

Nasdaq PHLX, LLC (“PHLX”) Nonstandard Expiration Pilot Program

NDXP

Annual Report

As part of the Pilot Program, the Exchange submits this Pilot Program report to the Commission (the "annual report"). The annual report contains an analysis of volume, open interest and trading patterns. In addition, for series that exceed certain minimum open interest parameters, the annual report will provide analysis of index price volatility and, if needed, share trading activity. The annual report is provided to the Commission on a confidential basis.

To date Nasdaq has not listed any end of month (EOM) nonstandard NDXP options. All NDXP data included in this report reflects only weekly expirations, except 3rd Friday. Data are consolidated across all exchanges that trade the products.

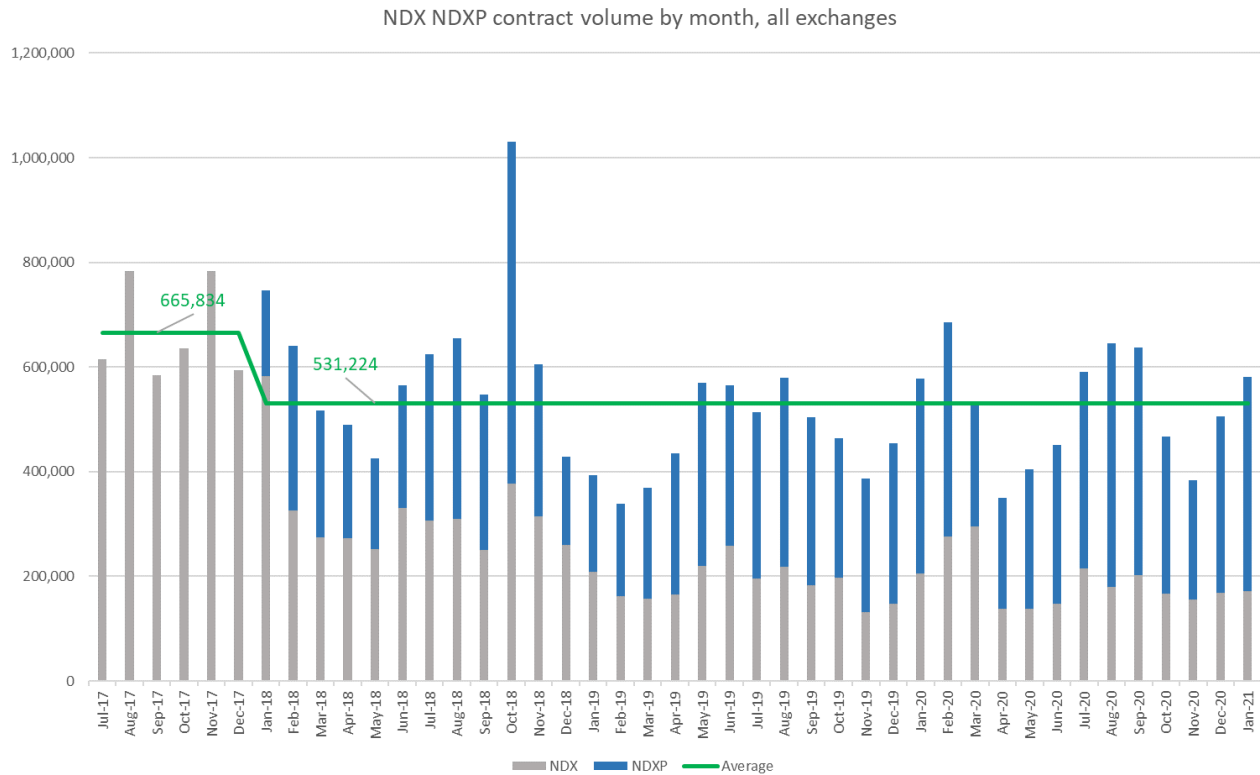
Analysis of Volume and Open Interest

For all weekly nonstandard expirations series (NDXP), this annual report provides volume and open interest data for each broad-based index overlying weekly expiration options.

In addition, the annual report contains the information noted for standard expiration Friday, a.m.-settled series (NDX), for the period covered in the annual report as well as for the six-month period prior to the initiation of the Pilot Program.

(1) Monthly volume aggregated for all Weekly Expiration series

After the introduction of NDXP (January 2018), monthly volume for the class (NDX and NDXP) fell from 665,834 contracts per month to 531,224 contracts per month, a 20% decline.

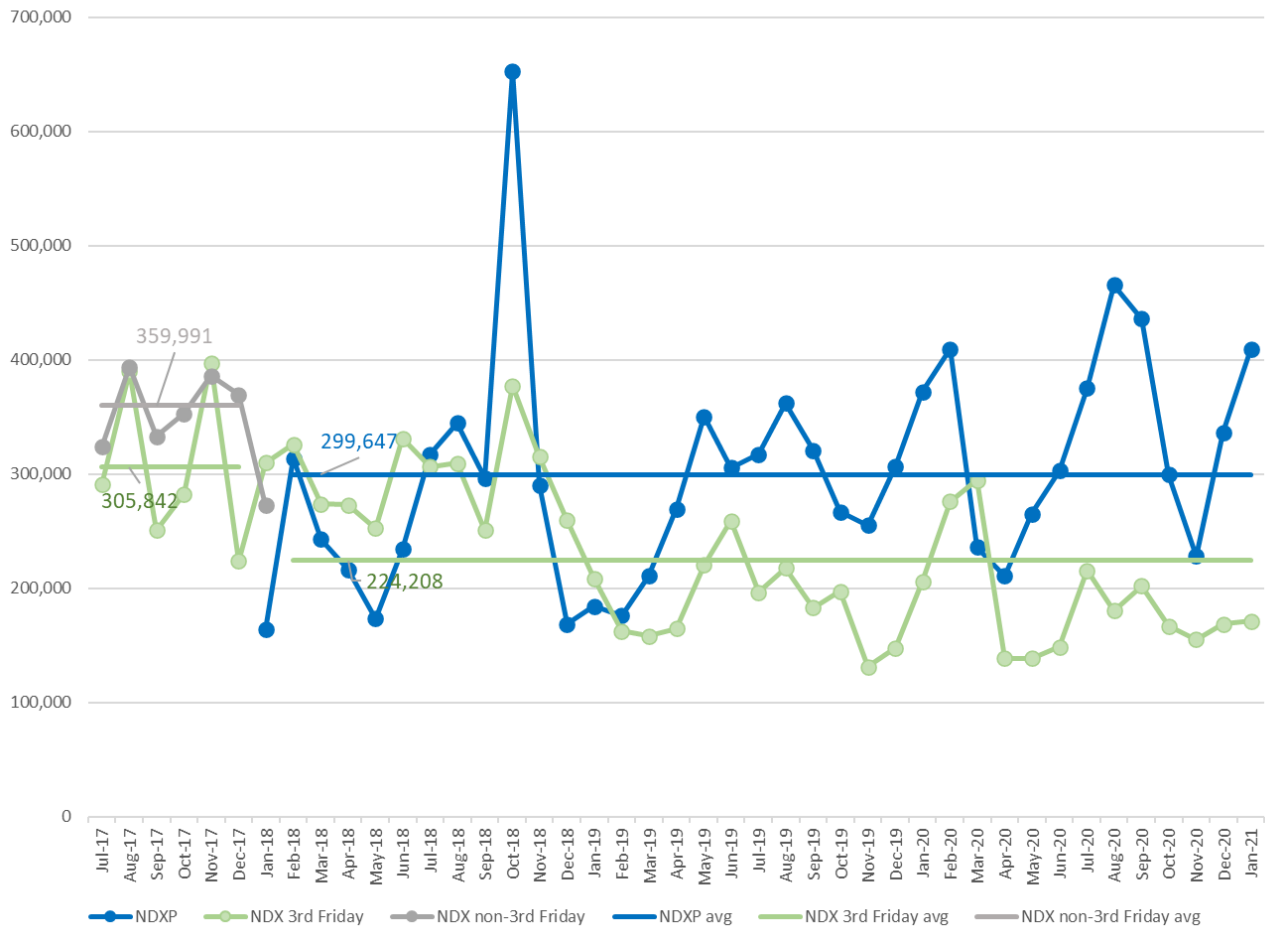


Month	NDX	NDXP	Total	Average
Jul-17	614,878	0	614,878	665,834
Aug-17	783,976	0	783,976	665,834
Sep-17	583,680	0	583,680	665,834
Oct-17	635,576	0	635,576	665,834
Nov-17	783,388	0	783,388	665,834
Dec-17	593,504	0	593,504	665,834
Jan-18	582,456	163,990	746,446	531,224
Feb-18	325,908	314,060	639,968	531,224
Mar-18	273,912	243,016	516,928	531,224
Apr-18	272,914	216,280	489,194	531,224
May-18	252,708	173,304	426,012	531,224
Jun-18	331,264	234,098	565,362	531,224
Jul-18	306,550	317,458	624,008	531,224
Aug-18	309,646	344,652	654,298	531,224
Sep-18	250,670	296,606	547,276	531,224
Oct-18	377,344	652,938	1,030,282	531,224
Nov-18	315,196	290,364	605,560	531,224
Dec-18	259,708	168,512	428,220	531,224
Jan-19	208,812	184,052	392,864	531,224
Feb-19	162,460	176,038	338,498	531,224
Mar-19	158,070	210,788	368,858	531,224
Apr-19	164,796	269,488	434,284	531,224
May-19	220,350	350,224	570,574	531,224
Jun-19	259,164	305,398	564,562	531,224
Jul-19	196,620	317,554	514,174	531,224
Aug-19	217,902	362,052	579,954	531,224
Sep-19	183,102	320,734	503,836	531,224
Oct-19	197,444	266,838	464,282	531,224
Nov-19	131,262	255,228	386,490	531,224
Dec-19	147,826	306,980	454,806	531,224
Jan-20	206,170	372,142	578,312	531,224
Feb-20	275,882	409,386	685,268	531,224
Mar-20	294,722	235,910	530,632	531,224
Apr-20	138,660	210,684	349,344	531,224
May-20	138,688	265,288	403,976	531,224
Jun-20	148,454	302,872	451,326	531,224
Jul-20	215,568	375,342	590,910	531,224
Aug-20	180,366	465,456	645,822	531,224
Sep-20	202,024	435,882	637,906	531,224
Oct-20	166,778	299,546	466,324	531,224
Nov-20	155,076	228,046	383,122	531,224
Dec-20	168,610	336,350	504,960	531,224
Jan-21	171,276	409,370	580,646	531,224

Volume Jul 1, 2017 - Jan 31, 2021

Before the introduction of NDXP, NDX volume included regular Friday expirations as well as 3rd Friday expirations. Nasdaq discontinued regular Friday expirations of NDX after NDXP was introduced. Regular Friday expirations of NDX averaged 359,991 contracts per month in the 6 months before they were discontinued. Since introduction, NDXP has averaged 299,647 contracts per month, 17% below the level for NDX regular Friday expirations. NDX 3rd Friday expirations declined from 305,842 contracts per month to 224,208 contracts per month, a 27% decline.

NDX and NDXP contract volume by month and expiration type, all exchanges



NDX and NDXP volume by month, by expiration type, all exchanges

Month	NDXP	NDX 3rd Friday	NDX non-3rd Friday
Jul-17		290,888	323,990
Aug-17		389,880	394,096
Sep-17		250,674	333,006
Oct-17		282,576	353,000
Nov-17		397,218	386,170
Dec-17		223,818	369,686
Jan-18	163,990	309,790	272,666
Feb-18	314,060	325,908	
Mar-18	243,016	273,912	
Apr-18	216,280	272,914	
May-18	173,304	252,708	
Jun-18	234,098	331,264	
Jul-18	317,458	306,550	
Aug-18	344,652	309,646	
Sep-18	296,606	250,670	
Oct-18	652,938	377,344	
Nov-18	290,364	315,196	
Dec-18	168,512	259,708	
Jan-19	184,052	208,812	
Feb-19	176,038	162,460	
Mar-19	210,788	158,070	
Apr-19	269,488	164,796	
May-19	350,224	220,350	
Jun-19	305,398	259,164	
Jul-19	317,554	196,620	
Aug-19	362,052	217,902	
Sep-19	320,734	183,102	
Oct-19	266,838	197,444	
Nov-19	255,228	131,262	
Dec-19	306,980	147,826	
Jan-20	372,142	206,170	
Feb-20	409,386	275,882	
Mar-20	235,910	294,722	
Apr-20	210,684	138,660	
May-20	265,288	138,688	
Jun-20	302,872	148,454	
Jul-20	375,342	215,568	
Aug-20	465,456	180,366	
Sep-20	435,882	202,024	
Oct-20	299,546	166,778	
Nov-20	228,046	155,076	
Dec-20	336,350	168,610	
Jan-21	409,370	171,276	

Volume Jul 1, 2017 - Jan 31, 2021

(2) Volume in Weekly Expiration series aggregated by expiration date

NDXP contract volume by expiration date Expiration date between February 2018 and April 2019			NDXP contract volume by expiration date Expiration date between May 2019 and February 2020			NDXP contract volume by expiration date Expiration date between March 2020 and September 2020		
Expiration date	NDXP	Expiration day	Expiration date	NDXP	Expiration day	Expiration date	NDXP	Expiration day
2/2/2018	122,948	Friday	5/1/2019	31,272	Wednesday	3/2/2020	11,780	Monday
2/9/2018	163,880	Friday	5/3/2019	54,258	Friday	3/4/2020	27,574	Wednesday
2/23/2018	77,960	Friday	5/8/2019	50,286	Wednesday	3/6/2020	50,260	Friday
3/2/2018	90,830	Friday	5/10/2019	42,832	Friday	3/9/2020	8,152	Monday
3/9/2018	53,206	Friday	5/15/2019	32,942	Wednesday	3/11/2020	16,882	Wednesday
3/23/2018	94,770	Friday	5/22/2019	33,478	Wednesday	3/13/2020	29,214	Friday
3/29/2018	58,116	Thursday	5/24/2019	48,148	Friday	3/16/2020	4,598	Monday
4/6/2018	65,810	Friday	5/29/2019	32,202	Wednesday	3/18/2020	10,290	Wednesday
4/13/2018	78,978	Friday	5/31/2019	53,054	Friday	3/23/2020	5,284	Monday
4/27/2018	73,536	Friday	6/5/2019	35,776	Wednesday	3/25/2020	9,814	Wednesday
5/4/2018	49,740	Friday	6/7/2019	59,508	Friday	3/27/2020	48,406	Friday
5/11/2018	41,220	Friday	6/12/2019	27,196	Wednesday	3/30/2020	16,118	Monday
5/25/2018	46,416	Friday	6/14/2019	41,734	Friday	4/1/2020	10,868	Wednesday
6/1/2018	49,484	Friday	6/19/2019	28,212	Wednesday	4/3/2020	39,260	Friday
6/8/2018	54,170	Friday	6/26/2019	31,636	Wednesday	4/6/2020	7,766	Monday
6/22/2018	66,368	Friday	6/28/2019	97,092	Friday	4/8/2020	12,374	Wednesday
6/29/2018	90,040	Friday	7/3/2019	25,400	Wednesday	4/9/2020	35,070	Thursday
7/6/2018	69,942	Friday	7/5/2019	43,312	Friday	4/13/2020	11,238	Monday
7/13/2018	60,350	Friday	7/10/2019	28,290	Wednesday	4/15/2020	20,272	Wednesday
7/27/2018	110,478	Friday	7/12/2019	48,592	Friday	4/20/2020	14,790	Monday
8/3/2018	90,200	Friday	7/17/2019	30,338	Wednesday	4/22/2020	20,648	Wednesday
8/10/2018	88,032	Friday	7/24/2019	46,040	Wednesday	4/24/2020	30,954	Friday
8/24/2018	112,810	Friday	7/26/2019	52,288	Friday	4/27/2020	14,046	Monday
8/31/2018	108,782	Friday	7/31/2019	22,772	Wednesday	4/29/2020	16,306	Wednesday
9/7/2018	82,520	Friday	8/2/2019	63,374	Friday	5/1/2020	31,818	Friday
9/14/2018	58,738	Friday	8/7/2019	34,188	Wednesday	5/4/2020	10,336	Monday
9/26/2018	12,486	Wednesday	8/9/2019	38,096	Friday	5/6/2020	16,782	Wednesday
9/28/2018	167,618	Friday	8/14/2019	34,888	Wednesday	5/8/2020	38,544	Friday
10/3/2018	8,898	Wednesday	8/21/2019	33,774	Wednesday	5/11/2020	17,634	Monday
10/5/2018	82,856	Friday	8/23/2019	62,330	Friday	5/13/2020	25,294	Wednesday
10/10/2018	64,626	Wednesday	8/28/2019	29,822	Wednesday	5/18/2020	16,562	Monday
10/12/2018	104,182	Friday	8/30/2019	81,536	Friday	5/20/2020	22,026	Wednesday
10/17/2018	20,388	Wednesday	9/4/2019	36,826	Wednesday	5/22/2020	29,898	Friday
10/24/2018	44,278	Wednesday	9/6/2019	40,138	Friday	5/26/2020	16,348	Tuesday
10/26/2018	67,582	Friday	9/11/2019	30,056	Wednesday	5/27/2020	22,792	Wednesday
10/31/2018	44,538	Wednesday	9/13/2019	42,890	Friday	5/29/2020	31,980	Friday
11/2/2018	130,996	Friday	9/18/2019	34,386	Wednesday	6/1/2020	9,878	Monday
11/7/2018	28,038	Wednesday	9/25/2019	54,158	Wednesday	6/3/2020	17,338	Wednesday
11/9/2018	101,954	Friday	9/27/2019	63,222	Friday	6/5/2020	33,512	Friday
11/14/2018	29,308	Wednesday	10/2/2019	32,300	Wednesday	6/8/2020	19,016	Monday
11/21/2018	31,366	Wednesday	10/4/2019	37,342	Friday	6/10/2020	21,216	Wednesday
11/23/2018	63,614	Friday	10/9/2019	22,666	Wednesday	6/12/2020	45,370	Friday
11/28/2018	30,974	Wednesday	10/11/2019	50,868	Friday	6/15/2020	19,976	Monday
11/30/2018	82,364	Friday	10/16/2019	26,730	Wednesday	6/17/2020	23,382	Wednesday
12/5/2018	11,992	Wednesday	10/23/2019	33,426	Wednesday	6/22/2020	16,828	Monday
12/7/2018	52,206	Friday	10/25/2019	40,004	Friday	6/24/2020	24,022	Wednesday
12/12/2018	16,260	Wednesday	10/30/2019	26,598	Wednesday	6/26/2020	39,446	Friday
12/14/2018	34,800	Friday	11/1/2019	37,188	Friday	6/29/2020	14,178	Monday
12/19/2018	13,846	Wednesday	11/6/2019	23,540	Wednesday	7/1/2020	20,456	Wednesday
12/26/2018	14,688	Wednesday	11/8/2019	37,176	Friday	7/2/2020	32,960	Thursday
12/28/2018	36,080	Friday	11/13/2019	27,018	Wednesday	7/6/2020	19,170	Monday
1/2/2019	17,292	Wednesday	11/20/2019	32,418	Wednesday	7/8/2020	26,666	Wednesday
1/4/2019	33,702	Friday	11/22/2019	48,604	Friday	7/10/2020	63,080	Friday
1/9/2019	10,026	Wednesday	11/27/2019	28,716	Wednesday	7/13/2020	24,764	Monday
1/11/2019	18,614	Friday	11/29/2019	42,362	Friday	7/15/2020	21,124	Wednesday
1/16/2019	20,344	Wednesday	12/4/2019	28,862	Wednesday	7/20/2020	24,784	Monday
1/23/2019	14,118	Wednesday	12/6/2019	36,806	Friday	7/22/2020	16,428	Wednesday
1/25/2019	44,470	Friday	12/11/2019	28,028	Wednesday	7/24/2020	59,078	Friday
1/30/2019	24,178	Wednesday	12/13/2019	44,558	Friday	7/27/2020	14,744	Monday
2/1/2019	36,698	Friday	12/18/2019	33,326	Wednesday	7/29/2020	19,576	Wednesday
2/6/2019	18,558	Wednesday	12/24/2019	26,682	Tuesday	7/31/2020	43,582	Friday
2/8/2019	48,880	Friday	12/27/2019	49,110	Friday	8/3/2020	17,800	Monday
2/13/2019	15,386	Wednesday	12/31/2019	33,566	Tuesday	8/5/2020	21,600	Wednesday
2/20/2019	15,928	Wednesday	1/3/2020	40,200	Friday	8/7/2020	47,708	Friday
2/22/2019	28,444	Friday	1/8/2020	40,724	Wednesday	8/10/2020	30,542	Monday
2/27/2019	22,400	Wednesday	1/10/2020	57,584	Friday	8/12/2020	49,434	Wednesday
3/1/2019	31,212	Friday	1/15/2020	44,008	Wednesday	8/14/2020	45,854	Friday
3/6/2019	19,636	Wednesday	1/22/2020	33,838	Wednesday	8/17/2020	16,254	Monday
3/8/2019	31,434	Friday	1/24/2020	66,022	Friday	8/19/2020	28,630	Wednesday
3/13/2019	16,852	Wednesday	1/29/2020	39,926	Wednesday	8/24/2020	36,554	Monday
3/20/2019	18,286	Wednesday	1/31/2020	67,328	Friday	8/26/2020	49,052	Wednesday
3/22/2019	38,236	Friday	2/5/2020	47,982	Wednesday	8/28/2020	68,080	Friday
3/27/2019	21,390	Wednesday	2/7/2020	56,346	Friday	8/31/2020	32,010	Monday
3/29/2019	41,326	Friday	2/12/2020	44,642	Wednesday	9/2/2020	36,396	Wednesday
4/3/2019	16,076	Wednesday	2/14/2020	62,004	Friday	9/4/2020	102,746	Friday
4/5/2019	36,224	Friday	2/19/2020	36,148	Wednesday	9/8/2020	19,066	Tuesday
4/10/2019	25,344	Wednesday	2/26/2020	61,862	Wednesday	9/9/2020	16,960	Wednesday
4/12/2019	43,806	Friday	2/28/2020	79,944	Friday	9/11/2020	46,242	Friday
4/17/2019	25,594	Wednesday	Volume Jan 1, 2017 - Jan 31, 2021			9/14/2020	15,002	Monday
4/24/2019	31,540	Wednesday				9/16/2020	21,816	Wednesday
4/26/2019	49,912	Friday				9/21/2020	21,880	Monday
Volume Jan 1, 2017 - Jan 31, 2021						9/23/2020	28,004	Wednesday
						9/25/2020	79,572	Friday
						9/28/2020	17,440	Monday
						9/30/2020	23,722	Wednesday
						Volume Jan 1, 2017 - Jan 31, 2021		

NDXP contract volume by expiration date

Expiration date between October 2020 and March 2021

date	NDXP	Expiration day
10/2/2020	51,464	Friday
10/5/2020	16,192	Monday
10/7/2020	19,312	Wednesday
10/9/2020	44,034	Friday
10/12/2020	17,566	Monday
10/14/2020	22,118	Wednesday
10/19/2020	17,680	Monday
10/21/2020	19,010	Wednesday
10/23/2020	31,290	Friday
10/26/2020	19,616	Monday
10/28/2020	20,306	Wednesday
10/30/2020	47,718	Friday
11/2/2020	14,830	Monday
11/4/2020	12,224	Wednesday
11/6/2020	28,392	Friday
11/9/2020	15,422	Monday
11/11/2020	15,568	Wednesday
11/13/2020	32,440	Friday
11/16/2020	13,218	Monday
11/18/2020	19,346	Wednesday
11/23/2020	20,394	Monday
11/25/2020	23,948	Wednesday
11/27/2020	23,024	Friday
11/30/2020	15,464	Monday
12/2/2020	14,790	Wednesday
12/4/2020	29,262	Friday
12/7/2020	18,124	Monday
12/9/2020	33,766	Wednesday
12/11/2020	35,374	Friday
12/14/2020	21,596	Monday
12/16/2020	20,842	Wednesday
12/21/2020	22,886	Monday
12/23/2020	22,526	Wednesday
12/24/2020	23,748	Thursday
12/28/2020	16,234	Monday
12/30/2020	23,328	Wednesday
12/31/2020	47,140	Thursday
1/4/2021	30,494	Monday
1/6/2021	30,032	Wednesday
1/8/2021	46,704	Friday
1/11/2021	21,876	Monday
1/13/2021	29,308	Wednesday
1/19/2021	35,956	Tuesday
1/20/2021	27,934	Wednesday
1/22/2021	42,618	Friday
1/25/2021	25,042	Monday
1/27/2021	40,006	Wednesday
1/29/2021	54,150	Friday
2/1/2021	9,950	Monday
2/3/2021	5,542	Wednesday
2/5/2021	17,896	Friday
2/8/2021	3,922	Monday
2/10/2021	2,670	Wednesday
2/12/2021	8,366	Friday
2/16/2021	2,208	Tuesday
2/17/2021	1,558	Wednesday
2/22/2021	966	Monday
2/24/2021	430	Wednesday
2/26/2021	6,260	Friday
3/1/2021	690	Monday
3/3/2021	62	Wednesday
3/5/2021	2,466	Friday
3/8/2021	122	Monday
3/12/2021	534	Friday
3/26/2021	94	Friday

Volume Jan 1, 2017 - Jan 31, 2021

NDX 3rd Friday contract volume by expiration date

Expiration date	NDX	Expiration day
7/21/2017	325,300	3rd Friday
8/18/2017	296,352	3rd Friday
9/15/2017	345,250	3rd Friday
10/20/2017	246,100	3rd Friday
11/17/2017	305,468	3rd Friday
12/15/2017	459,208	3rd Friday
1/19/2018	228,008	3rd Friday
2/16/2018	256,190	3rd Friday
3/16/2018	290,100	3rd Friday
4/20/2018	238,940	3rd Friday
5/18/2018	232,476	3rd Friday
6/15/2018	294,288	3rd Friday
7/20/2018	321,010	3rd Friday
8/17/2018	243,408	3rd Friday
9/21/2018	370,976	3rd Friday
10/19/2018	263,136	3rd Friday
11/16/2018	248,076	3rd Friday
12/21/2018	446,776	3rd Friday
1/18/2019	204,622	3rd Friday
2/15/2019	132,860	3rd Friday
3/15/2019	236,206	3rd Friday
4/18/2019	153,024	3rd Thursday
5/17/2019	137,190	3rd Friday
6/21/2019	338,960	3rd Friday
7/19/2019	157,694	3rd Friday
8/16/2019	175,242	3rd Friday
9/20/2019	245,016	3rd Friday
10/18/2019	160,998	3rd Friday
11/15/2019	132,710	3rd Friday
12/20/2019	301,542	3rd Friday
1/17/2020	131,964	3rd Friday
2/21/2020	165,158	3rd Friday
3/20/2020	273,516	3rd Friday
4/17/2020	179,216	3rd Friday
5/15/2020	166,258	3rd Friday
6/19/2020	194,850	3rd Friday
7/17/2020	154,074	3rd Friday
8/21/2020	145,978	3rd Friday
9/18/2020	222,346	3rd Friday
10/16/2020	145,120	3rd Friday
11/20/2020	157,282	3rd Friday
12/18/2020	279,880	3rd Friday
1/15/2021	146,234	3rd Friday
2/19/2021	76,440	3rd Friday
3/19/2021	77,922	3rd Friday
4/16/2021	26,706	3rd Friday
5/21/2021	6,150	3rd Friday
6/18/2021	53,062	3rd Friday
7/16/2021	1,650	3rd Friday
9/17/2021	7,754	3rd Friday
12/17/2021	36,698	3rd Friday
3/18/2022	526	3rd Friday
6/17/2022	114	3rd Friday
12/16/2022	6,140	3rd Friday
12/15/2023	226	3rd Friday

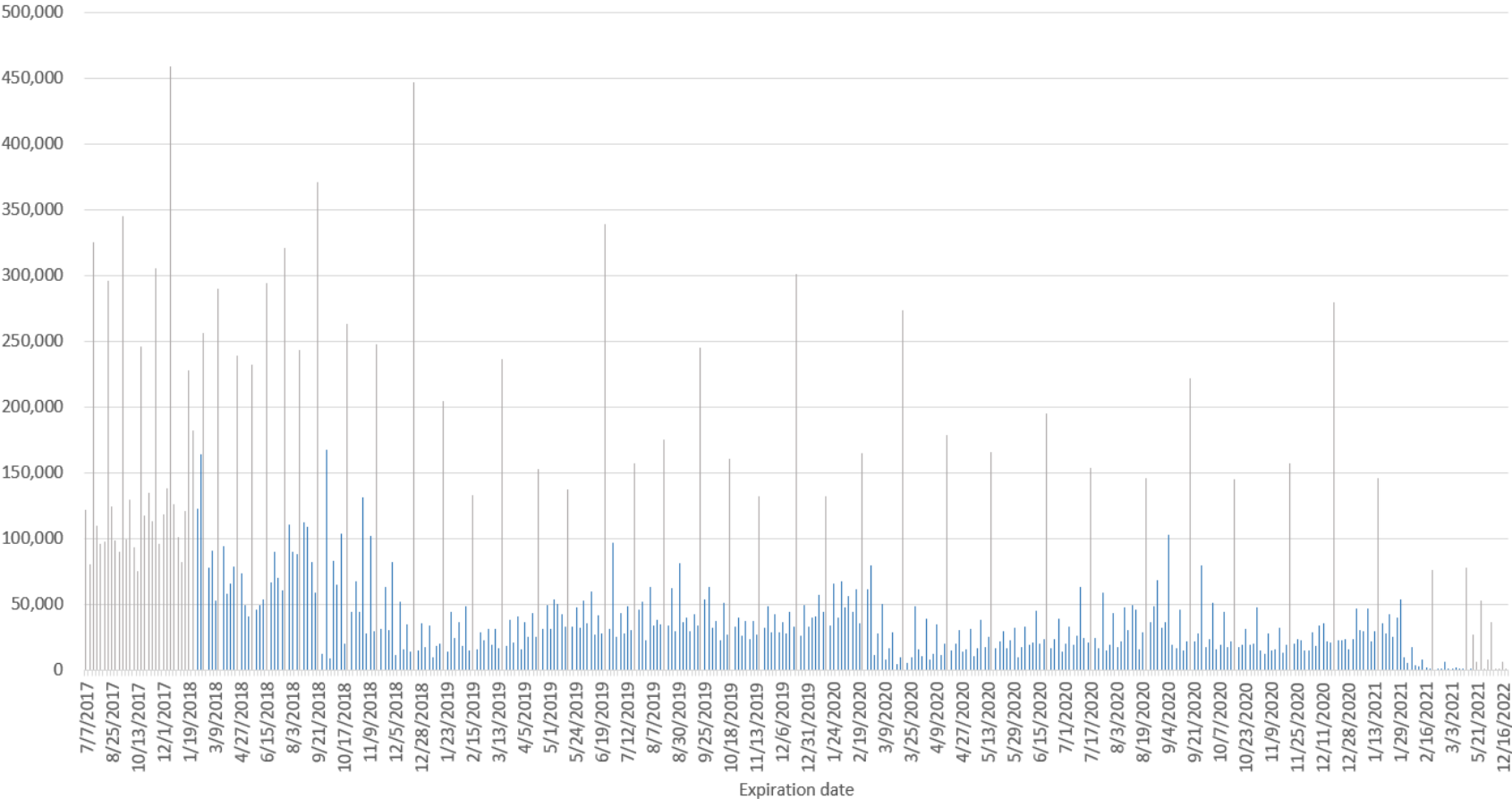
Volume Jan 1, 2017 - Jan 31, 2021

NDX non-3rd Friday contract volume by expiration date

Expiration date	NDX	Expiration day
7/7/2017	121,716	Friday
7/14/2017	80,228	Friday
7/28/2017	109,454	Friday
8/4/2017	95,942	Friday
8/11/2017	97,736	Friday
8/25/2017	124,484	Friday
9/1/2017	98,544	Friday
9/8/2017	90,122	Friday
9/22/2017	99,730	Friday
9/29/2017	129,980	Friday
10/6/2017	93,314	Friday
10/13/2017	75,248	Friday
10/27/2017	117,896	Friday
11/3/2017	135,036	Friday
11/10/2017	113,578	Friday
11/24/2017	95,948	Friday
12/1/2017	118,188	Friday
12/8/2017	138,314	Friday
12/22/2017	126,052	Friday
12/29/2017	100,978	Friday
1/5/2018	82,702	Friday
1/12/2018	121,190	Friday
1/26/2018	182,438	Friday

Volume Jan 1, 2017 - Jan 31, 2021

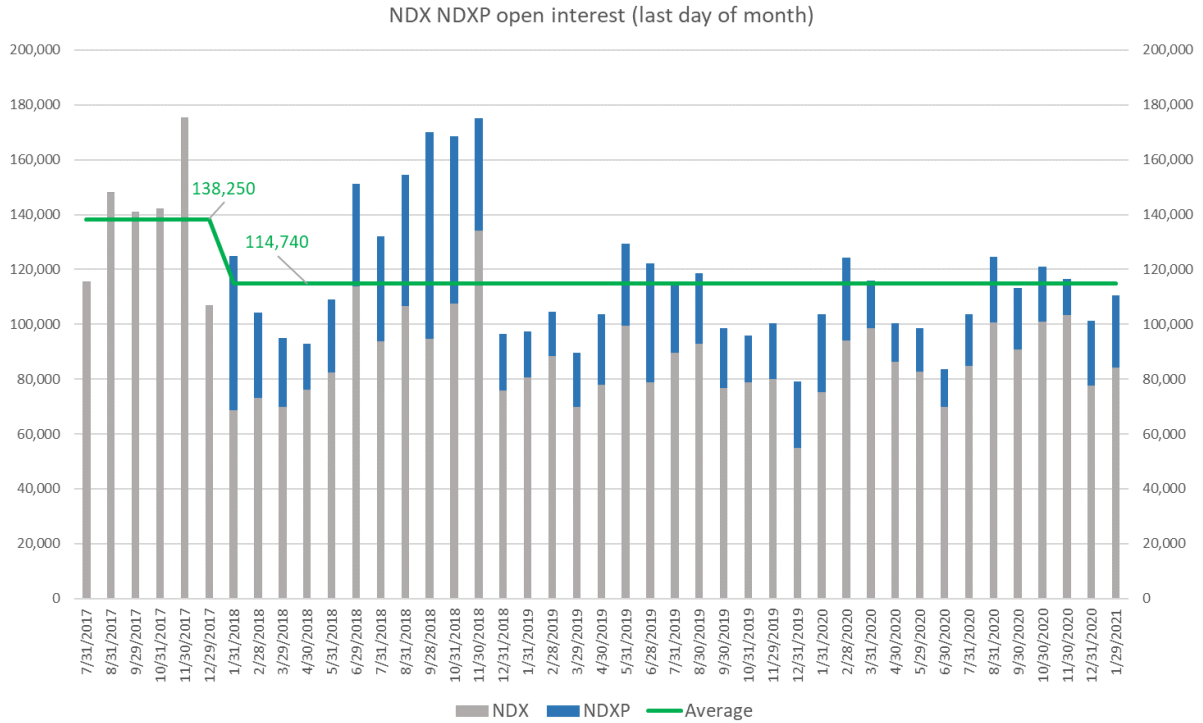
NDX and NDXP contract volume by expiration date



Volume Jan 1, 2017 - Jan 31, 2021

(3) Month-end open interest aggregated for all Weekly Expiration series

After the introduction of NDXP (January 2018), end of month open interest for the class (NDX and NDXP) fell from 138,250 contracts to 114,740 contracts, a 17% decline.



Open interest (last day of month)

Month	NDX	NDXP	Sum	Average
7/31/2017	115,491	0	115,491	138,250
8/31/2017	148,145	0	148,145	138,250
9/29/2017	140,978	0	140,978	138,250
10/31/2017	142,374	0	142,374	138,250
11/30/2017	175,566	0	175,566	138,250
12/29/2017	106,946	0	106,946	138,250
1/31/2018	68,543	56,330	124,873	114,740
2/28/2018	73,287	30,879	104,166	114,740
3/29/2018	69,796	25,276	95,072	114,740
4/30/2018	76,090	16,791	92,881	114,740
5/31/2018	82,429	26,626	109,055	114,740
6/29/2018	113,834	37,446	151,280	114,740
7/31/2018	93,721	38,338	132,059	114,740
8/31/2018	106,741	47,646	154,387	114,740
9/28/2018	94,781	75,324	170,105	114,740
10/31/2018	107,545	60,906	168,451	114,740
11/30/2018	134,295	40,710	175,005	114,740
12/31/2018	75,729	20,790	96,519	114,740
1/31/2019	80,582	16,667	97,249	114,740
2/28/2019	88,482	15,940	104,422	114,740
3/29/2019	69,836	19,716	89,552	114,740
4/30/2019	77,819	25,986	103,805	114,740
5/31/2019	99,495	29,858	129,353	114,740
6/28/2019	78,865	43,479	122,344	114,740
7/31/2019	89,541	25,004	114,545	114,740
8/30/2019	92,796	25,771	118,567	114,740
9/30/2019	76,662	21,932	98,594	114,740
10/31/2019	78,771	17,242	96,013	114,740
11/29/2019	80,124	20,123	100,247	114,740
12/31/2019	54,888	24,369	79,257	114,740
1/31/2020	75,328	28,274	103,602	114,740
2/28/2020	94,164	30,135	124,299	114,740
3/31/2020	98,445	17,634	116,079	114,740
4/30/2020	86,271	13,983	100,254	114,740
5/29/2020	82,769	15,955	98,724	114,740
6/30/2020	70,000	13,604	83,604	114,740
7/31/2020	84,980	18,693	103,673	114,740
8/31/2020	100,590	23,898	124,488	114,740
9/30/2020	90,712	22,595	113,307	114,740
10/30/2020	101,004	20,081	121,085	114,740
11/30/2020	103,254	13,413	116,667	114,740
12/31/2020	77,794	23,339	101,133	114,740
1/29/2021	84,364	26,313	110,677	114,740

(4) Month-end open interest for Weekly Expiration series aggregated by expiration date.

NDXP month end Open interest by expiration date, from Jan 2018 to Sep 2018				NDXP month end Open interest by expiration date, from Oct 2018 to Feb 2019			
Month	Expiration date	Open interest	Expiration day	Month	Expiration date	Open interest	Expiration day
1/31/2018	2/2/2018	30,512	Friday	10/31/2018	10/31/2018	6,472	Wednesday
1/31/2018	2/9/2018	20,151	Friday	10/31/2018	11/2/2018	17,431	Friday
1/31/2018	2/23/2018	2,791	Friday	10/31/2018	11/7/2018	4,653	Wednesday
1/31/2018	3/2/2018	2,681	Friday	10/31/2018	11/9/2018	12,801	Friday
1/31/2018	3/9/2018	195	Friday	10/31/2018	11/14/2018	5,037	Wednesday
2/28/2018	3/2/2018	17,327	Friday	10/31/2018	11/21/2018	680	Wednesday
2/28/2018	3/9/2018	5,364	Friday	10/31/2018	11/23/2018	7,598	Friday
2/28/2018	3/23/2018	6,007	Friday	10/31/2018	11/28/2018	1,357	Wednesday
2/28/2018	3/29/2018	2,019	Thursday	10/31/2018	11/30/2018	4,448	Friday
2/28/2018	4/6/2018	162	Friday	10/31/2018	12/7/2018	429	Friday
3/29/2018	3/29/2018	9,118	Thursday	11/30/2018	11/30/2018	18,641	Friday
3/29/2018	4/6/2018	8,202	Friday	11/30/2018	12/5/2018	2,416	Wednesday
3/29/2018	4/13/2018	4,826	Friday	11/30/2018	12/7/2018	10,533	Friday
3/29/2018	4/27/2018	2,694	Friday	11/30/2018	12/12/2018	1,232	Wednesday
3/29/2018	5/4/2018	428	Friday	11/30/2018	12/14/2018	2,974	Friday
3/29/2018	5/11/2018	8	Friday	11/30/2018	12/19/2018	422	Wednesday
4/30/2018	5/4/2018	10,118	Friday	11/30/2018	12/26/2018	324	Wednesday
4/30/2018	5/11/2018	4,153	Friday	11/30/2018	12/28/2018	1,480	Friday
4/30/2018	5/25/2018	1,529	Friday	11/30/2018	1/2/2019	1,177	Wednesday
4/30/2018	6/1/2018	871	Friday	11/30/2018	1/4/2019	1,486	Friday
4/30/2018	6/8/2018	120	Friday	11/30/2018	1/11/2019	25	Friday
5/31/2018	6/1/2018	11,836	Friday	12/31/2018	1/2/2019	5,765	Wednesday
5/31/2018	6/8/2018	8,494	Friday	12/31/2018	1/4/2019	6,778	Friday
5/31/2018	6/22/2018	2,732	Friday	12/31/2018	1/9/2019	740	Wednesday
5/31/2018	6/29/2018	3,183	Friday	12/31/2018	1/11/2019	1,814	Friday
5/31/2018	7/6/2018	369	Friday	12/31/2018	1/16/2019	1,479	Wednesday
5/31/2018	7/13/2018	12	Friday	12/31/2018	1/23/2019	273	Wednesday
6/29/2018	6/29/2018	15,734	Friday	12/31/2018	1/25/2019	3,233	Friday
6/29/2018	7/6/2018	10,748	Friday	12/31/2018	1/30/2019	18	Wednesday
6/29/2018	7/13/2018	5,325	Friday	12/31/2018	2/1/2019	635	Friday
6/29/2018	7/27/2018	4,297	Friday	12/31/2018	2/8/2019	55	Friday
6/29/2018	8/3/2018	1,307	Friday	1/31/2019	2/1/2019	6,273	Friday
6/29/2018	8/10/2018	35	Friday	1/31/2019	2/6/2019	1,283	Wednesday
7/31/2018	8/3/2018	18,696	Friday	1/31/2019	2/8/2019	3,356	Friday
7/31/2018	8/10/2018	8,841	Friday	1/31/2019	2/13/2019	572	Wednesday
7/31/2018	8/24/2018	3,975	Friday	1/31/2019	2/20/2019	414	Wednesday
7/31/2018	8/31/2018	6,013	Friday	1/31/2019	2/22/2019	2,598	Friday
7/31/2018	9/7/2018	813	Friday	1/31/2019	2/27/2019	351	Wednesday
8/31/2018	8/31/2018	18,397	Friday	1/31/2019	3/1/2019	1,040	Friday
8/31/2018	9/7/2018	13,794	Friday	1/31/2019	3/6/2019	14	Wednesday
8/31/2018	9/14/2018	5,625	Friday	1/31/2019	3/8/2019	734	Friday
8/31/2018	9/28/2018	8,908	Friday	1/31/2019	3/22/2019	32	Friday
8/31/2018	10/5/2018	861	Friday	2/28/2019	3/1/2019	6,207	Friday
8/31/2018	10/12/2018	61	Friday	2/28/2019	3/6/2019	2,605	Wednesday
9/28/2018	9/28/2018	56,006	Friday	2/28/2019	3/8/2019	3,625	Friday
9/28/2018	10/3/2018	821	Wednesday	2/28/2019	3/13/2019	472	Wednesday
9/28/2018	10/5/2018	7,473	Friday	2/28/2019	3/20/2019	304	Wednesday
9/28/2018	10/10/2018	1,327	Wednesday	2/28/2019	3/22/2019	1,125	Friday
9/28/2018	10/12/2018	5,086	Friday	2/28/2019	3/27/2019	189	Wednesday
9/28/2018	10/17/2018	83	Wednesday	2/28/2019	3/29/2019	1,213	Friday
9/28/2018	10/24/2018	357	Wednesday	2/28/2019	4/3/2019	4	Wednesday
9/28/2018	10/26/2018	2,948	Friday	2/28/2019	4/5/2019	186	Friday
9/28/2018	10/31/2018	645	Wednesday	2/28/2019	4/12/2019	10	Friday
9/28/2018	11/2/2018	532	Friday				
9/28/2018	11/9/2018	46	Friday				

NDXP month end Open interest by expiration date, from Mar 2019 to Jul 2019

Month	Expiration date	Open interest	Expiration day
3/29/2019	3/29/2019	6,540	Friday
3/29/2019	4/3/2019	1,637	Wednesday
3/29/2019	4/5/2019	5,322	Friday
3/29/2019	4/10/2019	614	Wednesday
3/29/2019	4/12/2019	2,132	Friday
3/29/2019	4/17/2019	468	Wednesday
3/29/2019	4/24/2019	500	Wednesday
3/29/2019	4/26/2019	1,361	Friday
3/29/2019	5/1/2019	25	Wednesday
3/29/2019	5/3/2019	1,107	Friday
3/29/2019	5/10/2019	10	Friday
4/30/2019	5/1/2019	8,523	Wednesday
4/30/2019	5/3/2019	6,756	Friday
4/30/2019	5/8/2019	2,358	Wednesday
4/30/2019	5/10/2019	2,596	Friday
4/30/2019	5/15/2019	1,025	Wednesday
4/30/2019	5/22/2019	783	Wednesday
4/30/2019	5/24/2019	2,200	Friday
4/30/2019	5/29/2019	587	Wednesday
4/30/2019	5/31/2019	1,023	Friday
4/30/2019	6/5/2019	2	Wednesday
4/30/2019	6/7/2019	133	Friday
5/31/2019	5/31/2019	10,479	Friday
5/31/2019	6/5/2019	2,389	Wednesday
5/31/2019	6/7/2019	3,716	Friday
5/31/2019	6/12/2019	607	Wednesday
5/31/2019	6/14/2019	2,508	Friday
5/31/2019	6/19/2019	535	Wednesday
5/31/2019	6/26/2019	299	Wednesday
5/31/2019	6/28/2019	9,018	Friday
5/31/2019	7/3/2019	52	Wednesday
5/31/2019	7/5/2019	193	Friday
5/31/2019	7/12/2019	62	Friday
6/28/2019	6/28/2019	29,928	Friday
6/28/2019	7/3/2019	3,088	Wednesday
6/28/2019	7/5/2019	3,694	Friday
6/28/2019	7/10/2019	1,405	Wednesday
6/28/2019	7/12/2019	2,656	Friday
6/28/2019	7/17/2019	526	Wednesday
6/28/2019	7/24/2019	664	Wednesday
6/28/2019	7/26/2019	990	Friday
6/28/2019	7/31/2019	11	Wednesday
6/28/2019	8/2/2019	507	Friday
6/28/2019	8/9/2019	10	Friday
7/31/2019	7/31/2019	4,400	Wednesday
7/31/2019	8/2/2019	12,106	Friday
7/31/2019	8/7/2019	2,860	Wednesday
7/31/2019	8/9/2019	2,480	Friday
7/31/2019	8/14/2019	947	Wednesday
7/31/2019	8/21/2019	668	Wednesday
7/31/2019	8/23/2019	581	Friday
7/31/2019	8/28/2019	193	Wednesday
7/31/2019	8/30/2019	519	Friday
7/31/2019	9/4/2019	8	Wednesday
7/31/2019	9/6/2019	242	Friday

NDXP month end Open interest by expiration date, from Aug 2019 to Jan 2020

Month	Expiration date	Open interest	Expiration day
8/30/2019	8/30/2019	11,142	Friday
8/30/2019	9/4/2019	6,059	Wednesday
8/30/2019	9/6/2019	3,529	Friday
8/30/2019	9/11/2019	809	Wednesday
8/30/2019	9/13/2019	1,786	Friday
8/30/2019	9/18/2019	988	Wednesday
8/30/2019	9/25/2019	316	Wednesday
8/30/2019	9/27/2019	738	Friday
8/30/2019	10/2/2019	98	Wednesday
8/30/2019	10/4/2019	305	Friday
8/30/2019	10/11/2019	1	Friday
9/30/2019	10/2/2019	3,908	Wednesday
9/30/2019	10/4/2019	4,676	Friday
9/30/2019	10/9/2019	1,552	Wednesday
9/30/2019	10/11/2019	8,328	Friday
9/30/2019	10/16/2019	845	Wednesday
9/30/2019	10/23/2019	478	Wednesday
9/30/2019	10/25/2019	1,296	Friday
9/30/2019	10/30/2019	171	Wednesday
9/30/2019	11/1/2019	504	Friday
9/30/2019	11/8/2019	174	Friday
10/31/2019	11/1/2019	7,618	Friday
10/31/2019	11/6/2019	2,029	Wednesday
10/31/2019	11/8/2019	3,260	Friday
10/31/2019	11/13/2019	772	Wednesday
10/31/2019	11/20/2019	509	Wednesday
10/31/2019	11/22/2019	1,138	Friday
10/31/2019	11/27/2019	189	Wednesday
10/31/2019	11/29/2019	1,387	Friday
10/31/2019	12/4/2019	8	Wednesday
10/31/2019	12/6/2019	316	Friday
10/31/2019	12/13/2019	16	Friday
11/29/2019	11/29/2019	6,622	Friday
11/29/2019	12/4/2019	2,748	Wednesday
11/29/2019	12/6/2019	3,689	Friday
11/29/2019	12/11/2019	1,372	Wednesday
11/29/2019	12/13/2019	1,613	Friday
11/29/2019	12/18/2019	762	Wednesday
11/29/2019	12/24/2019	1,111	Tuesday
11/29/2019	12/27/2019	1,806	Friday
11/29/2019	1/3/2020	344	Friday
11/29/2019	1/10/2020	56	Friday
12/31/2019	12/31/2019	5,828	Tuesday
12/31/2019	1/3/2020	5,828	Friday
12/31/2019	1/8/2020	2,119	Wednesday
12/31/2019	1/10/2020	2,476	Friday
12/31/2019	1/15/2020	2,200	Wednesday
12/31/2019	1/22/2020	366	Wednesday
12/31/2019	1/24/2020	2,202	Friday
12/31/2019	1/29/2020	130	Wednesday
12/31/2019	1/31/2020	3,048	Friday
12/31/2019	2/7/2020	172	Friday
1/31/2020	1/31/2020	13,355	Friday
1/31/2020	2/5/2020	4,963	Wednesday
1/31/2020	2/7/2020	3,902	Friday
1/31/2020	2/12/2020	1,027	Wednesday
1/31/2020	2/14/2020	2,142	Friday
1/31/2020	2/19/2020	838	Wednesday
1/31/2020	2/26/2020	299	Wednesday
1/31/2020	2/28/2020	1,370	Friday
1/31/2020	3/4/2020	24	Wednesday
1/31/2020	3/6/2020	303	Friday
1/31/2020	3/13/2020	51	Friday

NDXP month end Open interest by expiration date, from
Feb 2020 to May 2020

Month	Expiration	Open interest	Expiration day
2/28/2020	2/28/2020	11,347	Friday
2/28/2020	3/2/2020	2,202	Monday
2/28/2020	3/4/2020	3,090	Wednesday
2/28/2020	3/6/2020	4,583	Friday
2/28/2020	3/9/2020	404	Monday
2/28/2020	3/11/2020	1,346	Wednesday
2/28/2020	3/13/2020	2,807	Friday
2/28/2020	3/16/2020	111	Monday
2/28/2020	3/18/2020	736	Wednesday
2/28/2020	3/23/2020	122	Monday
2/28/2020	3/25/2020	332	Wednesday
2/28/2020	3/27/2020	1,792	Friday
2/28/2020	3/30/2020	88	Monday
2/28/2020	4/1/2020	480	Wednesday
2/28/2020	4/3/2020	668	Friday
2/28/2020	4/9/2020	27	Thursday
3/31/2020	4/1/2020	2,424	Wednesday
3/31/2020	4/3/2020	5,861	Friday
3/31/2020	4/6/2020	741	Monday
3/31/2020	4/8/2020	413	Wednesday
3/31/2020	4/9/2020	6,031	Thursday
3/31/2020	4/13/2020	478	Monday
3/31/2020	4/15/2020	248	Wednesday
3/31/2020	4/20/2020	141	Monday
3/31/2020	4/22/2020	212	Wednesday
3/31/2020	4/24/2020	661	Friday
3/31/2020	4/27/2020	78	Monday
3/31/2020	4/29/2020	82	Wednesday
3/31/2020	5/1/2020	223	Friday
3/31/2020	5/8/2020	41	Friday
4/30/2020	5/1/2020	5,760	Friday
4/30/2020	5/4/2020	739	Monday
4/30/2020	5/6/2020	656	Wednesday
4/30/2020	5/8/2020	4,448	Friday
4/30/2020	5/11/2020	278	Monday
4/30/2020	5/13/2020	420	Wednesday
4/30/2020	5/18/2020	214	Monday
4/30/2020	5/20/2020	214	Wednesday
4/30/2020	5/22/2020	542	Friday
4/30/2020	5/26/2020	122	Tuesday
4/30/2020	5/27/2020	82	Wednesday
4/30/2020	5/29/2020	310	Friday
4/30/2020	6/1/2020	2	Monday
4/30/2020	6/3/2020	4	Wednesday
4/30/2020	6/5/2020	192	Friday
5/29/2020	5/29/2020	6,015	Friday
5/29/2020	6/1/2020	1,448	Monday
5/29/2020	6/3/2020	1,170	Wednesday
5/29/2020	6/5/2020	2,519	Friday
5/29/2020	6/8/2020	749	Monday
5/29/2020	6/10/2020	404	Wednesday
5/29/2020	6/12/2020	1,370	Friday
5/29/2020	6/15/2020	391	Monday
5/29/2020	6/17/2020	260	Wednesday
5/29/2020	6/22/2020	225	Monday
5/29/2020	6/24/2020	134	Wednesday
5/29/2020	6/26/2020	1,095	Friday
5/29/2020	6/29/2020	49	Monday
5/29/2020	7/1/2020	4	Wednesday
5/29/2020	7/2/2020	95	Thursday
5/29/2020	7/6/2020	2	Monday
5/29/2020	7/10/2020	25	Friday

NDXP month end Open interest by expiration date, from
Jun 2020 to Sep 2020

Month	Expiration	Open interest	Expiration day
6/30/2020	7/1/2020	3,072	Wednesday
6/30/2020	7/2/2020	3,579	Thursday
6/30/2020	7/6/2020	821	Monday
6/30/2020	7/8/2020	538	Wednesday
6/30/2020	7/10/2020	2,020	Friday
6/30/2020	7/13/2020	501	Monday
6/30/2020	7/15/2020	575	Wednesday
6/30/2020	7/20/2020	224	Monday
6/30/2020	7/22/2020	194	Wednesday
6/30/2020	7/24/2020	855	Friday
6/30/2020	7/27/2020	161	Monday
6/30/2020	7/31/2020	756	Friday
6/30/2020	8/3/2020	28	Monday
6/30/2020	8/7/2020	280	Friday
7/31/2020	7/31/2020	7,235	Friday
7/31/2020	8/3/2020	2,627	Monday
7/31/2020	8/5/2020	1,063	Wednesday
7/31/2020	8/7/2020	3,033	Friday
7/31/2020	8/10/2020	603	Monday
7/31/2020	8/12/2020	379	Wednesday
7/31/2020	8/14/2020	1,730	Friday
7/31/2020	8/17/2020	290	Monday
7/31/2020	8/19/2020	272	Wednesday
7/31/2020	8/24/2020	125	Monday
7/31/2020	8/26/2020	146	Wednesday
7/31/2020	8/28/2020	816	Friday
7/31/2020	8/31/2020	104	Monday
7/31/2020	9/2/2020	4	Wednesday
7/31/2020	9/4/2020	165	Friday
7/31/2020	9/8/2020	26	Tuesday
7/31/2020	9/11/2020	75	Friday
8/31/2020	8/31/2020	7,066	Monday
8/31/2020	9/2/2020	4,097	Wednesday
8/31/2020	9/4/2020	6,004	Friday
8/31/2020	9/8/2020	1,386	Tuesday
8/31/2020	9/9/2020	596	Wednesday
8/31/2020	9/11/2020	1,760	Friday
8/31/2020	9/14/2020	354	Monday
8/31/2020	9/16/2020	370	Wednesday
8/31/2020	9/21/2020	261	Monday
8/31/2020	9/23/2020	88	Wednesday
8/31/2020	9/25/2020	1,286	Friday
8/31/2020	9/28/2020	139	Monday
8/31/2020	10/2/2020	410	Friday
8/31/2020	10/5/2020	47	Monday
8/31/2020	10/9/2020	34	Friday
9/30/2020	9/30/2020	3,848	Wednesday
9/30/2020	10/2/2020	8,696	Friday
9/30/2020	10/5/2020	1,108	Monday
9/30/2020	10/7/2020	628	Wednesday
9/30/2020	10/9/2020	2,827	Friday
9/30/2020	10/12/2020	338	Monday
9/30/2020	10/14/2020	401	Wednesday
9/30/2020	10/19/2020	260	Monday
9/30/2020	10/21/2020	212	Wednesday
9/30/2020	10/23/2020	784	Friday
9/30/2020	10/26/2020	175	Monday
9/30/2020	10/28/2020	82	Wednesday
9/30/2020	10/30/2020	3,084	Friday
9/30/2020	11/2/2020	39	Monday
9/30/2020	11/4/2020	2	Wednesday
9/30/2020	11/6/2020	111	Friday

NDXP month end Open interest by expiration date, from Oct 2020 to Dec 2020

Month	Expiration	Open interest	Expiration day
10/30/2020	10/30/2020	8,152	Friday
10/30/2020	11/2/2020	2,212	Monday
10/30/2020	11/4/2020	1,060	Wednesday
10/30/2020	11/6/2020	2,956	Friday
10/30/2020	11/9/2020	641	Monday
10/30/2020	11/11/2020	584	Wednesday
10/30/2020	11/13/2020	1,672	Friday
10/30/2020	11/16/2020	573	Monday
10/30/2020	11/18/2020	257	Wednesday
10/30/2020	11/23/2020	307	Monday
10/30/2020	11/25/2020	207	Wednesday
10/30/2020	11/27/2020	872	Friday
10/30/2020	11/30/2020	249	Monday
10/30/2020	12/2/2020	6	Wednesday
10/30/2020	12/4/2020	265	Friday
10/30/2020	12/11/2020	64	Friday
10/30/2020	12/24/2020	4	Thursday
11/30/2020	11/30/2020	2,465	Monday
11/30/2020	12/2/2020	1,648	Wednesday
11/30/2020	12/4/2020	2,807	Friday
11/30/2020	12/7/2020	567	Monday
11/30/2020	12/9/2020	336	Wednesday
11/30/2020	12/11/2020	1,672	Friday
11/30/2020	12/14/2020	490	Monday
11/30/2020	12/16/2020	476	Wednesday
11/30/2020	12/21/2020	206	Monday
11/30/2020	12/23/2020	278	Wednesday
11/30/2020	12/24/2020	1,159	Thursday
11/30/2020	12/28/2020	83	Monday
11/30/2020	12/30/2020	8	Wednesday
11/30/2020	12/31/2020	834	Thursday
11/30/2020	1/4/2021	59	Monday
11/30/2020	1/8/2021	279	Friday
11/30/2020	1/22/2021	46	Friday
12/31/2020	12/31/2020	9,752	Thursday
12/31/2020	1/4/2021	2,987	Monday
12/31/2020	1/6/2021	1,741	Wednesday
12/31/2020	1/8/2021	2,803	Friday
12/31/2020	1/11/2021	773	Monday
12/31/2020	1/13/2021	556	Wednesday
12/31/2020	1/19/2021	835	Tuesday
12/31/2020	1/20/2021	322	Wednesday
12/31/2020	1/22/2021	1,546	Friday
12/31/2020	1/25/2021	321	Monday
12/31/2020	1/27/2021	90	Wednesday
12/31/2020	1/29/2021	863	Friday
12/31/2020	2/1/2021	123	Monday
12/31/2020	2/3/2021	48	Wednesday
12/31/2020	2/5/2021	490	Friday
12/31/2020	2/12/2021	89	Friday

NDXP month end Open interest by expiration date, Jan 2021

Month	Expiration	Open interest	Expiration day
1/29/2021	1/29/2021	6,724	Friday
1/29/2021	2/1/2021	2,613	Monday
1/29/2021	2/3/2021	1,610	Wednesday
1/29/2021	2/5/2021	5,375	Friday
1/29/2021	2/8/2021	958	Monday
1/29/2021	2/10/2021	865	Wednesday
1/29/2021	2/12/2021	2,910	Friday
1/29/2021	2/16/2021	697	Tuesday
1/29/2021	2/17/2021	563	Wednesday
1/29/2021	2/22/2021	362	Monday
1/29/2021	2/24/2021	169	Wednesday
1/29/2021	2/26/2021	2,026	Friday
1/29/2021	3/1/2021	244	Monday
1/29/2021	3/3/2021	29	Wednesday
1/29/2021	3/5/2021	852	Friday
1/29/2021	3/8/2021	61	Monday
1/29/2021	3/12/2021	208	Friday
1/29/2021	3/26/2021	47	Friday

NDX month end Open interest by expiration date (3rd Friday), from Jul 2017 to Nov 2017

Month	Expiration date	Open interest	Expiration day
7/31/2017	8/18/2017	24,113	3rd Friday
7/31/2017	9/15/2017	27,981	3rd Friday
7/31/2017	10/20/2017	2,492	3rd Friday
7/31/2017	11/17/2017	456	3rd Friday
7/31/2017	12/15/2017	15,111	3rd Friday
7/31/2017	3/16/2018	1,442	3rd Friday
7/31/2017	6/15/2018	4,039	3rd Friday
7/31/2017	12/21/2018	2,300	3rd Friday
7/31/2017	12/20/2019	550	3rd Friday
8/31/2017	9/15/2017	50,869	3rd Friday
8/31/2017	10/20/2017	13,347	3rd Friday
8/31/2017	11/17/2017	4,977	3rd Friday
8/31/2017	12/15/2017	17,262	3rd Friday
8/31/2017	1/19/2018	27	3rd Friday
8/31/2017	3/16/2018	2,010	3rd Friday
8/31/2017	6/15/2018	4,338	3rd Friday
8/31/2017	12/21/2018	2,370	3rd Friday
8/31/2017	12/20/2019	689	3rd Friday
9/29/2017	10/20/2017	26,116	3rd Friday
9/29/2017	11/17/2017	14,929	3rd Friday
9/29/2017	12/15/2017	21,838	3rd Friday
9/29/2017	1/19/2018	733	3rd Friday
9/29/2017	2/16/2018	203	3rd Friday
9/29/2017	3/16/2018	2,439	3rd Friday
9/29/2017	6/15/2018	4,441	3rd Friday
9/29/2017	12/21/2018	2,698	3rd Friday
9/29/2017	12/20/2019	753	3rd Friday
10/31/2017	11/17/2017	34,944	3rd Friday
10/31/2017	12/15/2017	38,954	3rd Friday
10/31/2017	1/19/2018	1,640	3rd Friday
10/31/2017	2/16/2018	572	3rd Friday
10/31/2017	3/16/2018	2,885	3rd Friday
10/31/2017	4/20/2018	88	3rd Friday
10/31/2017	5/18/2018	24	3rd Friday
10/31/2017	6/15/2018	4,523	3rd Friday
10/31/2017	7/20/2018	34	3rd Friday
10/31/2017	9/21/2018	5	3rd Friday
10/31/2017	12/21/2018	3,189	3rd Friday
10/31/2017	1/18/2019	153	3rd Friday
10/31/2017	12/20/2019	804	3rd Friday
11/30/2017	12/15/2017	99,788	3rd Friday
11/30/2017	1/19/2018	7,223	3rd Friday
11/30/2017	2/16/2018	2,958	3rd Friday
11/30/2017	3/16/2018	3,739	3rd Friday
11/30/2017	4/20/2018	152	3rd Friday
11/30/2017	5/18/2018	84	3rd Friday
11/30/2017	6/15/2018	4,648	3rd Friday
11/30/2017	7/20/2018	172	3rd Friday
11/30/2017	8/17/2018	38	3rd Friday
11/30/2017	9/21/2018	72	3rd Friday
11/30/2017	12/21/2018	3,441	3rd Friday
11/30/2017	1/18/2019	203	3rd Friday
11/30/2017	12/20/2019	829	3rd Friday

NDX month end Open interest by expiration date (3rd Friday), from Dec 2017 to Mar 2018

Month	Expiration date	Open interest	Expiration day
12/29/2017	1/19/2018	22,687	3rd Friday
12/29/2017	2/16/2018	5,938	3rd Friday
12/29/2017	3/16/2018	8,704	3rd Friday
12/29/2017	4/20/2018	452	3rd Friday
12/29/2017	5/18/2018	143	3rd Friday
12/29/2017	6/15/2018	4,832	3rd Friday
12/29/2017	7/20/2018	195	3rd Friday
12/29/2017	8/17/2018	67	3rd Friday
12/29/2017	9/21/2018	139	3rd Friday
12/29/2017	10/19/2018	6	3rd Friday
12/29/2017	12/21/2018	3,700	3rd Friday
12/29/2017	1/18/2019	275	3rd Friday
12/29/2017	12/20/2019	1,127	3rd Friday
1/31/2018	2/16/2018	27,891	3rd Friday
1/31/2018	3/16/2018	22,669	3rd Friday
1/31/2018	4/20/2018	3,853	3rd Friday
1/31/2018	5/18/2018	719	3rd Friday
1/31/2018	6/15/2018	5,859	3rd Friday
1/31/2018	7/20/2018	282	3rd Friday
1/31/2018	8/17/2018	130	3rd Friday
1/31/2018	9/21/2018	324	3rd Friday
1/31/2018	10/19/2018	129	3rd Friday
1/31/2018	11/16/2018	38	3rd Friday
1/31/2018	12/21/2018	4,800	3rd Friday
1/31/2018	1/18/2019	503	3rd Friday
1/31/2018	12/20/2019	1,346	3rd Friday
2/28/2018	3/16/2018	40,931	3rd Friday
2/28/2018	4/20/2018	9,311	3rd Friday
2/28/2018	5/18/2018	4,561	3rd Friday
2/28/2018	6/15/2018	8,878	3rd Friday
2/28/2018	7/20/2018	550	3rd Friday
2/28/2018	8/17/2018	247	3rd Friday
2/28/2018	9/21/2018	721	3rd Friday
2/28/2018	10/19/2018	223	3rd Friday
2/28/2018	11/16/2018	70	3rd Friday
2/28/2018	12/21/2018	4,992	3rd Friday
2/28/2018	1/18/2019	1,185	3rd Friday
2/28/2018	12/20/2019	1,618	3rd Friday
3/29/2018	4/20/2018	26,545	3rd Friday
3/29/2018	5/18/2018	12,053	3rd Friday
3/29/2018	6/15/2018	16,271	3rd Friday
3/29/2018	7/20/2018	2,087	3rd Friday
3/29/2018	8/17/2018	1,196	3rd Friday
3/29/2018	9/21/2018	2,357	3rd Friday
3/29/2018	10/19/2018	369	3rd Friday
3/29/2018	11/16/2018	73	3rd Friday
3/29/2018	12/21/2018	5,305	3rd Friday
3/29/2018	1/18/2019	1,590	3rd Friday
3/29/2018	3/15/2019	82	3rd Friday
3/29/2018	6/21/2019	46	3rd Friday
3/29/2018	12/20/2019	1,822	3rd Friday

NDX month end Open interest by expiration date (3rd Friday), from Apr 2018 to Jul 2018

Month	Expiration	Open interest	Expiration day
4/30/2018	5/18/2018	29,138	3rd Friday
4/30/2018	6/15/2018	24,790	3rd Friday
4/30/2018	7/20/2018	5,662	3rd Friday
4/30/2018	8/17/2018	2,113	3rd Friday
4/30/2018	9/21/2018	3,612	3rd Friday
4/30/2018	10/19/2018	520	3rd Friday
4/30/2018	11/16/2018	134	3rd Friday
4/30/2018	12/21/2018	5,684	3rd Friday
4/30/2018	1/18/2019	2,060	3rd Friday
4/30/2018	3/15/2019	323	3rd Friday
4/30/2018	6/21/2019	209	3rd Friday
4/30/2018	12/20/2019	1,727	3rd Friday
4/30/2018	12/18/2020	118	3rd Friday
5/31/2018	6/15/2018	43,176	3rd Friday
5/31/2018	7/20/2018	14,161	3rd Friday
5/31/2018	8/17/2018	4,483	3rd Friday
5/31/2018	9/21/2018	7,608	3rd Friday
5/31/2018	10/19/2018	625	3rd Friday
5/31/2018	11/16/2018	165	3rd Friday
5/31/2018	12/21/2018	6,881	3rd Friday
5/31/2018	1/18/2019	2,642	3rd Friday
5/31/2018	2/15/2019	42	3rd Friday
5/31/2018	3/15/2019	441	3rd Friday
5/31/2018	4/18/2019	1	3rd Friday
5/31/2018	6/21/2019	239	3rd Friday
5/31/2018	12/20/2019	1,802	3rd Friday
5/31/2018	12/18/2020	163	3rd Friday
6/29/2018	7/20/2018	64,387	3rd Friday
6/29/2018	8/17/2018	13,800	3rd Friday
6/29/2018	9/21/2018	18,862	3rd Friday
6/29/2018	10/19/2018	1,244	3rd Friday
6/29/2018	11/16/2018	539	3rd Friday
6/29/2018	12/21/2018	7,465	3rd Friday
6/29/2018	1/18/2019	3,364	3rd Friday
6/29/2018	2/15/2019	115	3rd Friday
6/29/2018	3/15/2019	814	3rd Friday
6/29/2018	4/18/2019	130	3rd Friday
6/29/2018	5/17/2019	22	3rd Friday
6/29/2018	6/21/2019	597	3rd Friday
6/29/2018	12/20/2019	2,187	3rd Friday
6/29/2018	12/18/2020	308	3rd Friday
7/31/2018	8/17/2018	33,476	3rd Friday
7/31/2018	9/21/2018	33,985	3rd Friday
7/31/2018	10/19/2018	5,665	3rd Friday
7/31/2018	11/16/2018	2,055	3rd Friday
7/31/2018	12/21/2018	8,674	3rd Friday
7/31/2018	1/18/2019	3,597	3rd Friday
7/31/2018	2/15/2019	230	3rd Friday
7/31/2018	3/15/2019	1,059	3rd Friday
7/31/2018	4/18/2019	160	3rd Friday
7/31/2018	5/17/2019	31	3rd Friday
7/31/2018	6/21/2019	1,223	3rd Friday
7/31/2018	12/20/2019	3,111	3rd Friday
7/31/2018	12/18/2020	455	3rd Friday

NDX month end Open interest by expiration date (3rd Friday), from Aug 2018 to Nov 2018

Month	Expiration	Open interest	Expiration day
8/31/2018	9/21/2018	48,820	3rd Friday
8/31/2018	10/19/2018	17,184	3rd Friday
8/31/2018	11/16/2018	10,662	3rd Friday
8/31/2018	12/21/2018	14,992	3rd Friday
8/31/2018	1/18/2019	4,054	3rd Friday
8/31/2018	2/15/2019	358	3rd Friday
8/31/2018	3/15/2019	4,125	3rd Friday
8/31/2018	4/18/2019	290	3rd Friday
8/31/2018	5/17/2019	126	3rd Friday
8/31/2018	6/21/2019	2,211	3rd Friday
8/31/2018	10/18/2019	8	3rd Friday
8/31/2018	12/20/2019	3,292	3rd Friday
8/31/2018	12/18/2020	619	3rd Friday
9/28/2018	10/19/2018	34,310	3rd Friday
9/28/2018	11/16/2018	15,768	3rd Friday
9/28/2018	12/21/2018	22,638	3rd Friday
9/28/2018	1/18/2019	5,051	3rd Friday
9/28/2018	2/15/2019	548	3rd Friday
9/28/2018	3/15/2019	4,765	3rd Friday
9/28/2018	4/18/2019	375	3rd Friday
9/28/2018	5/17/2019	182	3rd Friday
9/28/2018	6/21/2019	5,897	3rd Friday
9/28/2018	9/20/2019	68	3rd Friday
9/28/2018	10/18/2019	72	3rd Friday
9/28/2018	12/20/2019	4,444	3rd Friday
9/28/2018	12/18/2020	663	3rd Friday
10/31/2018	11/16/2018	31,732	3rd Friday
10/31/2018	12/21/2018	44,442	3rd Friday
10/31/2018	1/18/2019	8,458	3rd Friday
10/31/2018	2/15/2019	1,255	3rd Friday
10/31/2018	3/15/2019	6,408	3rd Friday
10/31/2018	4/18/2019	1,081	3rd Friday
10/31/2018	5/17/2019	453	3rd Friday
10/31/2018	6/21/2019	7,004	3rd Friday
10/31/2018	7/19/2019	67	3rd Friday
10/31/2018	8/16/2019	27	3rd Friday
10/31/2018	9/20/2019	514	3rd Friday
10/31/2018	10/18/2019	195	3rd Friday
10/31/2018	12/20/2019	5,249	3rd Friday
10/31/2018	12/18/2020	660	3rd Friday
11/30/2018	12/21/2018	86,373	3rd Friday
11/30/2018	1/18/2019	16,798	3rd Friday
11/30/2018	2/15/2019	3,729	3rd Friday
11/30/2018	3/15/2019	8,222	3rd Friday
11/30/2018	4/18/2019	1,344	3rd Friday
11/30/2018	5/17/2019	522	3rd Friday
11/30/2018	6/21/2019	6,562	3rd Friday
11/30/2018	7/19/2019	175	3rd Friday
11/30/2018	8/16/2019	125	3rd Friday
11/30/2018	9/20/2019	714	3rd Friday
11/30/2018	10/18/2019	393	3rd Friday
11/30/2018	12/20/2019	8,634	3rd Friday
11/30/2018	12/18/2020	704	3rd Friday

NDX month end Open interest by expiration date (3rd Friday), from Dec 2018 to Mar 2019

Month	Expiration date	Open interest	Expiration day
12/31/2018	1/18/2019	29,716	3rd Friday
12/31/2018	2/15/2019	7,142	3rd Friday
12/31/2018	3/15/2019	15,034	3rd Friday
12/31/2018	4/18/2019	1,929	3rd Friday
12/31/2018	5/17/2019	791	3rd Friday
12/31/2018	6/21/2019	7,739	3rd Friday
12/31/2018	7/19/2019	287	3rd Friday
12/31/2018	8/16/2019	277	3rd Friday
12/31/2018	9/20/2019	1,681	3rd Friday
12/31/2018	10/18/2019	476	3rd Friday
12/31/2018	12/20/2019	9,943	3rd Friday
12/31/2018	12/18/2020	714	3rd Friday
1/31/2019	2/15/2019	20,449	3rd Friday
1/31/2019	3/15/2019	27,668	3rd Friday
1/31/2019	4/18/2019	4,883	3rd Friday
1/31/2019	5/17/2019	1,206	3rd Friday
1/31/2019	6/21/2019	10,472	3rd Friday
1/31/2019	7/19/2019	498	3rd Friday
1/31/2019	8/16/2019	499	3rd Friday
1/31/2019	9/20/2019	2,143	3rd Friday
1/31/2019	10/18/2019	546	3rd Friday
1/31/2019	12/20/2019	10,758	3rd Friday
1/31/2019	1/17/2020	11	3rd Friday
1/31/2019	6/19/2020	215	3rd Friday
1/31/2019	12/18/2020	982	3rd Friday
1/31/2019	12/17/2021	252	3rd Friday
2/28/2019	3/15/2019	41,134	3rd Friday
2/28/2019	4/18/2019	10,796	3rd Friday
2/28/2019	5/17/2019	3,684	3rd Friday
2/28/2019	6/21/2019	13,194	3rd Friday
2/28/2019	7/19/2019	722	3rd Friday
2/28/2019	8/16/2019	575	3rd Friday
2/28/2019	9/20/2019	2,641	3rd Friday
2/28/2019	10/18/2019	696	3rd Friday
2/28/2019	12/20/2019	10,984	3rd Friday
2/28/2019	1/17/2020	150	3rd Friday
2/28/2019	3/20/2020	3	3rd Friday
2/28/2019	6/19/2020	263	3rd Friday
2/28/2019	12/18/2020	3,315	3rd Friday
2/28/2019	12/17/2021	325	3rd Friday
3/29/2019	4/18/2019	21,134	3rd Friday
3/29/2019	5/17/2019	8,578	3rd Friday
3/29/2019	6/21/2019	17,941	3rd Friday
3/29/2019	7/19/2019	1,117	3rd Friday
3/29/2019	8/16/2019	698	3rd Friday
3/29/2019	9/20/2019	3,089	3rd Friday
3/29/2019	10/18/2019	837	3rd Friday
3/29/2019	12/20/2019	10,580	3rd Friday
3/29/2019	1/17/2020	335	3rd Friday
3/29/2019	3/20/2020	258	3rd Friday
3/29/2019	6/19/2020	624	3rd Friday
3/29/2019	12/18/2020	4,142	3rd Friday
3/29/2019	12/17/2021	503	3rd Friday

NDX month end Open interest by expiration date (3rd Friday), from Apr 2019 to Jul 2019

Month	Expiration date	Open interest	Expiration day
4/30/2019	5/17/2019	15,811	3rd Friday
4/30/2019	6/21/2019	26,648	3rd Friday
4/30/2019	7/19/2019	5,629	3rd Friday
4/30/2019	8/16/2019	2,215	3rd Friday
4/30/2019	9/20/2019	4,205	3rd Friday
4/30/2019	10/18/2019	1,100	3rd Friday
4/30/2019	11/15/2019	65	3rd Friday
4/30/2019	12/20/2019	14,323	3rd Friday
4/30/2019	1/17/2020	804	3rd Friday
4/30/2019	3/20/2020	421	3rd Friday
4/30/2019	6/19/2020	749	3rd Friday
4/30/2019	12/18/2020	4,216	3rd Friday
4/30/2019	12/17/2021	1,633	3rd Friday
5/31/2019	6/21/2019	44,810	3rd Friday
5/31/2019	7/19/2019	10,554	3rd Friday
5/31/2019	8/16/2019	9,111	3rd Friday
5/31/2019	9/20/2019	6,771	3rd Friday
5/31/2019	10/18/2019	2,431	3rd Friday
5/31/2019	11/15/2019	217	3rd Friday
5/31/2019	12/20/2019	16,693	3rd Friday
5/31/2019	1/17/2020	1,120	3rd Friday
5/31/2019	2/21/2020	13	3rd Friday
5/31/2019	3/20/2020	482	3rd Friday
5/31/2019	6/19/2020	1,272	3rd Friday
5/31/2019	12/18/2020	4,329	3rd Friday
5/31/2019	12/17/2021	1,692	3rd Friday
6/28/2019	7/19/2019	20,808	3rd Friday
6/28/2019	8/16/2019	13,230	3rd Friday
6/28/2019	9/20/2019	13,537	3rd Friday
6/28/2019	10/18/2019	3,954	3rd Friday
6/28/2019	11/15/2019	477	3rd Friday
6/28/2019	12/20/2019	17,039	3rd Friday
6/28/2019	1/17/2020	1,310	3rd Friday
6/28/2019	2/21/2020	16	3rd Friday
6/28/2019	3/20/2020	535	3rd Friday
6/28/2019	6/19/2020	1,838	3rd Friday
6/28/2019	12/18/2020	4,367	3rd Friday
6/28/2019	12/17/2021	1,754	3rd Friday
7/31/2019	8/16/2019	23,811	3rd Friday
7/31/2019	9/20/2019	29,303	3rd Friday
7/31/2019	10/18/2019	6,083	3rd Friday
7/31/2019	11/15/2019	914	3rd Friday
7/31/2019	12/20/2019	19,229	3rd Friday
7/31/2019	1/17/2020	1,691	3rd Friday
7/31/2019	2/21/2020	32	3rd Friday
7/31/2019	3/20/2020	606	3rd Friday
7/31/2019	6/19/2020	2,237	3rd Friday
7/31/2019	12/18/2020	3,706	3rd Friday
7/31/2019	12/17/2021	1,929	3rd Friday

NDX month end Open interest by expiration date (3rd Friday), from Aug 2019 to Dec 2019

Month	Expiration	Open interest	Expiration day
8/30/2019	9/20/2019	39,902	3rd Friday
8/30/2019	10/18/2019	12,769	3rd Friday
8/30/2019	11/15/2019	4,118	3rd Friday
8/30/2019	12/20/2019	22,663	3rd Friday
8/30/2019	1/17/2020	2,681	3rd Friday
8/30/2019	2/21/2020	201	3rd Friday
8/30/2019	3/20/2020	1,172	3rd Friday
8/30/2019	6/19/2020	2,258	3rd Friday
8/30/2019	12/18/2020	4,463	3rd Friday
8/30/2019	12/17/2021	2,569	3rd Friday
9/30/2019	10/18/2019	20,642	3rd Friday
9/30/2019	11/15/2019	7,762	3rd Friday
9/30/2019	12/20/2019	30,481	3rd Friday
9/30/2019	1/17/2020	3,008	3rd Friday
9/30/2019	2/21/2020	453	3rd Friday
9/30/2019	3/20/2020	3,403	3rd Friday
9/30/2019	6/19/2020	3,068	3rd Friday
9/30/2019	9/18/2020	261	3rd Friday
9/30/2019	12/18/2020	4,940	3rd Friday
9/30/2019	12/17/2021	2,644	3rd Friday
10/31/2019	11/15/2019	16,589	3rd Friday
10/31/2019	12/20/2019	39,563	3rd Friday
10/31/2019	1/17/2020	3,922	3rd Friday
10/31/2019	2/21/2020	1,075	3rd Friday
10/31/2019	3/20/2020	5,712	3rd Friday
10/31/2019	4/17/2020	43	3rd Friday
10/31/2019	5/15/2020	42	3rd Friday
10/31/2019	6/19/2020	3,163	3rd Friday
10/31/2019	9/18/2020	484	3rd Friday
10/31/2019	12/18/2020	5,311	3rd Friday
10/31/2019	12/17/2021	2,867	3rd Friday
11/29/2019	12/20/2019	49,241	3rd Friday
11/29/2019	1/17/2020	8,838	3rd Friday
11/29/2019	2/21/2020	2,754	3rd Friday
11/29/2019	3/20/2020	6,636	3rd Friday
11/29/2019	4/17/2020	150	3rd Friday
11/29/2019	5/15/2020	120	3rd Friday
11/29/2019	6/19/2020	3,303	3rd Friday
11/29/2019	9/18/2020	541	3rd Friday
11/29/2019	12/18/2020	5,525	3rd Friday
11/29/2019	12/17/2021	3,016	3rd Friday
12/31/2019	1/17/2020	19,599	3rd Friday
12/31/2019	2/21/2020	7,366	3rd Friday
12/31/2019	3/20/2020	13,669	3rd Friday
12/31/2019	4/17/2020	387	3rd Friday
12/31/2019	5/15/2020	161	3rd Friday
12/31/2019	6/19/2020	3,736	3rd Friday
12/31/2019	9/18/2020	770	3rd Friday
12/31/2019	10/16/2020	47	3rd Friday
12/31/2019	11/20/2020	24	3rd Friday
12/31/2019	12/18/2020	5,902	3rd Friday
12/31/2019	12/17/2021	3,197	3rd Friday
12/31/2019	12/16/2022	30	3rd Friday

NDX month end Open interest by expiration date (3rd Friday), from Jan 2020 to Apr 2020

Month	Expiration	Open interest	Expiration day
1/31/2020	2/21/2020	20,454	3rd Friday
1/31/2020	3/20/2020	29,048	3rd Friday
1/31/2020	4/17/2020	2,878	3rd Friday
1/31/2020	5/15/2020	3,612	3rd Friday
1/31/2020	6/19/2020	6,326	3rd Friday
1/31/2020	9/18/2020	1,518	3rd Friday
1/31/2020	10/16/2020	153	3rd Friday
1/31/2020	11/20/2020	451	3rd Friday
1/31/2020	12/18/2020	7,424	3rd Friday
1/31/2020	3/19/2021	1	3rd Friday
1/31/2020	6/18/2021	20	3rd Friday
1/31/2020	12/17/2021	3,339	3rd Friday
1/31/2020	12/16/2022	104	3rd Friday
2/28/2020	3/20/2020	44,622	3rd Friday
2/28/2020	4/17/2020	9,855	3rd Friday
2/28/2020	5/15/2020	8,008	3rd Friday
2/28/2020	6/19/2020	9,117	3rd Friday
2/28/2020	7/17/2020	54	3rd Friday
2/28/2020	8/21/2020	410	3rd Friday
2/28/2020	9/18/2020	2,773	3rd Friday
2/28/2020	10/16/2020	538	3rd Friday
2/28/2020	11/20/2020	1,588	3rd Friday
2/28/2020	12/18/2020	12,578	3rd Friday
2/28/2020	3/19/2021	334	3rd Friday
2/28/2020	6/18/2021	172	3rd Friday
2/28/2020	12/17/2021	3,800	3rd Friday
2/28/2020	12/16/2022	315	3rd Friday
3/31/2020	4/17/2020	30,701	3rd Friday
3/31/2020	5/15/2020	16,267	3rd Friday
3/31/2020	6/19/2020	22,678	3rd Friday
3/31/2020	7/17/2020	2,761	3rd Friday
3/31/2020	8/21/2020	863	3rd Friday
3/31/2020	9/18/2020	4,929	3rd Friday
3/31/2020	10/16/2020	871	3rd Friday
3/31/2020	11/20/2020	1,966	3rd Friday
3/31/2020	12/18/2020	11,877	3rd Friday
3/31/2020	3/19/2021	647	3rd Friday
3/31/2020	6/18/2021	571	3rd Friday
3/31/2020	12/17/2021	3,897	3rd Friday
3/31/2020	12/16/2022	417	3rd Friday
4/30/2020	5/15/2020	22,808	3rd Friday
4/30/2020	6/19/2020	27,899	3rd Friday
4/30/2020	7/17/2020	4,962	3rd Friday
4/30/2020	8/21/2020	1,480	3rd Friday
4/30/2020	9/18/2020	6,031	3rd Friday
4/30/2020	10/16/2020	999	3rd Friday
4/30/2020	11/20/2020	2,146	3rd Friday
4/30/2020	12/18/2020	12,798	3rd Friday
4/30/2020	1/15/2021	23	3rd Friday
4/30/2020	3/19/2021	723	3rd Friday
4/30/2020	6/18/2021	1,876	3rd Friday
4/30/2020	12/17/2021	3,901	3rd Friday
4/30/2020	12/16/2022	625	3rd Friday

NDX month end Open interest by expiration date (3rd Friday), from May 2020 to Aug 2020

	Expiration	Open interest	Expiration day
5/29/2020	6/19/2020	37,140	3rd Friday
5/29/2020	7/17/2020	8,515	3rd Friday
5/29/2020	8/21/2020	2,792	3rd Friday
5/29/2020	9/18/2020	9,300	3rd Friday
5/29/2020	10/16/2020	1,320	3rd Friday
5/29/2020	11/20/2020	2,226	3rd Friday
5/29/2020	12/18/2020	12,772	3rd Friday
5/29/2020	1/15/2021	684	3rd Friday
5/29/2020	3/19/2021	844	3rd Friday
5/29/2020	6/18/2021	2,547	3rd Friday
5/29/2020	12/17/2021	4,002	3rd Friday
5/29/2020	12/16/2022	627	3rd Friday
6/30/2020	7/17/2020	17,151	3rd Friday
6/30/2020	8/21/2020	7,082	3rd Friday
6/30/2020	9/18/2020	15,915	3rd Friday
6/30/2020	10/16/2020	2,570	3rd Friday
6/30/2020	11/20/2020	2,592	3rd Friday
6/30/2020	12/18/2020	13,862	3rd Friday
6/30/2020	1/15/2021	1,094	3rd Friday
6/30/2020	2/19/2021	2	3rd Friday
6/30/2020	3/19/2021	1,408	3rd Friday
6/30/2020	6/18/2021	3,387	3rd Friday
6/30/2020	12/17/2021	4,338	3rd Friday
6/30/2020	12/16/2022	599	3rd Friday
7/31/2020	8/21/2020	19,473	3rd Friday
7/31/2020	9/18/2020	25,651	3rd Friday
7/31/2020	10/16/2020	6,153	3rd Friday
7/31/2020	11/20/2020	3,562	3rd Friday
7/31/2020	12/18/2020	16,310	3rd Friday
7/31/2020	1/15/2021	1,910	3rd Friday
7/31/2020	2/19/2021	54	3rd Friday
7/31/2020	3/19/2021	1,468	3rd Friday
7/31/2020	4/16/2021	17	3rd Friday
7/31/2020	6/18/2021	4,709	3rd Friday
7/31/2020	12/17/2021	4,968	3rd Friday
7/31/2020	12/16/2022	705	3rd Friday
8/31/2020	9/18/2020	45,328	3rd Friday
8/31/2020	10/16/2020	10,660	3rd Friday
8/31/2020	11/20/2020	8,047	3rd Friday
8/31/2020	12/18/2020	18,369	3rd Friday
8/31/2020	1/15/2021	3,033	3rd Friday
8/31/2020	2/19/2021	179	3rd Friday
8/31/2020	3/19/2021	2,800	3rd Friday
8/31/2020	4/16/2021	56	3rd Friday
8/31/2020	6/18/2021	5,529	3rd Friday
8/31/2020	9/17/2021	0	3rd Friday
8/31/2020	12/17/2021	5,791	3rd Friday
8/31/2020	12/16/2022	798	3rd Friday

NDX month end Open interest by expiration date (3rd Friday), from Sep 2020 to Dec 2020

Month	Expiration	Open interest	Expiration day
9/30/2020	10/16/2020	19,883	3rd Friday
9/30/2020	11/20/2020	10,620	3rd Friday
9/30/2020	12/18/2020	34,651	3rd Friday
9/30/2020	1/15/2021	4,459	3rd Friday
9/30/2020	2/19/2021	821	3rd Friday
9/30/2020	3/19/2021	3,227	3rd Friday
9/30/2020	4/16/2021	104	3rd Friday
9/30/2020	6/18/2021	9,008	3rd Friday
9/30/2020	9/17/2021	458	3rd Friday
9/30/2020	12/17/2021	6,452	3rd Friday
9/30/2020	12/16/2022	1,029	3rd Friday
10/30/2020	11/20/2020	19,820	3rd Friday
10/30/2020	12/18/2020	46,511	3rd Friday
10/30/2020	1/15/2021	9,157	3rd Friday
10/30/2020	2/19/2021	1,342	3rd Friday
10/30/2020	3/19/2021	4,597	3rd Friday
10/30/2020	4/16/2021	391	3rd Friday
10/30/2020	6/18/2021	10,278	3rd Friday
10/30/2020	9/17/2021	682	3rd Friday
10/30/2020	12/17/2021	6,901	3rd Friday
10/30/2020	12/16/2022	1,325	3rd Friday
11/30/2020	12/18/2020	59,793	3rd Friday
11/30/2020	1/15/2021	12,002	3rd Friday
11/30/2020	2/19/2021	3,486	3rd Friday
11/30/2020	3/19/2021	5,930	3rd Friday
11/30/2020	4/16/2021	1,211	3rd Friday
11/30/2020	5/21/2021	1	3rd Friday
11/30/2020	6/18/2021	10,683	3rd Friday
11/30/2020	9/17/2021	1,342	3rd Friday
11/30/2020	12/17/2021	7,182	3rd Friday
11/30/2020	12/16/2022	1,624	3rd Friday
12/31/2020	1/15/2021	23,450	3rd Friday
12/31/2020	2/19/2021	8,943	3rd Friday
12/31/2020	3/19/2021	19,742	3rd Friday
12/31/2020	4/16/2021	4,135	3rd Friday
12/31/2020	5/21/2021	104	3rd Friday
12/31/2020	6/18/2021	9,463	3rd Friday
12/31/2020	7/16/2021	28	3rd Friday
12/31/2020	9/17/2021	1,806	3rd Friday
12/31/2020	12/17/2021	8,257	3rd Friday
12/31/2020	3/18/2022	37	3rd Friday
12/31/2020	12/16/2022	1,820	3rd Friday
12/31/2020	12/15/2023	9	3rd Friday

NDX month end Open interest by expiration date (3rd Friday), for Jan 2021

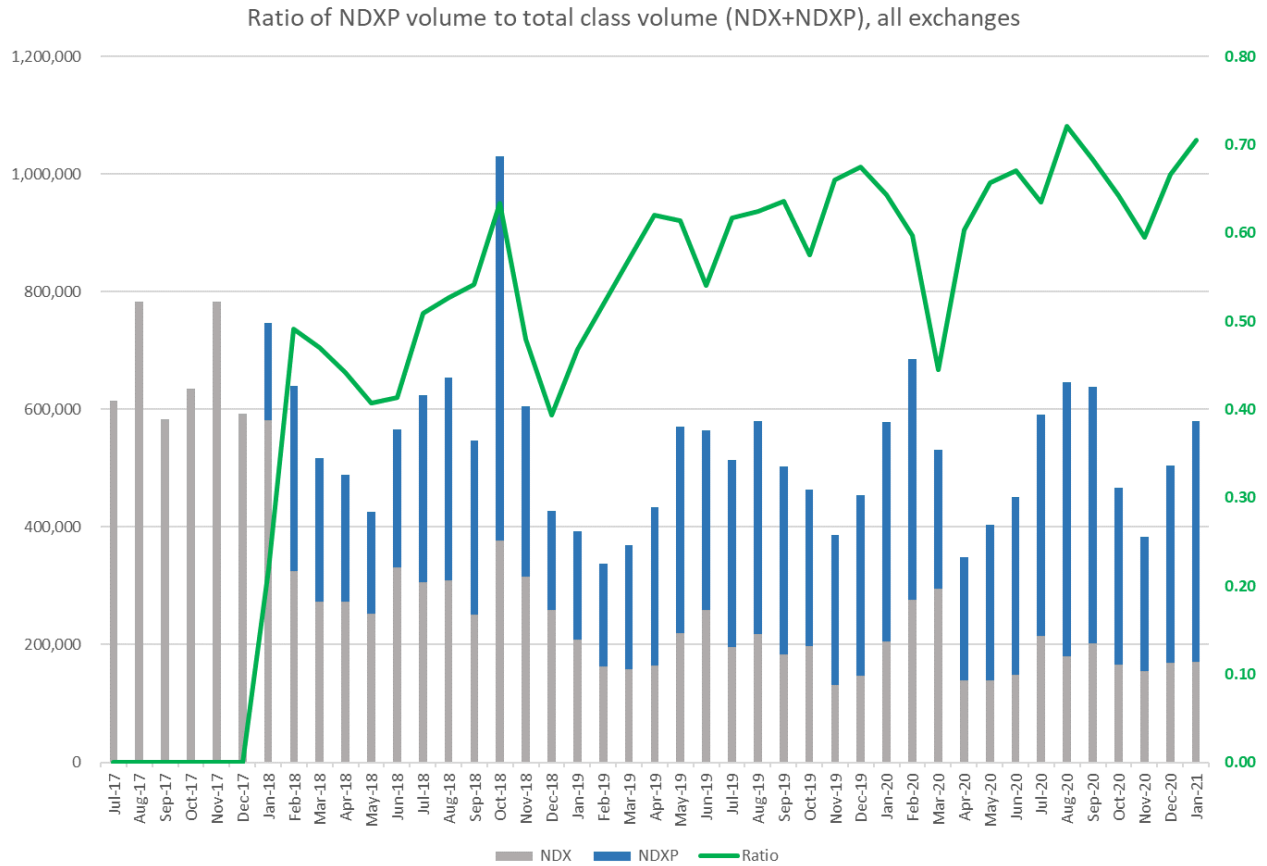
Month	Expiration	Open interest	Expiration day
1/29/2021	2/19/2021	21,526	3rd Friday
1/29/2021	3/19/2021	26,888	3rd Friday
1/29/2021	4/16/2021	8,151	3rd Friday
1/29/2021	5/21/2021	2,151	3rd Friday
1/29/2021	6/18/2021	10,941	3rd Friday
1/29/2021	7/16/2021	322	3rd Friday
1/29/2021	9/17/2021	1,927	3rd Friday
1/29/2021	12/17/2021	9,999	3rd Friday
1/29/2021	3/18/2022	252	3rd Friday
1/29/2021	6/17/2022	54	3rd Friday
1/29/2021	12/16/2022	2,048	3rd Friday
1/29/2021	12/15/2023	105	3rd Friday

NDX month end Open interest by expiration date (non-3rd Friday)

Month	Expiration date	Open interest	Expiration day
7/31/2017	8/4/2017	22,646	Friday
7/31/2017	8/11/2017	6,450	Friday
7/31/2017	8/25/2017	4,257	Friday
7/31/2017	9/1/2017	3,485	Friday
7/31/2017	9/8/2017	169	Friday
8/31/2017	9/1/2017	18,582	Friday
8/31/2017	9/8/2017	18,472	Friday
8/31/2017	9/22/2017	5,896	Friday
8/31/2017	9/29/2017	5,307	Friday
8/31/2017	10/6/2017	3,063	Friday
8/31/2017	10/13/2017	936	Friday
9/29/2017	9/29/2017	27,913	Friday
9/29/2017	10/6/2017	21,190	Friday
9/29/2017	10/13/2017	9,234	Friday
9/29/2017	10/27/2017	3,955	Friday
9/29/2017	11/3/2017	3,888	Friday
9/29/2017	11/10/2017	648	Friday
10/31/2017	11/3/2017	31,436	Friday
10/31/2017	11/10/2017	16,405	Friday
10/31/2017	11/24/2017	2,454	Friday
10/31/2017	12/1/2017	3,856	Friday
10/31/2017	12/8/2017	408	Friday
11/30/2017	12/1/2017	21,388	Friday
11/30/2017	12/8/2017	19,469	Friday
11/30/2017	12/22/2017	6,250	Friday
11/30/2017	12/29/2017	4,416	Friday
11/30/2017	1/5/2018	618	Friday
11/30/2017	1/12/2018	78	Friday
12/29/2017	12/29/2017	17,780	Friday
12/29/2017	1/5/2018	17,445	Friday
12/29/2017	1/12/2018	20,212	Friday
12/29/2017	1/26/2018	3,244	Friday

(5) Ratio of monthly aggregate volume in Weekly Expiration series to total monthly class volume.

Ratio of NDXP volume to total class volume (NDX+NDXP) has been steadily increasing over time and has peaked at 72% in August 2020.



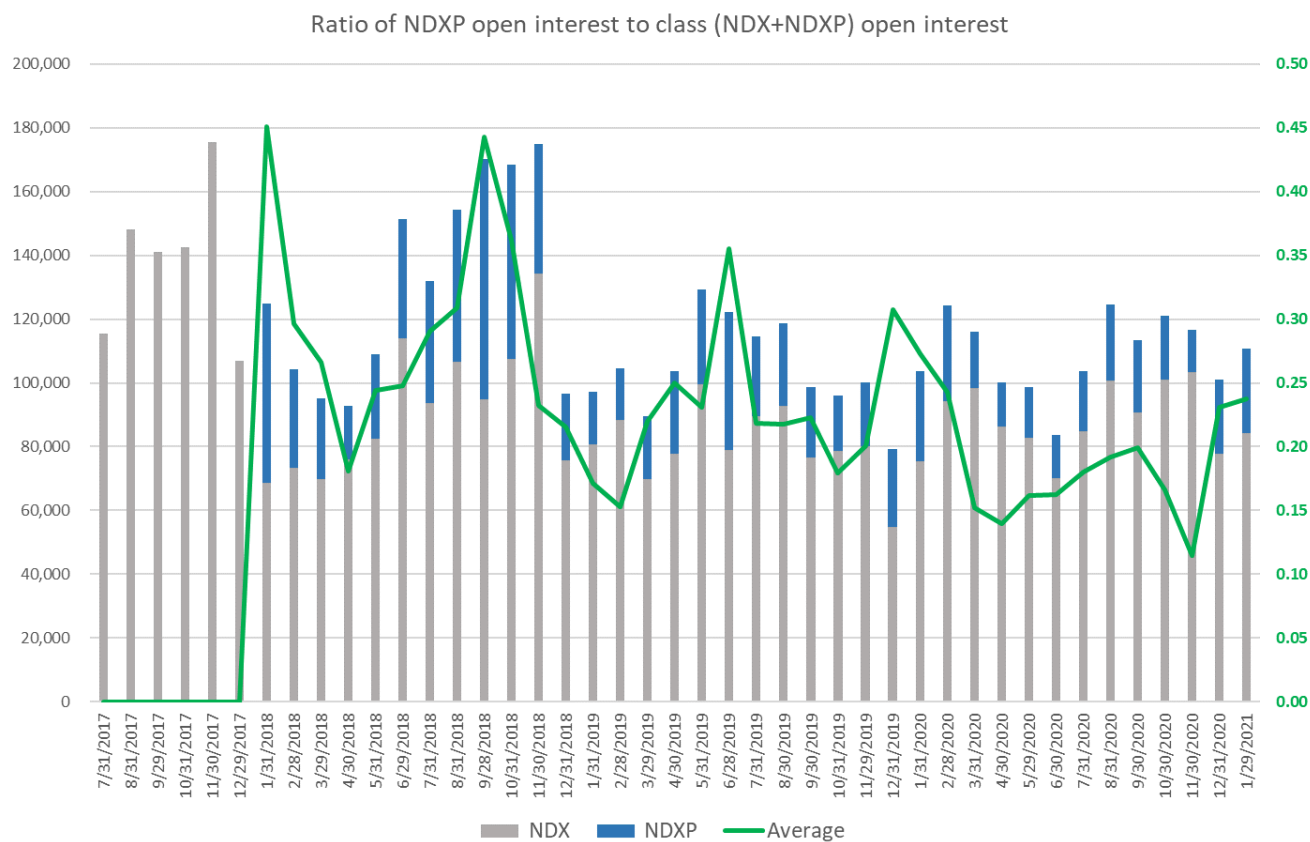
Ratio of NDXP contract volume to class volume

Month	NDX	NDXP	Sum	Ratio
Jul-17	614,878	0	614,878	0.00
Aug-17	783,976	0	783,976	0.00
Sep-17	583,680	0	583,680	0.00
Oct-17	635,576	0	635,576	0.00
Nov-17	783,388	0	783,388	0.00
Dec-17	593,504	0	593,504	0.00
Jan-18	582,456	163,990	746,446	0.22
Feb-18	325,908	314,060	639,968	0.49
Mar-18	273,912	243,016	516,928	0.47
Apr-18	272,914	216,280	489,194	0.44
May-18	252,708	173,304	426,012	0.41
Jun-18	331,264	234,098	565,362	0.41
Jul-18	306,550	317,458	624,008	0.51
Aug-18	309,646	344,652	654,298	0.53
Sep-18	250,670	296,606	547,276	0.54
Oct-18	377,344	652,938	1,030,282	0.63
Nov-18	315,196	290,364	605,560	0.48
Dec-18	259,708	168,512	428,220	0.39
Jan-19	208,812	184,052	392,864	0.47
Feb-19	162,460	176,038	338,498	0.52
Mar-19	158,070	210,788	368,858	0.57
Apr-19	164,796	269,488	434,284	0.62
May-19	220,350	350,224	570,574	0.61
Jun-19	259,164	305,398	564,562	0.54
Jul-19	196,620	317,554	514,174	0.62
Aug-19	217,902	362,052	579,954	0.62
Sep-19	183,102	320,734	503,836	0.64
Oct-19	197,444	266,838	464,282	0.57
Nov-19	131,262	255,228	386,490	0.66
Dec-19	147,826	306,980	454,806	0.67
Jan-20	206,170	372,142	578,312	0.64
Feb-20	275,882	409,386	685,268	0.60
Mar-20	294,722	235,910	530,632	0.44
Apr-20	138,660	210,684	349,344	0.60
May-20	138,688	265,288	403,976	0.66
Jun-20	148,454	302,872	451,326	0.67
Jul-20	215,568	375,342	590,910	0.64
Aug-20	180,366	465,456	645,822	0.72
Sep-20	202,024	435,882	637,906	0.68
Oct-20	166,778	299,546	466,324	0.64
Nov-20	155,076	228,046	383,122	0.60
Dec-20	168,610	336,350	504,960	0.67
Jan-21	171,276	409,370	580,646	0.71

Volume Jul 1, 2017 - Jan 31, 2021

(6) Ratio of month-end open interest in each Weekly Expiration series to total class open interest.

Ratio of NDXP open interest to total class open interest (NDX+NDXP) has fluctuated widely, peaking at 44% in September 2018.



Ratio of NDXP open interest to class open interest

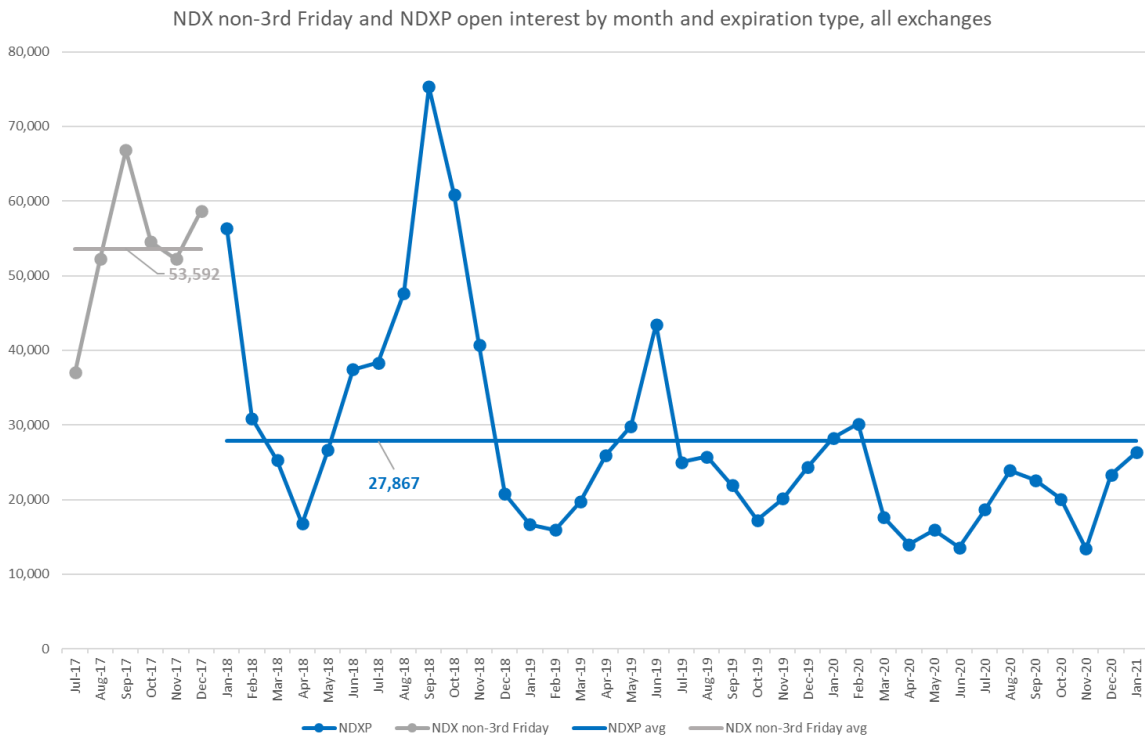
Month	NDX	NDXP	Sum	Ratio
7/31/2017	115,491	0	115,491	0.00
8/31/2017	148,145	0	148,145	0.00
9/29/2017	140,978	0	140,978	0.00
10/31/2017	142,374	0	142,374	0.00
11/30/2017	175,566	0	175,566	0.00
12/29/2017	106,946	0	106,946	0.00
1/31/2018	68,543	56,330	124,873	0.45
2/28/2018	73,287	30,879	104,166	0.30
3/29/2018	69,796	25,276	95,072	0.27
4/30/2018	76,090	16,791	92,881	0.18
5/31/2018	82,429	26,626	109,055	0.24
6/29/2018	113,834	37,446	151,280	0.25
7/31/2018	93,721	38,338	132,059	0.29
8/31/2018	106,741	47,646	154,387	0.31
9/28/2018	94,781	75,324	170,105	0.44
10/31/2018	107,545	60,906	168,451	0.36
11/30/2018	134,295	40,710	175,005	0.23
12/31/2018	75,729	20,790	96,519	0.22
1/31/2019	80,582	16,667	97,249	0.17
2/28/2019	88,482	15,940	104,422	0.15
3/29/2019	69,836	19,716	89,552	0.22
4/30/2019	77,819	25,986	103,805	0.25
5/31/2019	99,495	29,858	129,353	0.23
6/28/2019	78,865	43,479	122,344	0.36
7/31/2019	89,541	25,004	114,545	0.22
8/30/2019	92,796	25,771	118,567	0.22
9/30/2019	76,662	21,932	98,594	0.22
10/31/2019	78,771	17,242	96,013	0.18
11/29/2019	80,124	20,123	100,247	0.20
12/31/2019	54,888	24,369	79,257	0.31
1/31/2020	75,328	28,274	103,602	0.27
2/28/2020	94,164	30,135	124,299	0.24
3/31/2020	98,445	17,634	116,079	0.15
4/30/2020	86,271	13,983	100,254	0.14
5/29/2020	82,769	15,955	98,724	0.16
6/30/2020	70,000	13,604	83,604	0.16
7/31/2020	84,980	18,693	103,673	0.18
8/31/2020	100,590	23,898	124,488	0.19
9/30/2020	90,712	22,595	113,307	0.20
10/30/2020	101,004	20,081	121,085	0.17
11/30/2020	103,254	13,413	116,667	0.11
12/31/2020	77,794	23,339	101,133	0.23
1/29/2021	84,364	26,313	110,677	0.24

Monthly Analysis of Weekly Expiration and EOM Trading Patterns

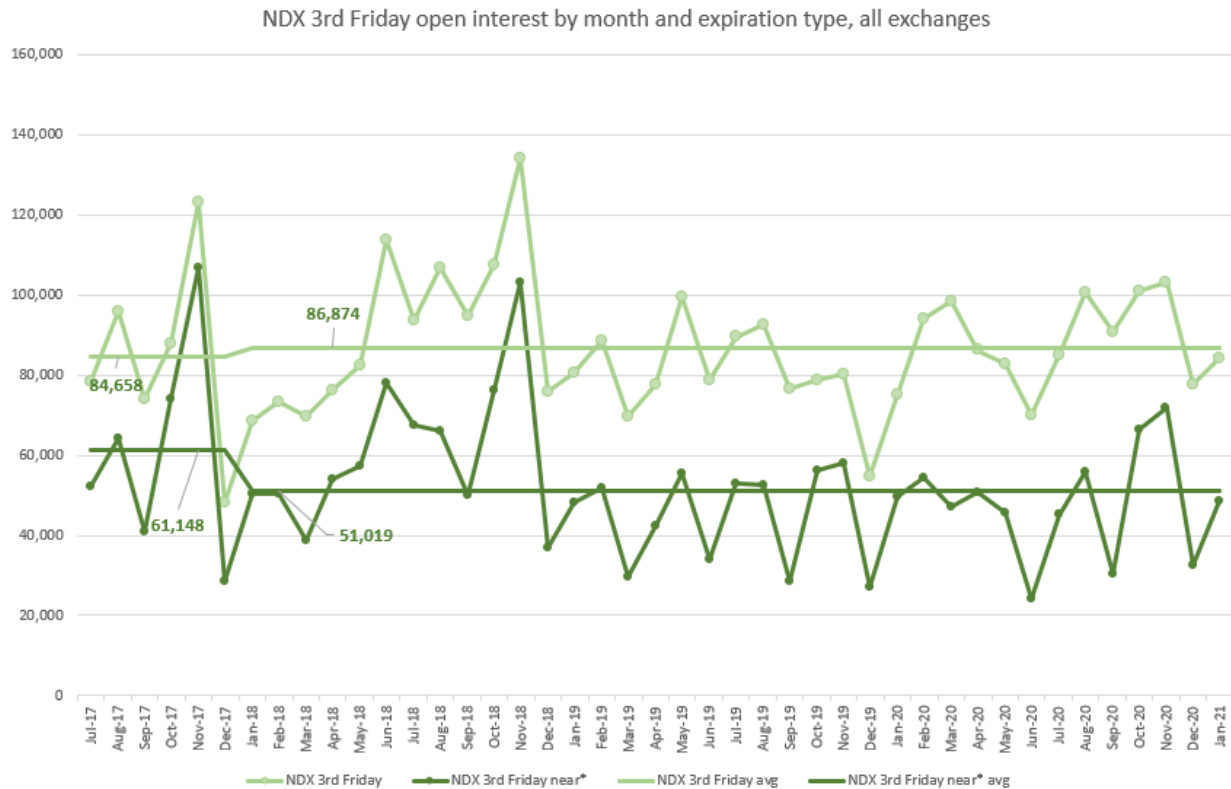
In this annual report, the Exchange analyzed open interest in Weekly Expiration series aggregated by expiration date compared to open interest in near-term standard Expiration Friday a.m.-settled series in order to determine whether users are shifting positions from standard series to Weekly Expiration series. PHLX has no data on other weekly p.m. settled products from other exchanges to compare open interest with these options in order to determine whether users are shifting positions from other weekly or monthly p.m.-settled products to the Weekly Expiration series. Declining open interest in standard series or the weekly p.m.-settled products of other exchanges accompanied by rising open interest in Weekly Expiration series would suggest that users are shifting positions.

Open interest trends:

After the introduction of NDXP and discontinuation of non-3rd Friday NDX contracts, open interest shifted from NDX regular Friday expirations to NDXP. Average month-end open interest fell from 53,592 contracts in NDX during Jul-Dec 2017 to 27,867 contracts in NDXP during Jan 2018-Jan 2021. NDXP end of month average open interest has widely fluctuated between 13,413 and 75,324 contracts.



Open interest in the full range of 3rd Friday NDX contracts has not significantly changed since the introduction of NDXP. Average open interest before the introduction was 84,658 contracts. Open interest after the introduction has been 86,874. Open interest in near-term 3rd Friday NDX contracts (expiring within 7 weeks) fell slightly after the introduction of NDXP. Month-end open interest in 3rd Friday NDX fell from 61,148 to 51,019 contracts, a 17% decline.



*NDX contracts with expirations within 7 weeks

Clearly users shifted positions from discontinued NDX non-3rd Friday expiration contracts to NDXP. Any shift from 3rd Friday NDX contracts to NDXP is limited at most. First, NDXP does not compete directly with 3rd Friday expirations. Second, NDX 3rd Friday open interest has changed very little since the introduction of NDXP. Third, NDXP average open interest has so far been below the average open interest in NDX non-3rd Friday expiration contracts.

NDX and NDXP open interest at end of month, by expiration type, all exchanges

Month	NDXP	NDX 3rd Friday	NDX 3rd Friday near*	NDX non-3rd Friday	NDX Total
7/31/2017		78,484	52,094	37,007	115,491
8/31/2017		95,889	64,216	52,256	148,145
9/29/2017		74,150	41,045	66,828	140,978
10/31/2017		87,815	73,898	54,559	142,374
11/30/2017		123,347	107,011	52,219	175,566
12/29/2017		48,265	28,625	58,681	106,946
1/31/2018	56,330	68,543	50,560		68,543
2/28/2018	30,879	73,287	50,242		73,287
3/29/2018	25,276	69,796	38,598		69,796
4/30/2018	16,791	76,090	53,928		76,090
5/31/2018	26,626	82,429	57,337		82,429
6/29/2018	37,446	113,834	78,187		113,834
7/31/2018	38,338	93,721	67,461		93,721
8/31/2018	47,646	106,741	66,004		106,741
9/28/2018	75,324	94,781	50,078		94,781
10/31/2018	60,906	107,545	76,174		107,545
11/30/2018	40,710	134,295	103,171		134,295
12/31/2018	20,790	75,729	36,858		75,729
1/31/2019	16,667	80,582	48,117		80,582
2/28/2019	15,940	88,482	51,930		88,482
3/29/2019	19,716	69,836	29,712		69,836
4/30/2019	25,986	77,819	42,459		77,819
5/31/2019	29,858	99,495	55,364		99,495
6/28/2019	43,479	78,865	34,038		78,865
7/31/2019	25,004	89,541	53,114		89,541
8/30/2019	25,771	92,796	52,671		92,796
9/30/2019	21,932	76,662	28,404		76,662
10/31/2019	17,242	78,771	56,152		78,771
11/29/2019	20,123	80,124	58,079		80,124
12/31/2019	24,369	54,888	26,965		54,888
1/31/2020	28,274	75,328	49,502		75,328
2/28/2020	30,135	94,164	54,477		94,164
3/31/2020	17,634	98,445	46,968		98,445
4/30/2020	13,983	86,271	50,707		86,271
5/29/2020	15,955	82,769	45,655		82,769
6/30/2020	13,604	70,000	24,233		70,000
7/31/2020	18,693	84,980	45,124		84,980
8/31/2020	23,898	100,590	55,988		100,590
9/30/2020	22,595	90,712	30,503		90,712
10/30/2020	20,081	101,004	66,331		101,004
11/30/2020	13,413	103,254	71,795		103,254
12/31/2020	23,339	77,794	32,393		77,794
1/29/2021	26,313	84,364	48,414		84,364

*NDX contracts with expirations within 7 weeks