

Title: The Black Swan Event Through the Lens of Options Activity and Other Data Points (Part Two)

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[**Read Part One Here**](https://www.reddit.com/r/DDintoGME/comments/rwygms/the_black_swan_event_through_the_lens_of_options/)

****Notes:****

* Time Period Analyzed: 11/27/2020 to 2/19/2021

* Options data was pulled from contracts that had expiration dates from January 8th until February 19th, 2021.

****Disclaimers and Constraints:****

* This information does not constitute financial advice.

* The information used in these analyses was extracted from chartexchange.com and is available to the public.

* The total amount of calls and puts for the period analyzed is understated: there is volume for calls and puts that were purchased and held (open interest) for contract expiration dates later than February 19th 2021. This statement is especially true for out of the money puts that were purchased on January 26th, 27th, and 28th of 2021 for contracts that expired after February 19th 2021. This part of the analysis will be conducted in a separate post (part 3) as it brings to light an important phenomenon that did not happen prior to the black swan event - the abundant purchasing of OOTM puts at < \$5 strike prices.

[**Call and Put Open Interest (OI)**](https://docs.google.com/spreadsheets/d/e/2PACX-1vTWcAfvXsB5M-cLw2_y5Xdy4MyyVYoYXp27XgLI7YGglu7E8zAkPPEHTyi4WDrzWu5npWiltj6k80VN/pubchart?oid=1927973949&format=interactive)

Notable Dates on This Graph:

* Highest Call Open Interest: 2/05/2021 (337,659)

* Highest Put Open Interest: 1/29/2021 (927,907)

[**Ratio of Open Interest of Calls vs Puts**](https://docs.google.com/spreadsheets/d/e/2PACX-1vTWcAfvXsB5M-cLw2_y5Xdy4MyyVYoYXp27XgLI7YGglu7E8zAkPPEHTyi4WDrzWu5npWiltj6k80VN/pubchart?oid=1234856864&format=interactive)

General Observations:

* As noted in the previous graph above in addition to this graph, the ratio for the observed period overwhelmingly favors puts. There are only two dates where calls open interest have a higher ratio than puts.

Notable dates on This Graph:

* Highest % Ratio of OI Calls:

* 11/27/2020 (57.15% of total open interest was calls)

* 1/5/2021 (53.7% of total open interest was calls)

* Highest % Ratio of OI Puts:

* 1/28/2020 (80.62% of total open interest was puts)

* 2/1/2021 (80.73% of total open interest was puts)

[**Comparing Call and Put Volume vs Call and Put Open Interest**](https://docs.google.com/spreadsheets/d/e/2PACX-1vTWcAfvXsB5M-cLw2_y5Xdy4MyyVYoYXp27XgLI7YGglu7E8zAkPPEHTyi4WDrzWu5npWiITj6k80VN/pubchart?oid=175917990&format=interactive)

General Observations:

* When looking at this graph, it becomes apparent that much of the call and put volume was intraday trading (e.g. options day trading or swing trading) starting on the 13th.

Notable dates on This Graph:

* 1/13/2021: Call Volume increased by 484,312 from the previous day, however open interest was only increased by 26,775 from the previous day (5.5% of this volume could be attributed to this increase in open interest).

* 1/19/2021:

* Call open interest decreased by 44.19% from the previous day - the second biggest single day % drop observed.

* Put open interest decreased by 51.71% from the previous day - the biggest single day % drop observed

* 1/22/2021:

* Call volume had its highest one day increase of 659,809, however open interest was only increased by 11,961 (1.8% of this volume could be attributed to this increase in open interest).

* Put volume has its highest one day increase of 768,964 - interestingly though, put open interest increased by 215,238 (28% of this volume could be attributed to this increase in open interest).

* Put open interest increased by 80% from the previous day, the biggest single day increase observed.

* 2/2/2021: Call open interest increased by 31% from the previous day, the biggest single day increase observed.

* 2/16/2021: Call open interest decreased by 48.84% from its previous day - the biggest single day % drop observed - bringing the call open interest to 142,433; open interest was last this low on 12/8/2020.

Now for graphs with weighted averages:

This allows us to tell a different story about what calls and puts were being bought at volume versus ones bought and held in Open Interest. Note: "WA" on the charts stands for "weighted average".

What is a weighted average? [Find out here!](<https://www.investopedia.com/terms/w/weightedaverage.asp>)

[**Call and Put Volume Weighted Averages Against Daily High and Low Stock Price**](https://docs.google.com/spreadsheets/d/e/2PACX-1vTWcAfvXsB5M-cLw2_y5Xdy4MyyVYoYXp27XgLI7YGglu7E8zAkPPEHTyi4WDrzWu5npWiITj6k80VN/pubchart?oid=65239871&format=interactive)

General Observations:

* Up until 2/1, the call volume weighted average traced pretty closely to the stock daily high.

* The put volume weighted average traced pretty closely to the stock daily low, even after the fall from the run up.

[**Call and Put Open Interest Weighted Averages Against Daily High and Low Stock Price**](https://docs.google.com/spreadsheets/d/e/2PACX-1vTWcAfvXsB5M-cLw2_y5Xdy4MyyVYoYXp27XgLI7YGglu7E8zAkPPEHTyi4WDrzWu5npWiITj6k80VN/pubchart?oid=198435904&format=interactive)

General Observations:

* Similarly to the call volume weighted average above, up until 2/1, the call volume weighted average traced pretty closely to the stock daily high. The line seems to indicate that options holders were more conservative with their strikes than the intraday volume group.

* Similarly to the put volume weighted average above, the put volume weighted average traced pretty closely to the stock daily low, even after the fall from the run up. The line seems to indicate that options holders were more conservative with their strikes than the intraday volume group.

And to finalize it all, [here is a graph with the weighted average for call and put open interest averages compared to the weighted average for call and put volume for the observed time period](https://docs.google.com/spreadsheets/d/e/2PACX-1vTWcAfvXsB5M-cLw2_y5Xdy4MyyVYoYXp27XgLI7YGglu7E8zAkPPEHTyi4WDrzWu5npWiltj6k80VN/pubchart?oid=1201927988&format=interactive).

****Bonus Reading:****

* [Expecting Too Much Certainty](<https://web.ma.utexas.edu/users/mks/statmistakes/uncertainty.html>)

* [How Options Expiration Affects Stock Prices](<https://www.thestreet.com/investing/how-options-expiration-affects-stock-prices-11346823>)