

# IVolatility US Option Trades Tick Data Guide

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## Overview

The IVolatility US Options Trades Tick Data consists of tick level trades data (time and sales) for all US options (800,000+ as of now) and equities (5000+ including stocks, indices, funds). Database includes history since January 2014 and comes with data updates for new day.

Options Trades Tick Data include following:

- Options' tick by tick trade prices with sizes (time and sales)
- Options' bid/ask quotations at the moment of trade
- Underlying's bid/ask/trade prices at the moment of option's trade
- Options' Implied Vols and Greeks based on trade price
- History since Jan -2014
- Ongoing daily update right after the close
- Complimentary data such as dividends, rates, corporate actions are included as well.

Intraday Option Trades Tick Database is built by the same team and based on the same methodology that created our award-winning End-Of-the-Day database used by the leading firms.

To order the data, contact us at [sales@ivolatility.com](mailto:sales@ivolatility.com) or call +1-201-275-1111.

## Population and cleansing

Based on 16 years' experience building and supporting the best-known end of the day Options Implied Volatility database, we developed the technology and methodology to capture, cleanse and calculate derived data on an intraday basis as well.

Since our goal is to provide accurate and reliable data timely, we do the following:

- Use well-regarded market data vendors. This is the first step to get accurate market information like price, dividends, volume, etc...
- Our dedicated team tracks all corporate events such as splits, mergers, spin-offs, distributions, etc applying any ticker changes to maintain equity history continuity.
- Our analysts manually verify the data for accuracy of dividend and prices based on our own proprietary filters.
- When calculating implied volatilities, proprietary algorithms automatically filter bad data and replacing with interpolated volatilities, avoiding occasional spikes.
- Use a combination of Black&Scholes and Binomial Tree 100 steps, providing accuracy for the implied volatilities and Greeks.
- Various algorithms allow us to control data capturing in real time.
- After markets close, we perform some additional reviews to check the integrity of data and apply corrections if required.
- We register all found gaps in a special table for future reference.
- Quality of our data has been further improved thanks to feedback we have received from our clients who have been using it for over 15 years.
- We deliver the final product - completely verified with corrected data.

## Options Trades Tick Data Delivery.

### Compressed CSV file delivery:

Historical options trades tick data is delivered either via FTP (for small orders) or via media device (HDD).

Daily Update data files are delivered via FTP. Non-scrubbed data is available at 4:50 PM EST every trading day, data with calculated IV and Greeks is available after 5 PM EST.

By default, historical data is delivered in file(s) archived in zip.

The average size for all US market options trades per day is about 1 million rows:

- OptTradesRawIV (Options trade prices + calculated IV and greeks) – 250 Mb, ZIP – 45 Mb.
- OptTrades (Options trade prices) – 170 Mb, ZIP – 20 Mb.

## Data files description.

The historical options tick database contains trade by trade data for all US options or indexes and equities beginning from 1/13/2014.

Data are divided into two groups: historical tables and auxiliary EOD (end of the day) tables.

Historical tables are: OptTrades (for just trades information) or OptTradesRawIV (options trades + IV&Greeks). This table is populated during each trading day with the data for last trading day.

End of the day tables are: Dividends, Yields, Interest Rate, etc.

## Historical tick data tables/files

### ***Options trades prices with calculated IV and Greeks (OptTrades & OptTradesRawIV)***

This table includes all trades on options on US stocks, indexes and ETFs. Average amount of traders per day varies from 600,000 to 1,300,000.

Column	Description	Example
Symbol	Underlying symbol	A
Exchange	Underlying exchange code	NYSE
Company_name	Full company name	Agilent Technologies Inc
Trade_date	Trading date the data is as of	12/19/2014
Trade_time	Trade time	15:03:47
Option_trade_price	Option trade price	0.52
Trade_size	Option trade size	2
Trade_exchange	Option trade exchange	XO
Trade_condition	Option trade condition*	Spread
Option_symbol	Option symbol	A 150117C00047500
Option_expiration	Option expiration date	1/17/2015
Price_strike	Option strike price	47.5
Call/Put	'C' for Call, 'P' for Put	C
Style	Option style	A
Bid_price	Option bid quote**	0.45
Bid_time	Option bid time**	15:03:47
Bid_size	Option bid size**	253
Bid_exchange	Option bid exchange**	XO
Ask_price	Option ask quote**	0.59
Ask_time	Option ask time**	15:03:47
Ask_size	Option ask size**	2
Ask_exchange	Option ask exchange**	XO
Price_for_IV&Greeks	Underlying Price used for IV calculation	41.295
IsTradePrice	'*' - if price for IV is a trade price of an underlying,	

	" – if price for IV is a middle price (stock [bid+ask]/2). We choose the first one (stock trade price) if time-wise a stock trade is closer to the option trade than bid/ask quotes, and the second one (mid) in other cases.	
<i>IV</i>	Calculated option volatility, "-1" value indicates that no reasonable IV can be calculated by option model	0.503267
<i>Delta</i>	Delta greek (change in option price for \$1 increase in underlying)	0.175841
<i>Gamma</i>	Gamma greek (change in delta for \$1 increase in underlying)	0.044215
<i>Theta</i>	Theta greek (change in option price from today to tomorrow)	-0.026064
<i>Vega</i>	Vega greek (change in option price for 1% (absolute) change in implied volatility)	0.030043
<i>Rho</i>	Rho greek (change in option price for 1% (absolute) change in interest rate)	0.005349

\* - see table TradeConditions for full description of condition statement below.

\*\* - values are captured at the moment when the trade occurs.

Fields *marked in italics* are available only for OptTradesRawIV dataset and are not available for corporate action options (i.e. options after splits, mergers, etc..)

### TradeConditions

SHORT_DISCRIPTION	FULL_DESCRIPTION
Regular	Indicates that the transaction was a regular sale and was made without stated conditions.
Out Of Sequence	Transaction is being reported late and is out-of-sequence, i.e., later transactions have been reported for the particular option contract.
Late	Transaction is being reported late in the correct sequence. i.e., no later transactions have been reported for the particular option contract.
Open	Transaction is a late report of the opening trade and is out of sequence, i.e., other transactions have been reported for the particular option contract.
Late Open	Transaction is a late report of the opening trade, but is in the correct sequence, i.e., no other transactions have been reported for this particular option contract.
Auto	Transaction was executed electronically. This prefix appears solely for information; process as a regular transaction.
Re-Open	Transaction is a reopening of an option contract in which trading has been previously halted. This prefix appears solely for information; process as a regular transaction.
Adjusted	Transaction is an option contract for which the terms have been adjusted to reflect a stock dividend, stock split, or similar event. This prefix appears solely for information; process as a regular transaction.
Spread	Transaction represents a trade in two options in the same option class (a buy and sell in the same class). This prefix appears solely for information; process as a regular transaction.
Straddle	Transaction represents a trade in two options in the same option class (a buy and sell in a put and a call). This prefix appears solely for information; process as a regular transaction.
Stopped	Transaction is the execution of a sale at a price agreed upon by the floor personnel involved, where a condition of the trade is that it be reported following a non-stopped trade of the same series at the same price.
Buy/Write	Transaction represents the option portion of an order involving a single option leg (buy

	or sell of a call or put) and stock. The prefix appears solely for information; process as a regular transaction.
Combination	Transaction represents the buying of a call and the selling of a put for the same underlying stock or index. This prefix appears solely for information; process as a regular transaction.
Stopped	Transaction was the execution of an order that was 'stopped' at a price that did not constitute a Trade-Through on another market at the time of the stop.
Intermarket Sweep Order	Transaction was the execution of an order identified as an Intermarket Sweep Order.
Benchmark	Transaction reflects the execution of a 'benchmark trade'. A 'benchmark trade' is a trade resulting from the matching of 'Benchmark Orders'. A 'Benchmark Order' is an order for which the price is not based, directly or indirectly, on the quoted price of the option at the time of the order's execution and for which the material terms were not reasonably determinable at the time a commitment to trade the order was made.
Trade Through Exempt	Transaction is Trade Through Exempt. The transaction should be treated like a regular sale.

## End of the day data/files

End of day tables are updated in the mornings before market is open. All of the tables except InterestRate are rewritten daily. InterestRate table is only updated with new data daily.

### **Dividends**

We keep regular dividend data in this table.

For US stocks and ETFs we use periodical dividends in the form of date, amount and frequency for implied volatility calculations. As for the dividend date and amount data we use either data from the last paid dividend or information about the next declared dividend. For US Indices, we use yields, see next table.

Column	Comment
Symbol	underlying symbol
Exchange	underlying exchange code
Date	start date of the period where this dividend record is valid
Term_date	end date of the period where this dividend record is valid
Dividend_Amount	dividend amount
Dividend_Date	dividend ex-date
Dividend_Freq	times per year (1 - annually, 2 - semiannually, 4 - quarterly, 12 - monthly)

### **Yield**

Yields are the 12 months averaged dividends yeilds and used in implied volatility calculations for the indexes.

Column	Comment
Date	trading date the data is as of
Symbol	underlying symbol
Yield	yield

### **Interest Rates**

We use interpolated interbank offered rates such as LIBORs with 1 day delay.

Column	Comment
Trade_date	trading date the data is as of
Period	period in trading days. Standard periods are 30, 60, 90, 120, 150, 180, 210, 240, 270, 300, 330, 360, 720, 1080, 1440, 1800. Rates for other periods are interpolated
Currency	currency code
Rate	interest rate % value

### ***QuoteExchanges***

Contains information about data provider exchanges codes referring to exchange symbols in the OptTrades and OptTradesRawIV.

Column	Comment
Exchange_symbol	Symbol of the exchange
Name	Name of the exchange
MIC	MIC code of the exchange

## Our clients

15 years working and constantly developing data resulted in more than 70,000 clients from all over the world using **IVolatility.com** trading and risk management systems for US, European and Asian market data and analytics.

**IVolatility.com** clients represent all segments of the global derivatives market. More than half of the top 30 options market makers and US options brokers use **IVolatility.com** financial data services. In addition, **IVolatility.com** clients include 3 out of 5 of the largest US banking institutions and more than half of the top 50 investment banks. Other important clients include the CBOE, the NYSE, RiskMetrics Group - a proven leader in risk management, corporate governance, financial research and analysis- along with the Options Clearing Corporation, as well as hundreds of investment and hedge funds.