

EDA Refining Stock Report

Tickers: CL=F, GC=F, MPC, PSX, VLO, ^GSPC, ^VIX

CL=F • Schema & Missingness (All Columns)

Column	dtype	non_null	missing	missing_%	unique	sample
Adj Close CL=F	float64	3770	0	0.0	2992	96.97
Close CL=F	float64	3770	0	0.0	2992	96.97
High CL=F	float64	3770	0	0.0	2924	99.96
Low CL=F	float64	3770	0	0.0	2945	96.71
Open CL=F	float64	3770	0	0.0	2939	98.5
Volume CL=F	int64	3770	0	0.0	3751	262001.0

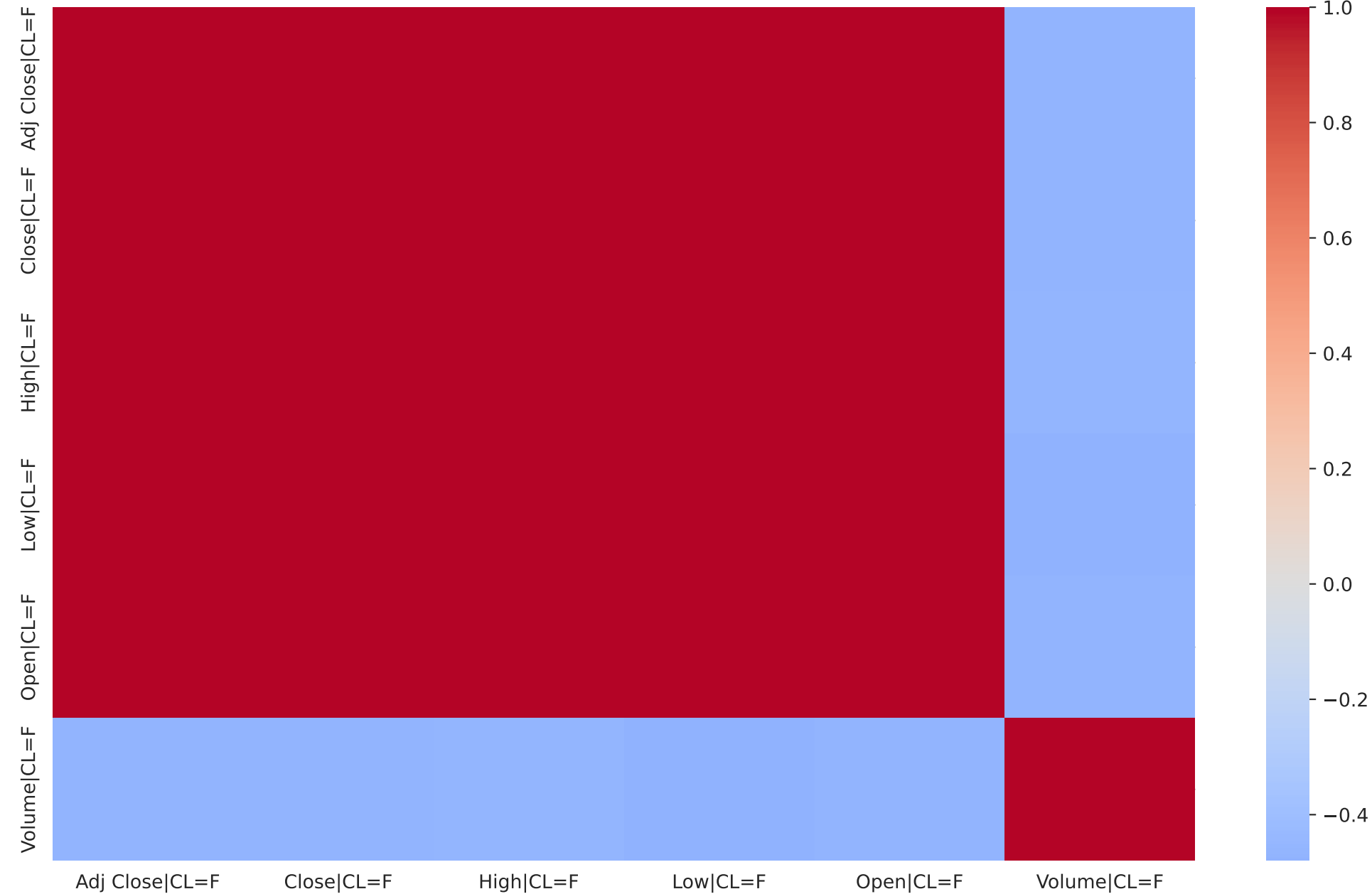
CL=F • Numeric Quality & Ranges

	Column	non_null	missing	missing_%	zeros	zeros_%	negatives	negatives_%	min	p01	q1	median	mean	q3	p99	max	std
Close	CL=F	3770	0	0.0	0	0.0	1	0.03	-37.63	25.987	53.29	69.205	70.7328	88.8875	110.774	123.7	21.2664
Close	CL=F	3770	0	0.0	0	0.0	1	0.03	-37.63	25.987	53.29	69.205	70.7328	88.8875	110.774	123.7	21.2664
High	CL=F	3770	0	0.0	0	0.0	0	0.0	13.69	27.9383	54.0525	70.225	71.812	90.1375	113.1924	130.5	21.3564
Low	CL=F	3770	0	0.0	0	0.0	2	0.05	-40.32	24.6133	52.58	68.215	69.623	87.425	108.6924	120.79	21.0996
Open	CL=F	3770	0	0.0	0	0.0	1	0.03	-14.0	26.2211	53.295	69.295	70.7695	88.7875	110.6831	124.66	21.2384
Volume	CL=F	3770	0	0.0	6	0.16	0	0.0	0.0	79902.8325	8405.7534	343488954	69.6244	512423.0100	1539.7228	8230057	62.9221

CL=F • Numeric Overview (Describe)

	Variable	count	mean	std	min	1%	5%	25%	50%	75%	95%	99%	max
Adj	Close CL=F	3770.0	70.7328	21.2664	-37.63	25.987	39.7845	53.29	69.205	88.8875	104.42	110.774	123.7
	Close CL=F	3770.0	70.7328	21.2664	-37.63	25.987	39.7845	53.29	69.205	88.8875	104.42	110.774	123.7
	High CL=F	3770.0	71.812	21.3564	13.69	27.9383	40.5345	54.0525	70.225	90.1375	105.6575	113.1924	130.5
	Low CL=F	3770.0	69.623	21.0996	-40.32	24.6133	38.8545	52.58	68.215	87.425	103.267	108.6924	120.79
	Open CL=F	3770.0	70.7695	21.2384	-14.0	26.2211	39.6945	53.295	69.295	88.7875	104.4975	110.6831	124.66
Volume	Volume CL=F	3770.0397	469.62442	205762.9221	0.0	79902.83	122621.8	258405.75	343488.5	512423.0	784563.15	1001539.7	2288230.0

CL=F • Correlation (numeric)

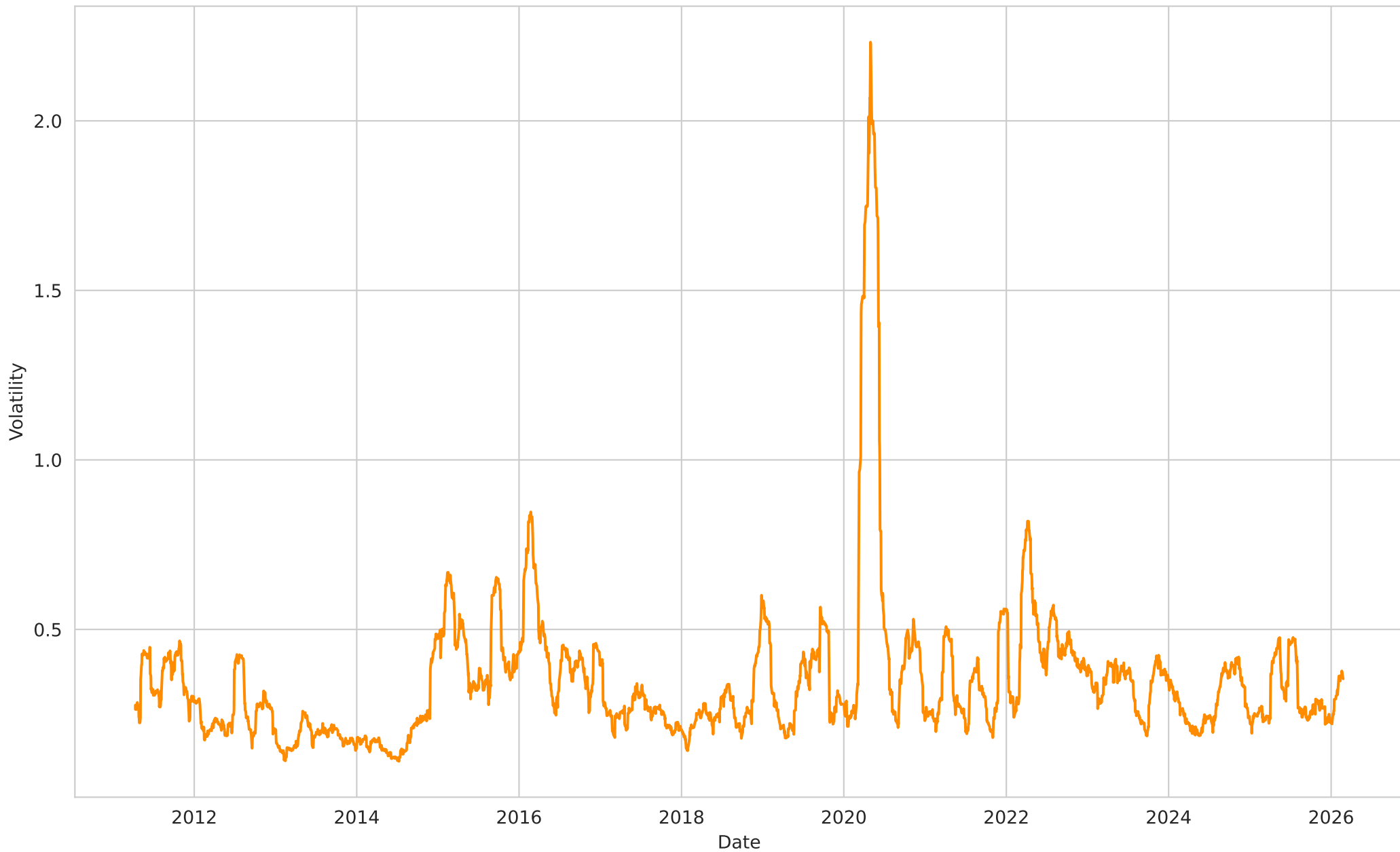


CL=F • Adj Close|CL=F Price

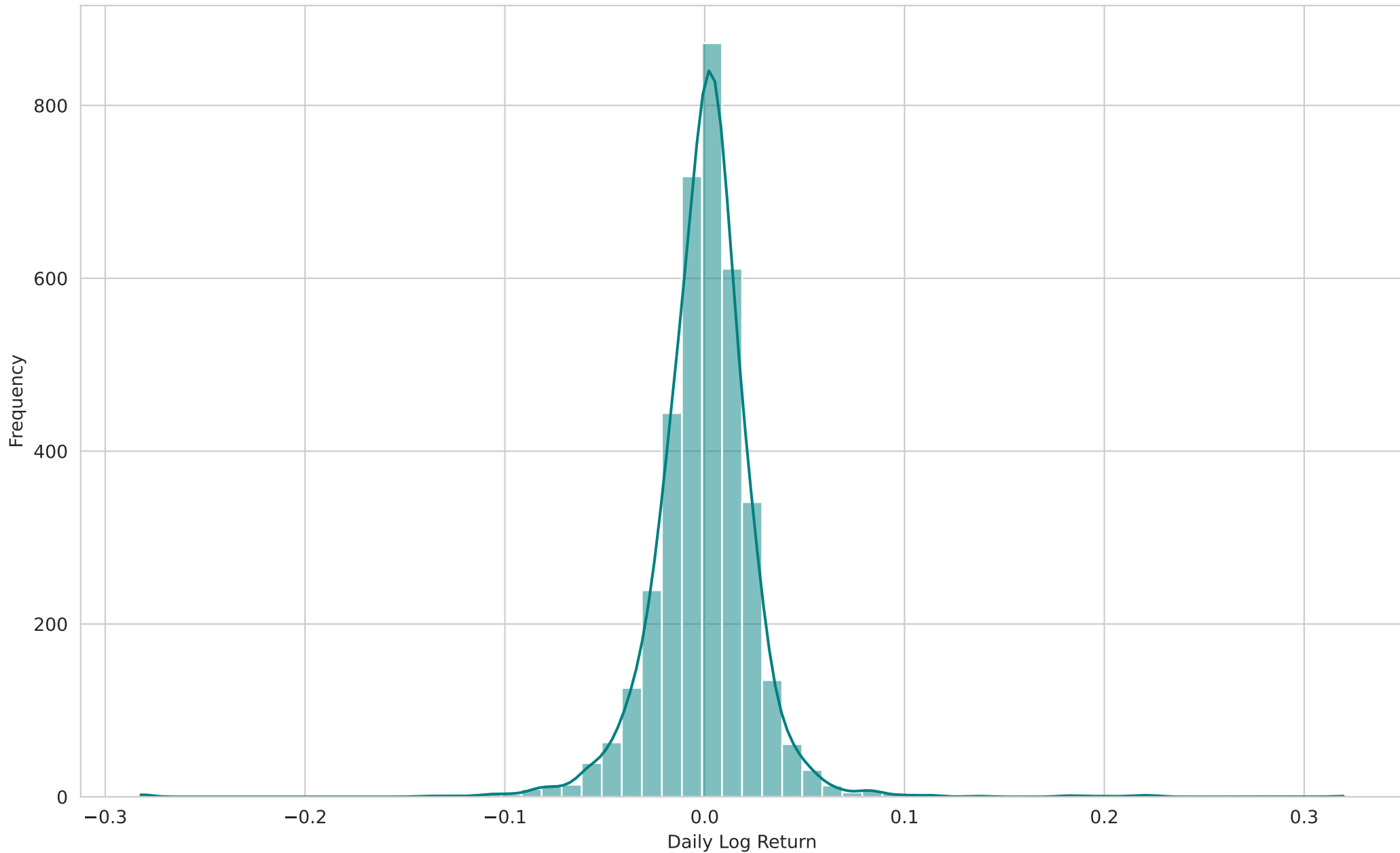
Adj Close|CL=F



CL=F • Rolling 30D Volatility (Annualized)



CL=F • Daily Log Returns Distribution



GC=F • Schema & Missingness (All Columns)

Column	dtype	non_null	missing	missing_%	unique	sample
Adj Close GC=F	float64	3769	0	0.0	3106	1409.3
Close GC=F	float64	3769	0	0.0	3106	1409.3
High GC=F	float64	3769	0	0.0	3116	1415.7
Low GC=F	float64	3769	0	0.0	3118	1407.7
Open GC=F	float64	3769	0	0.0	3101	1410.7
Volume GC=F	int64	3769	0	0.0	1319	205.0

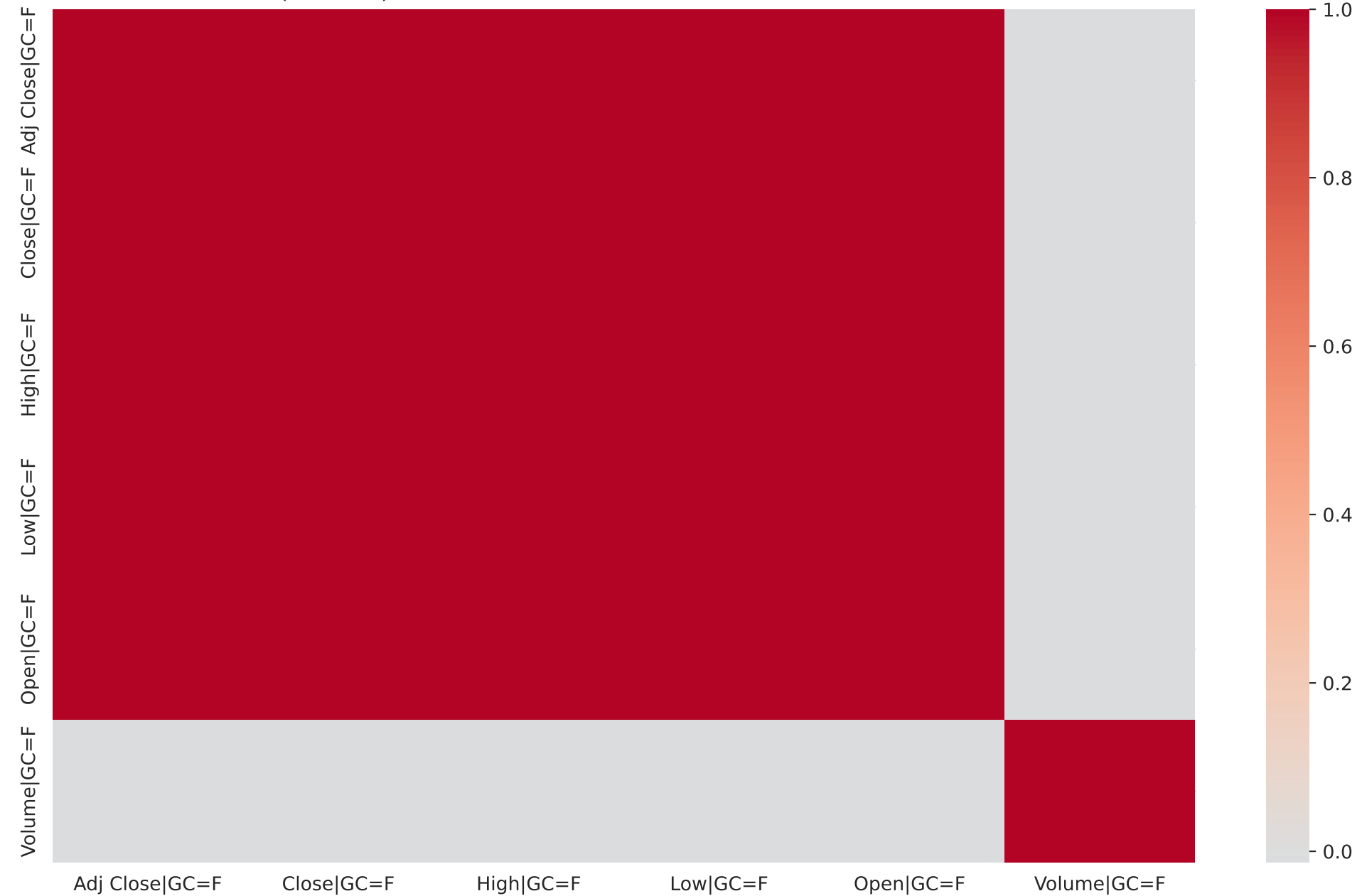
GC=F • Numeric Quality & Ranges

Column	non_null	missing	missing_%	zeros	zeros_%	negatives	negatives_%	min	p01	q1	median	mean	q3	p99	max	std
Close GC=F	3769	0	0.0	0	0.0	0	0.0	1050.8	1085.312	1281.3	1589.0	1726.6661	1862.94	4439.3645	318.3999	666.8598
Close GC=F	3769	0	0.0	0	0.0	0	0.0	1050.8	1085.312	1281.3	1589.0	1726.6661	1862.94	4439.3645	318.3999	666.8598
High GC=F	3769	0	0.0	0	0.0	0	0.0	1062.0	1091.468	1286.0	1596.0	1735.9846	1870.54	4444.8125	386.2002	673.0084
Low GC=F	3769	0	0.0	0	0.0	0	0.0	1046.2	1080.8	1276.9	1576.8	1717.0326	1853.64	4375.4845	301.6001	660.3167
Open GC=F	3769	0	0.0	0	0.0	0	0.0	1053.7	1084.968	1281.4	1588.5	1726.578	1864.73	4376.3645	415.7002	666.6428
Volume GC=F	3769	0	0.0	40	1.06	0	0.0	0.0	0.0	49.0	187.05	207.6959	592.01	30760.44	38633427	965.5983

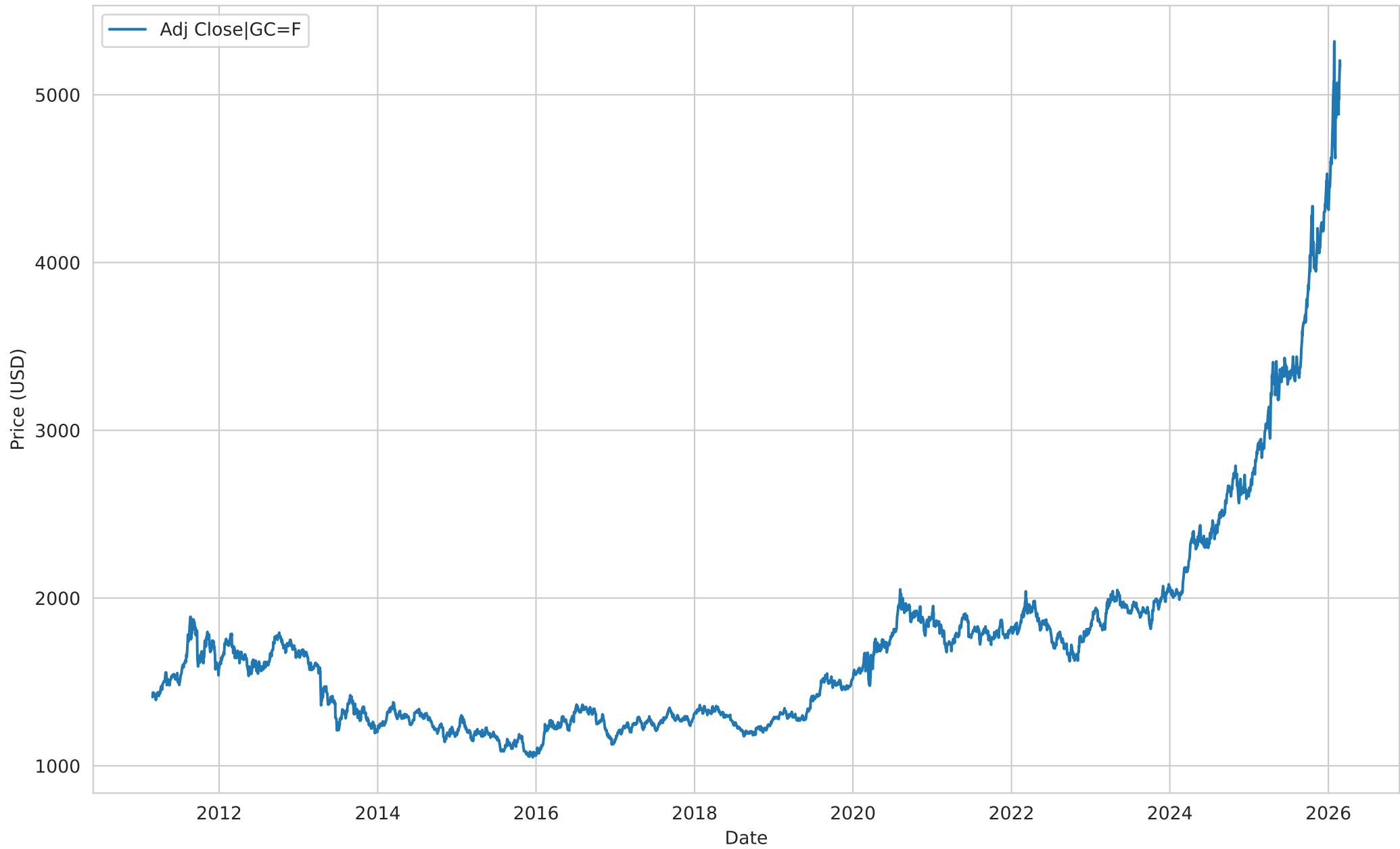
GC=F • Numeric Overview (Describe)

Variable		count	mean	std	min	1%	5%	25%	50%	75%	95%	99%	max
dj	Close GC=F	3769.0	1726.6661	666.8598	1050.8	1085.312	1171.66	1281.3	1589.0	1862.9	3312.68	4439.364	5318.3999
	Close GC=F	3769.0	1726.6661	666.8598	1050.8	1085.312	1171.66	1281.3	1589.0	1862.9	3312.68	4439.364	5318.3999
	High GC=F	3769.0	1735.9846	673.0084	1062.0	1091.468	1177.3	1286.0	1596.0	1870.5	3333.42	4444.812	5586.2002
	Low GC=F	3769.0	1717.0326	660.3167	1046.2	1080.8	1165.52	1276.9	1576.8	1853.6	3289.48	4375.484	5301.6001
Volume	Open GC=F	3769.0	1726.578	666.6428	1053.7	1084.968	1172.34	1281.4	1588.5	1864.7	3314.5801	4376.3641	5415.7002
	Volume GC=F	3769.0	5207.6959	27965.5983	0.0	0.0	6.0	49.0	187.0	592.0	6269.4	180760.44	386334.0

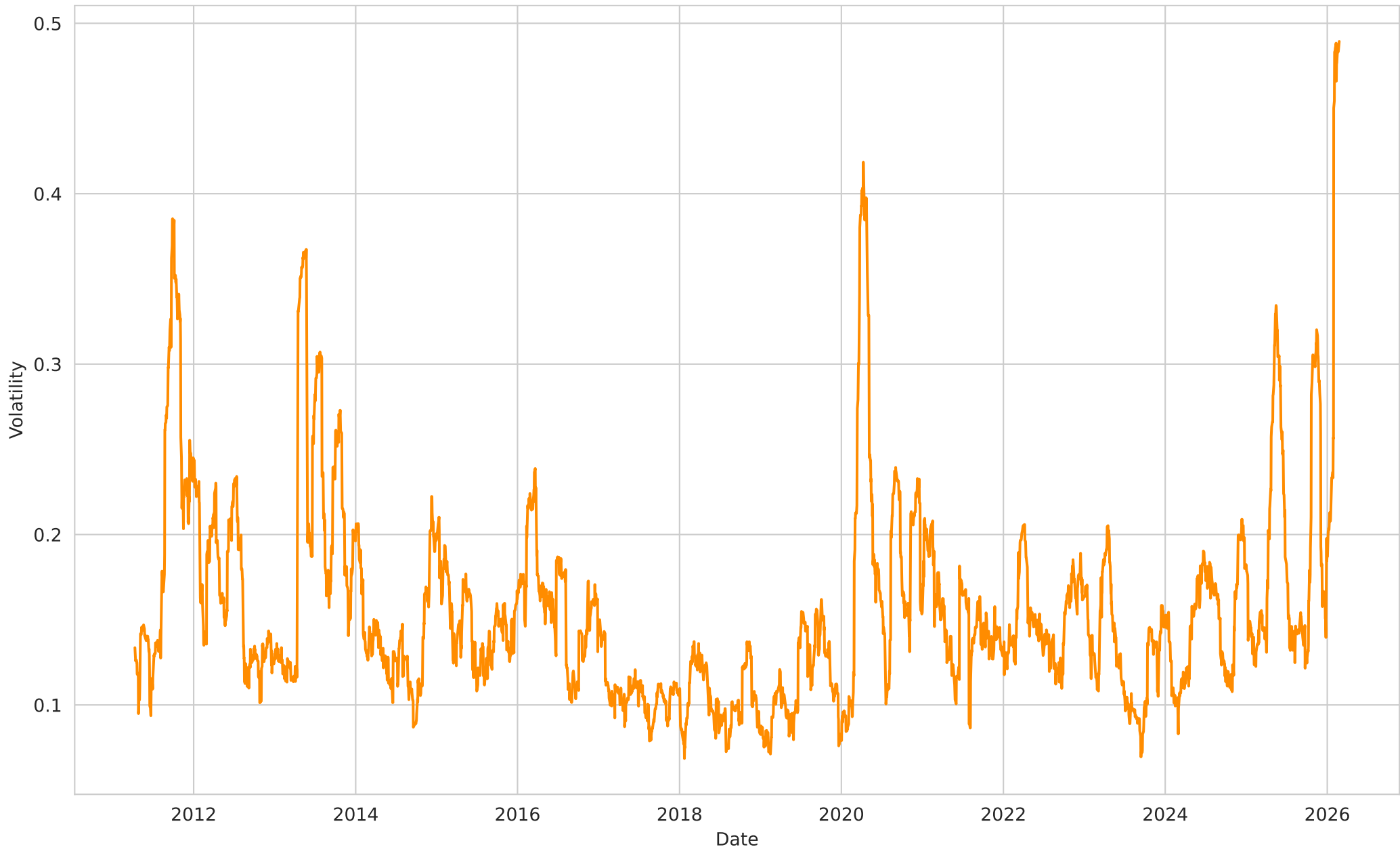
GC=F • Correlation (numeric)



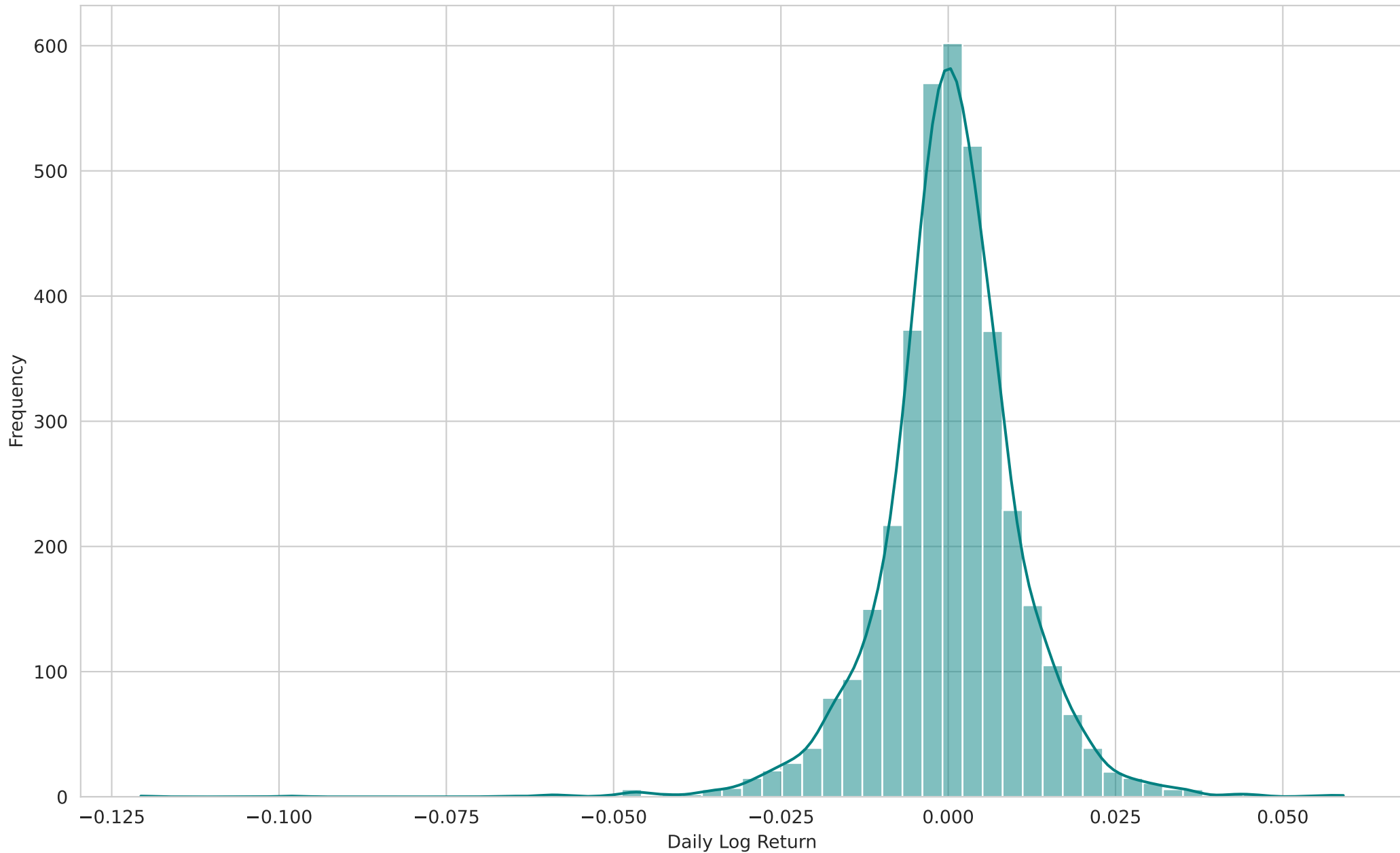
GC=F • Adj Close|GC=F Price



GC=F • Rolling 30D Volatility (Annualized)



GC=F • Daily Log Returns Distribution



MPC • Schema & Missingness (All Columns)

Column	dtype	non_null	missing	missing_%	unique	sample
Adj Close MPC	float64	3688	0	0.0	3580	12.2291
Close MPC	float64	3688	0	0.0	3160	18.625
High MPC	float64	3688	0	0.0	3211	19.575
Low MPC	float64	3688	0	0.0	3196	18.42
Open MPC	float64	3688	0	0.0	3162	19.375
Volume MPC	int64	3688	0	0.0	3612	1675400.0

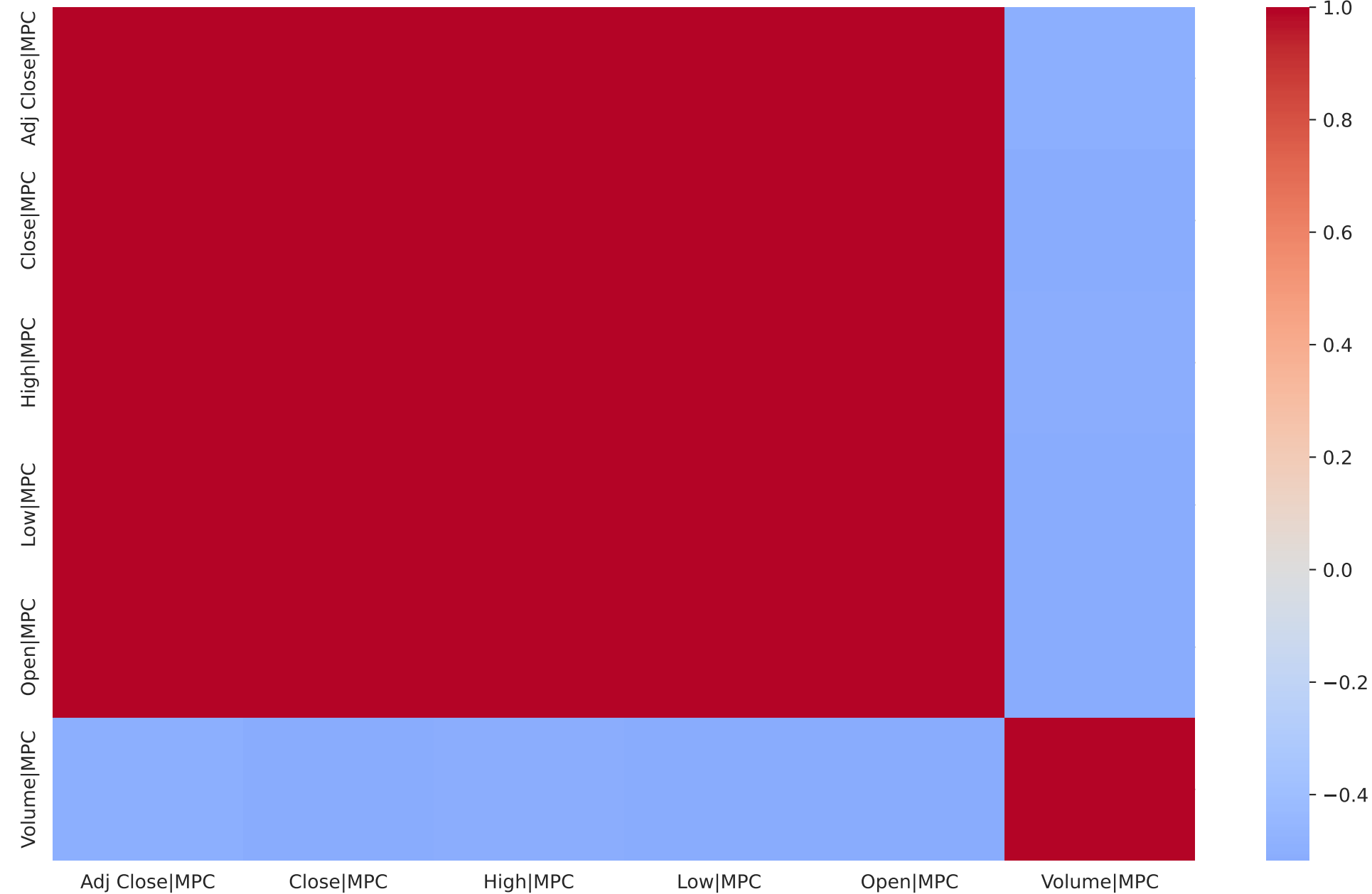
MPC • Numeric Quality & Ranges

Column	non_null	missing	missing_%	zeros	zeros_%	negatives	negatives_%	min	p01	q1	median	mean	q3	p99	max	std
Close MPC	3688	0	0.0	0	0.0	0	0.0	8.9315	11.0081	29.9422	42.1592	63.9283	83.9807	194.0244	210.0614	50.5957
Close MPC	3688	0	0.0	0	0.0	0	0.0	13.53	16.5837	40.8063	53.93	73.1749	91.3825	197.0407	219.13	48.784
High MPC	3688	0	0.0	0	0.0	0	0.0	13.9	16.92	41.5725	54.705	74.2224	93.085	199.6717	221.11	49.3884
Low MPC	3688	0	0.0	0	0.0	0	0.0	13.175	16.1743	40.1138	53.215	72.1311	89.95	195.3065	217.63	48.192
Open MPC	3688	0	0.0	0	0.0	0	0.0	13.4	16.665	40.8	53.875	73.1657	91.4975	196.8117	219.57	48.7773
Volume MPC	3688	0	0.0	0	0.0	0	0.0	467171.0	1372883.0	494850.0	1068559.2	113.7394	5979500.15	194748939	153880829	66.0955

MPC • Numeric Overview (Describe)

Variable	count	mean	std	min	1%	5%	25%	50%	75%	95%	99%	max
Adj Close MPC	3688.0	63.9283	50.5957	8.9315	11.0081	13.7511	29.9422	42.1592	83.9807	170.7817	194.0244	210.0614
Close MPC	3688.0	73.1749	48.784	13.53	16.5837	20.2935	40.8063	53.93	91.3825	175.229	197.0407	219.13
High MPC	3688.0	74.2224	49.3884	13.9	16.92	20.7403	41.5725	54.705	93.085	177.493	199.6717	221.11
Low MPC	3688.0	72.1311	48.192	13.175	16.1743	19.9602	40.1138	53.215	89.95	172.886	195.3065	217.63
Open MPC	3688.0	73.1657	48.7773	13.4	16.665	20.3917	40.8	53.875	91.4975	175.547	196.8117	219.57
Volume MPC	3688.0	597213.7394	4082966.0955	467171.0	1372883.0	1919465.0	3494850.0	5106800.0	6979500.0	10945780.0	15947489.0	39153800.0

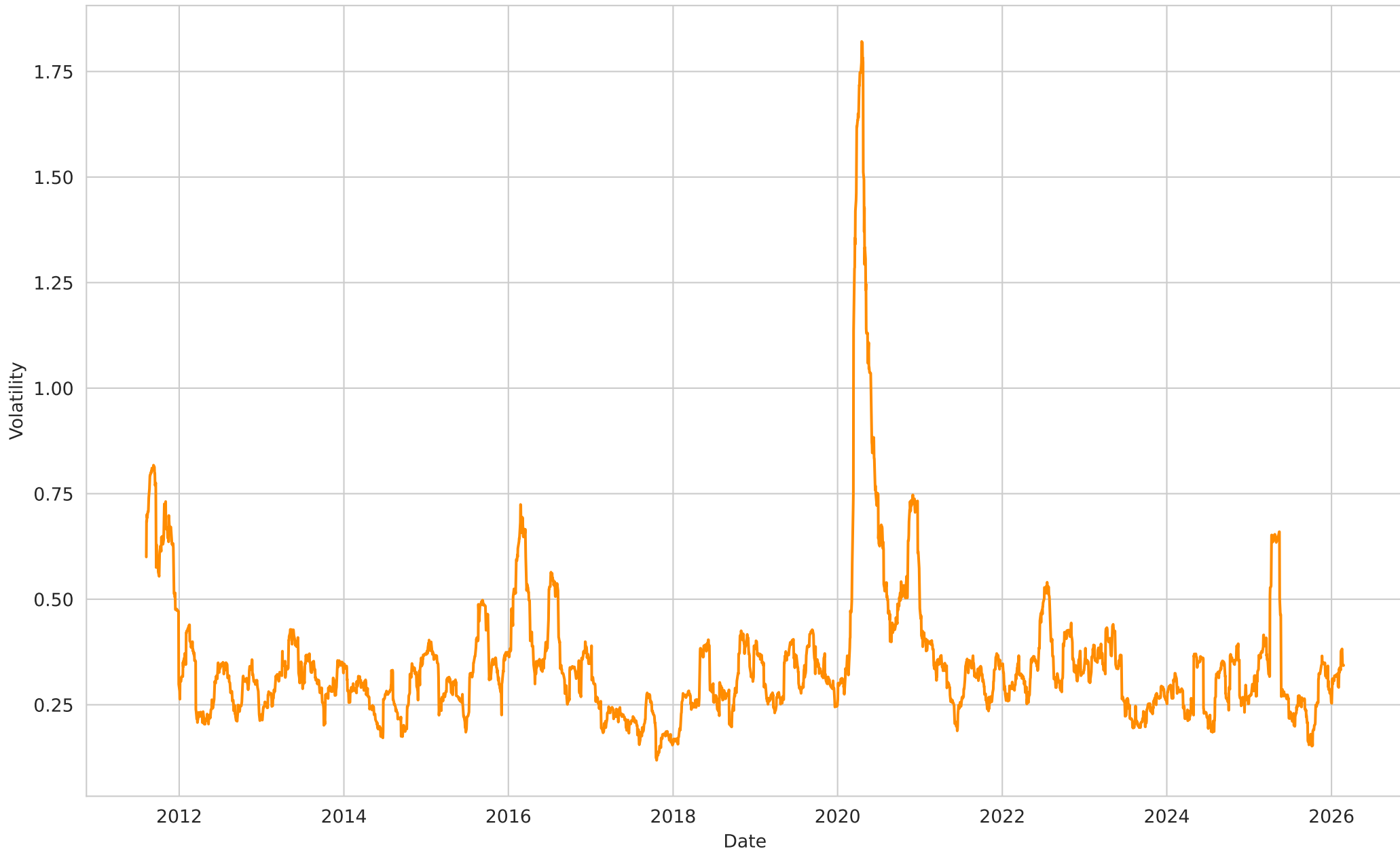
MPC • Correlation (numeric)



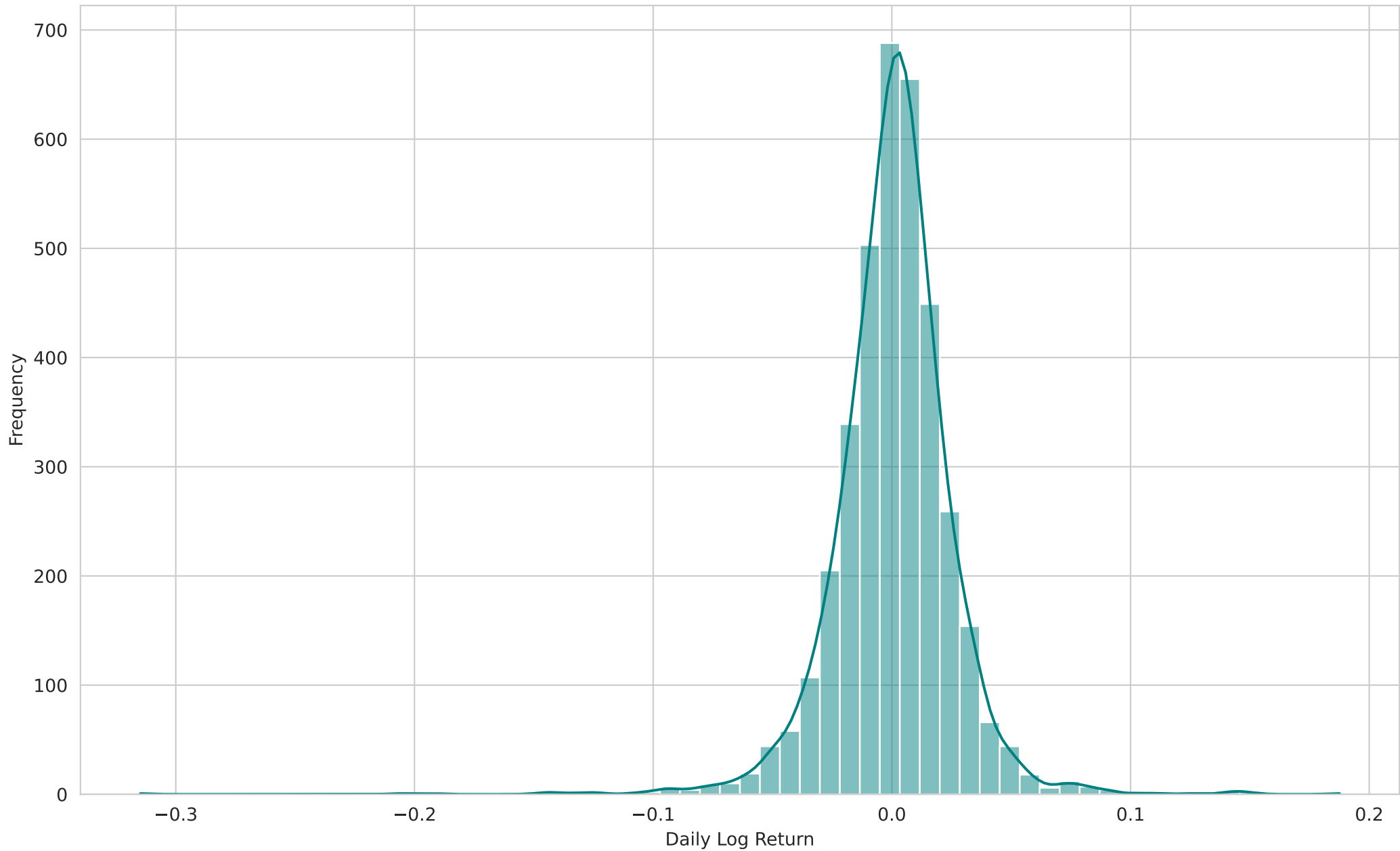
MPC • Adj Close|MPC Price



MPC • Rolling 30D Volatility (Annualized)



MPC • Daily Log Returns Distribution



PSX • Schema & Missingness (All Columns)

Column	dtype	non_null	missing	missing_%	unique	sample
Adj Close PSX	float64	3487	0	0.0	3385	21.4859
Close PSX	float64	3487	0	0.0	2774	34.0
High PSX	float64	3487	0	0.0	2815	34.21
Low PSX	float64	3487	0	0.0	2768	32.0
Open PSX	float64	3487	0	0.0	2727	33.25
Volume PSX	int64	3487	0	0.0	3333	654700.0

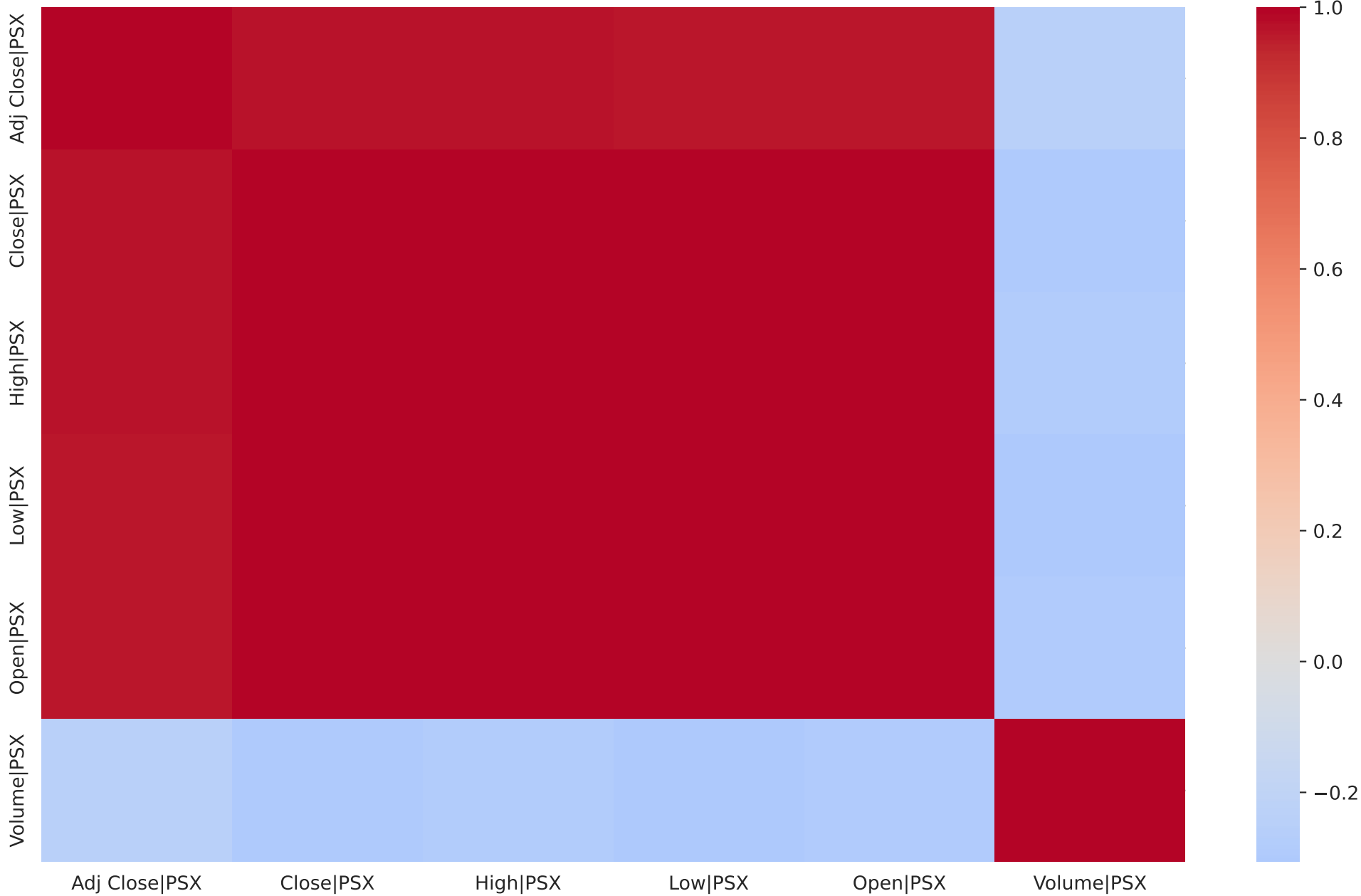
PSX • Numeric Quality & Ranges

	Column	non_null	missing	missing_%	zeros	zeros_%	negatives	negatives_%	min	p01	q1	median	mean	q3	p99	max	std
j	Close PSX	3487	0	0.0	0	0.0	0	0.0	18.5474	20.8479	53.528	65.4601	72.839	88.0686	147.854	162.3481	30.006
	Close PSX	3487	0	0.0	0	0.0	0	0.0	29.35	32.9904	75.93	84.8	90.105	105.585	155.8214	172.71	25.8968
	High PSX	3487	0	0.0	0	0.0	0	0.0	30.1	33.64	76.92	85.75	91.2255	106.73	157.7294	174.08	26.125
	Low PSX	3487	0	0.0	0	0.0	0	0.0	28.75	32.4986	74.83	83.8	88.9966	103.91	154.0308	170.64	25.6933
	Open PSX	3487	0	0.0	0	0.0	0	0.0	29.09	33.0758	75.895	84.85	90.1115	105.37	155.1098	173.18	25.9139
	Volume PSX	3487	0	0.0	0	0.0	0	0.0	95700.0	1144998.0	2276150.0	3894280.0	5006.4396	779400.0	8890096105	7980542	343.9077

PSX • Numeric Overview (Describe)

Variable	count	mean	std	min	1%	5%	25%	50%	75%	95%	99%	max
Adj Close PSX	3487.0	72.839	30.006	18.5474	20.8479	33.2401	53.528	65.4601	88.0686	132.7124	147.854	162.3481
Close PSX	3487.0	90.105	25.8968	29.35	32.9904	49.525	75.93	84.8	105.585	137.988	155.8214	172.71
High PSX	3487.0	91.2255	26.125	30.1	33.64	50.79	76.92	85.75	106.73	139.564	157.7294	174.08
Low PSX	3487.0	88.9966	25.6933	28.75	32.4986	48.708	74.83	83.8	103.91	136.12	154.0308	170.64
Open PSX	3487.0	90.1115	25.9139	29.09	33.0758	49.349	75.895	84.85	105.37	137.767	155.1098	173.18
Volume PSX	3487.0	37906.43915	42343.9077	95700.0	1144998.0	1602560.0	2276150.0	2894200.0	3779400.0	6012100.0	8890096.0	16579800.0

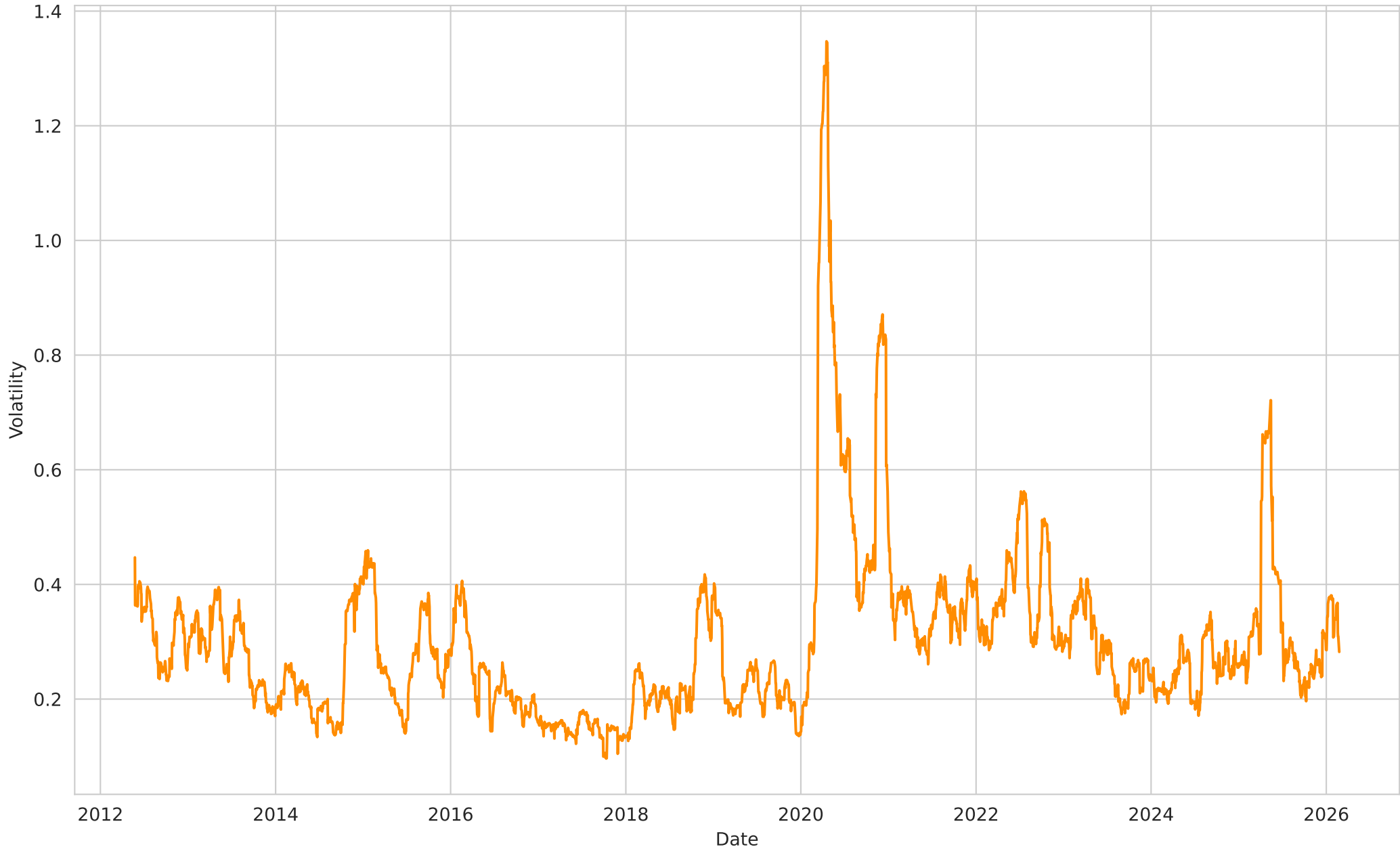
PSX • Correlation (numeric)



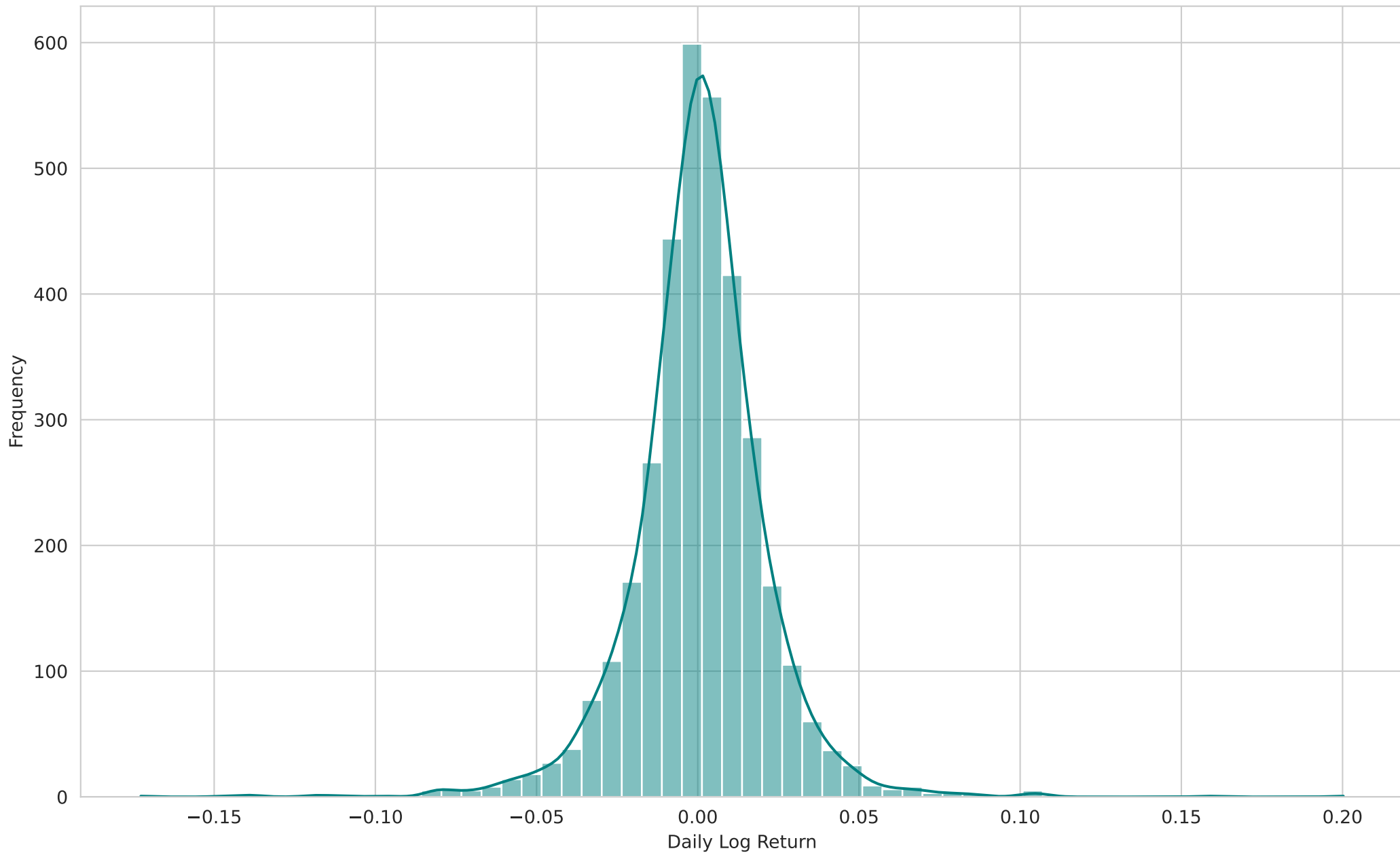
PSX • Adj Close|PSX Price



PSX • Rolling 30D Volatility (Annualized)



PSX • Daily Log Returns Distribution



VLO • Schema & Missingness (All Columns)

Column	dtype	non_null	missing	missing_%	unique	sample
Adj Close VLO	float64	3770	0	0.0	3684	15.468
Close VLO	float64	3770	0	0.0	3258	25.7587
High VLO	float64	3770	0	0.0	3244	26.3894
Low VLO	float64	3770	0	0.0	3209	25.457
Open VLO	float64	3770	0	0.0	3212	26.2614
Volume VLO	int64	3770	0	0.0	3700	12430356.0

VLO • Numeric Quality & Ranges

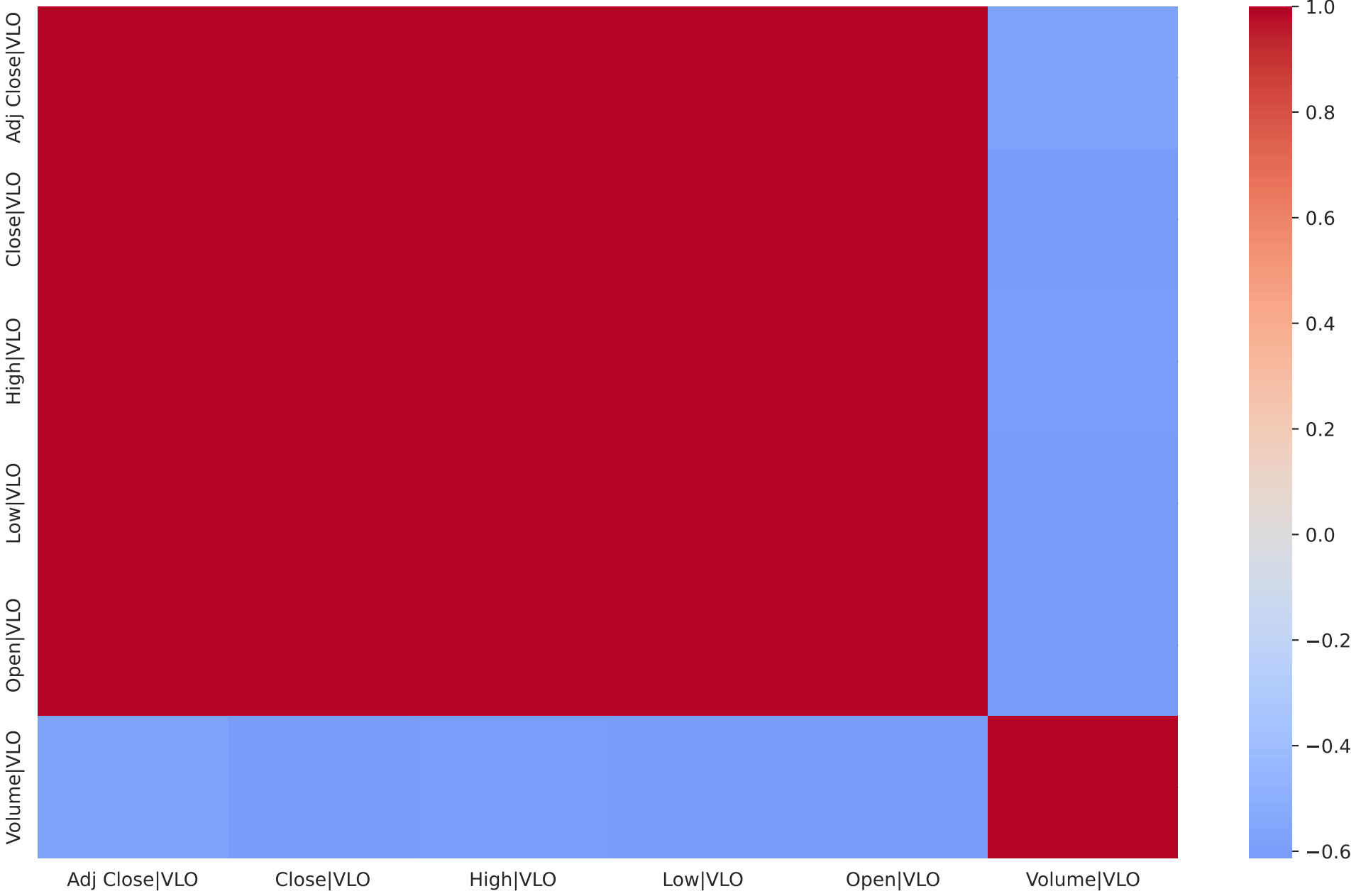
Column	non_null	missing	missing_%	zeros	zeros_%	negatives	negatives_%	min	p01	q1	median	mean	q3	p99	max	std
j Close VLO	3770	0	0.0	0	0.0	0	0.0	9.465	11.4698	33.9065	52.9884	65.6371	94.8766	178.2401	203.92	43.1499
Close VLO	3770	0	0.0	0	0.0	0	0.0	15.6947	18.9277	50.8225	68.7	79.7432	112.99	180.5493	203.92	41.101
High VLO	3770	0	0.0	0	0.0	0	0.0	16.4168	19.2385	51.4925	69.845	80.9155	114.845	183.2282	206.77	41.6739
Low VLO	3770	0	0.0	0	0.0	0	0.0	14.9909	18.5473	50.03	68.07	78.5583	111.0075	177.5813	200.51	40.531
Open VLO	3770	0	0.0	0	0.0	0	0.0	15.3748	18.9016	50.79	68.795	79.7527	113.19	180.2898	204.08	41.112
Volume VLO	3770	0	0.0	0	0.0	0	0.0	559800.0	1657225.0	172525.0	450725.0	629390.8308	707702.570	186118.96	2378536	204.5631

VLO • Numeric Overview (Describe)

Adj

Variable	count	mean	std	min	1%	5%	25%	50%	75%	95%	99%	max
Close VLO	3770.0	65.6371	43.1499	9.465	11.4698	13.6677	33.9065	52.9884	94.8766	147.217	178.2401	203.92
Close VLO	3770.0	79.7432	41.101	15.6947	18.9277	22.5087	50.8225	68.7	112.99	154.518	180.5493	203.92
High VLO	3770.0	80.9155	41.6739	16.4168	19.2385	22.8885	51.4925	69.845	114.845	156.527	183.2282	206.77
Low VLO	3770.0	78.5583	40.531	14.9909	18.5473	22.0699	50.03	68.07	111.0075	152.2165	177.5813	200.51
Open VLO	3770.0	79.7527	41.112	15.3748	18.9016	22.5137	50.79	68.795	113.19	154.227	180.2898	204.08
Volume VLO	3770.0	29390.83085	36204.5631	559800.0	1657225.0	2148205.0	3172525.0	4507200.0	7077025.01	2468915.2517	986118.96	44023700.0

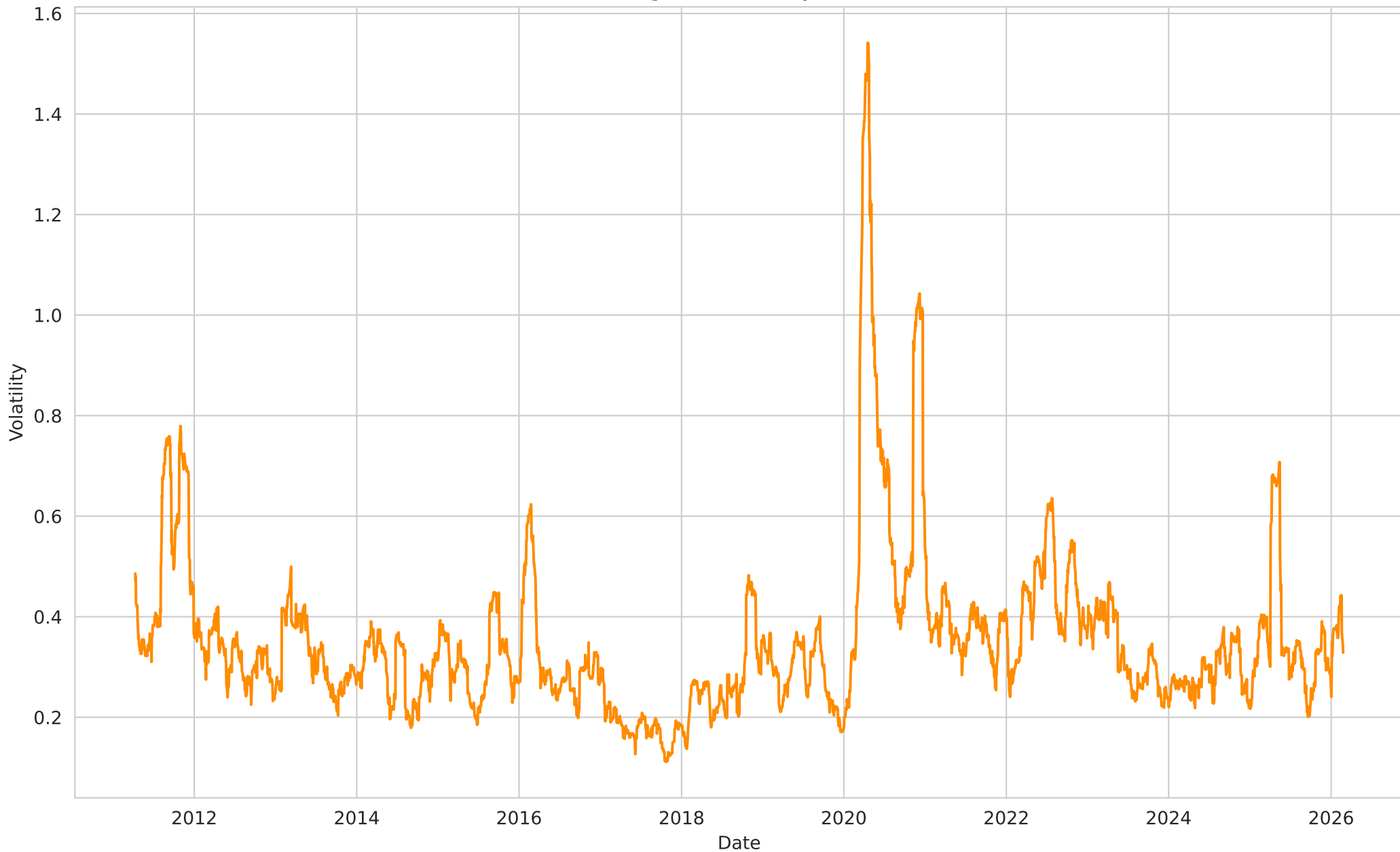
VLO • Correlation (numeric)



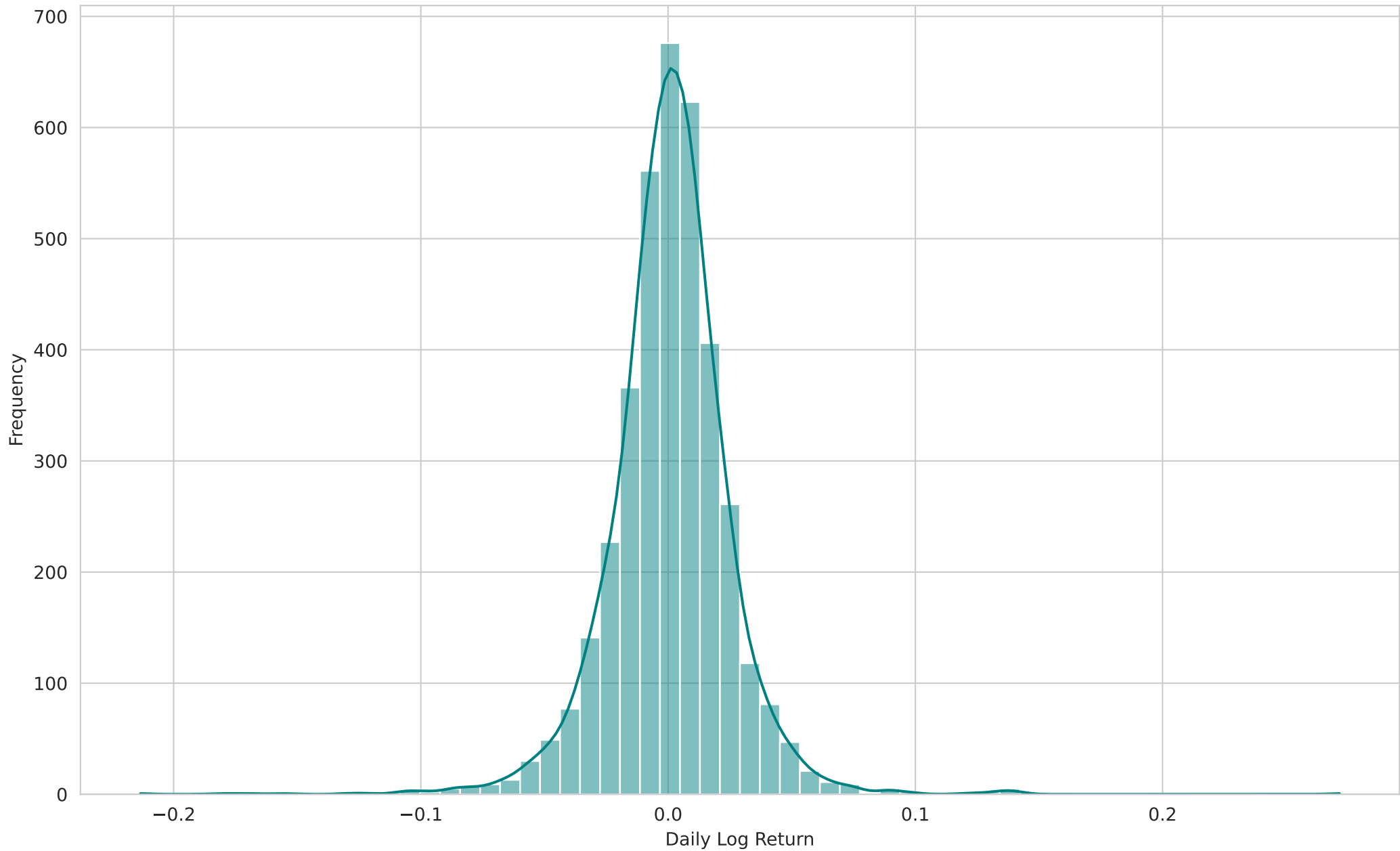
VLO • Adj Close|VLO Price



VLO • Rolling 30D Volatility (Annualized)



VLO • Daily Log Returns Distribution



^GSPC • Schema & Missingness (All Columns)

Column	dtype	non_null	missing	missing_%	unique	sample
Adj Close ^GSPC	float64	3770	0	0.0	3756	1327.22
Close ^GSPC	float64	3770	0	0.0	3756	1327.22
High ^GSPC	float64	3770	0	0.0	3743	1329.38
Low ^GSPC	float64	3770	0	0.0	3751	1320.55
Open ^GSPC	float64	3770	0	0.0	3746	1321.61
Volume ^GSPC	int64	3770	0	0.0	3722	1252850000.0

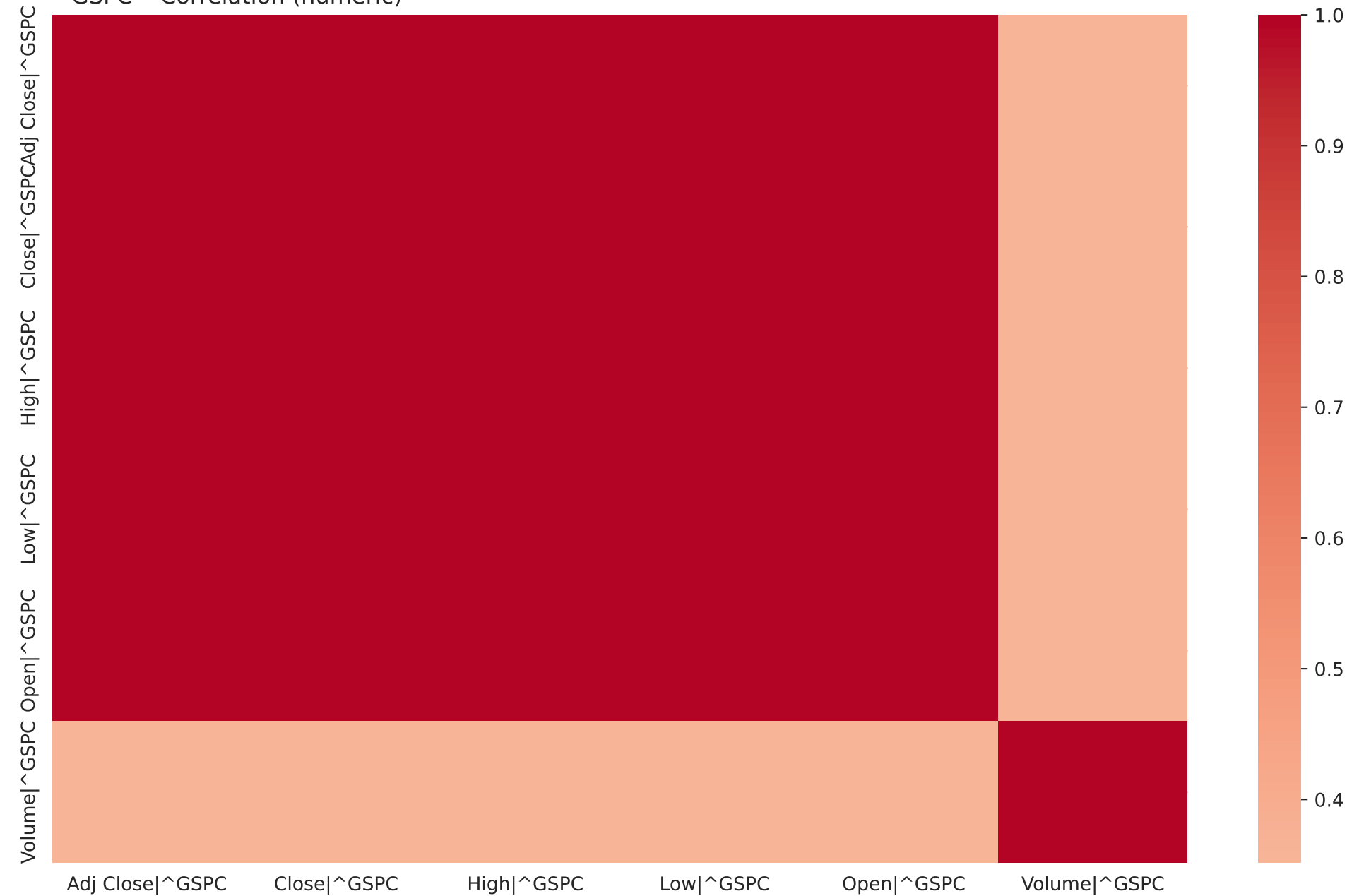
^GSPC • Numeric Quality & Ranges

Column	non_null	missing	missing_%	zeros	zeros_%	negatives	negatives_%	min	p01	q1	median	mean	q3	p99	max	std
Close ^GSPC	3770	0	0.0	0	0.0	0	0.0	1099.231	193.6079	1972.9425	2733.153	120.12154	176.48495	875.30279	978.60011	499.1578
Close ^GSPC	3770	0	0.0	0	0.0	0	0.0	1099.231	193.6079	1972.9425	2733.153	120.12154	176.48495	875.30279	978.60011	499.1578
High ^GSPC	3770	0	0.0	0	0.0	0	0.0	1125.121	204.12081	1982.5325	2746.7753	136.01841	197.46259	900.90247	1002.27981	506.3989
Low ^GSPC	3770	0	0.0	0	0.0	0	0.0	1074.771	178.5655	1964.065	2716.7353	101.8141	151.40776	833.181	6963.461	490.9005
Open ^GSPC	3770	0	0.0	0	0.0	0	0.0	1097.421	192.9521	1973.0975	2734.163	119.54071	176.59746	869.2085	7002.014	499.0314
Volume ^GSPC	3770	0	0.0	1	0.03	0	0.0	2057.5929	3380.1975	3800.1739	9052.121	2202.19125	7610.12729	9976.5298	2030.559	4478

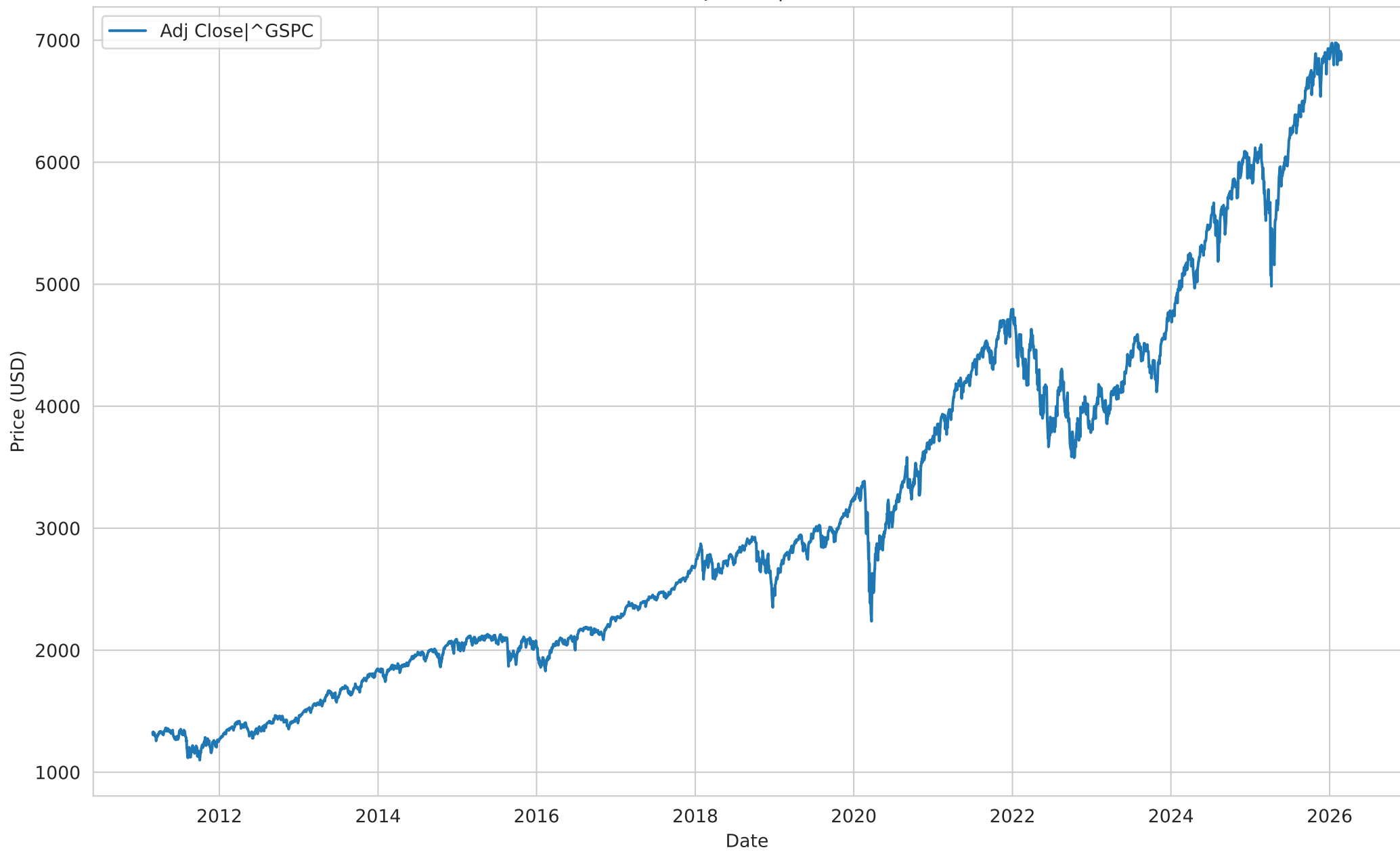
^GSPC • Numeric Overview (Describe)

Variable	count	mean	std	min	1%	5%	25%	50%	75%	95%	99%	max
j Close ^GSPC	3770.0	3120.1215	1499.1578	1099.23	1193.6079	1316.963	1972.9425	2733.15	4176.4849	6052.4542	6875.3027	6978.6001
Close ^GSPC	3770.0	3120.1215	1499.1578	1099.23	1193.6079	1316.963	1972.9425	2733.15	4176.4849	6052.4542	6875.3027	6978.6001
High ^GSPC	3770.0	3136.0184	1506.3989	1125.12	1204.1208	1326.594	1982.5325	2746.775	4197.4625	6079.1851	6900.9024	7002.2798
Low ^GSPC	3770.0	3101.814	1490.9005	1074.77	1178.5655	1310.168	1964.065	2716.735	4151.4077	6035.267	6833.181	6963.46
Open ^GSPC	3770.0	3119.5407	1499.0314	1097.42	1192.9521	1316.25	1973.0975	2734.16	4176.5974	6059.0475	6869.2085	7002.0
Volume ^GSPC	3770.0	52121.298243	559.4478	0.015759	2900.081874	1000.838019	7500.880177	0000.440191	2500.573807	6000.061127	2900.997652	0000.0

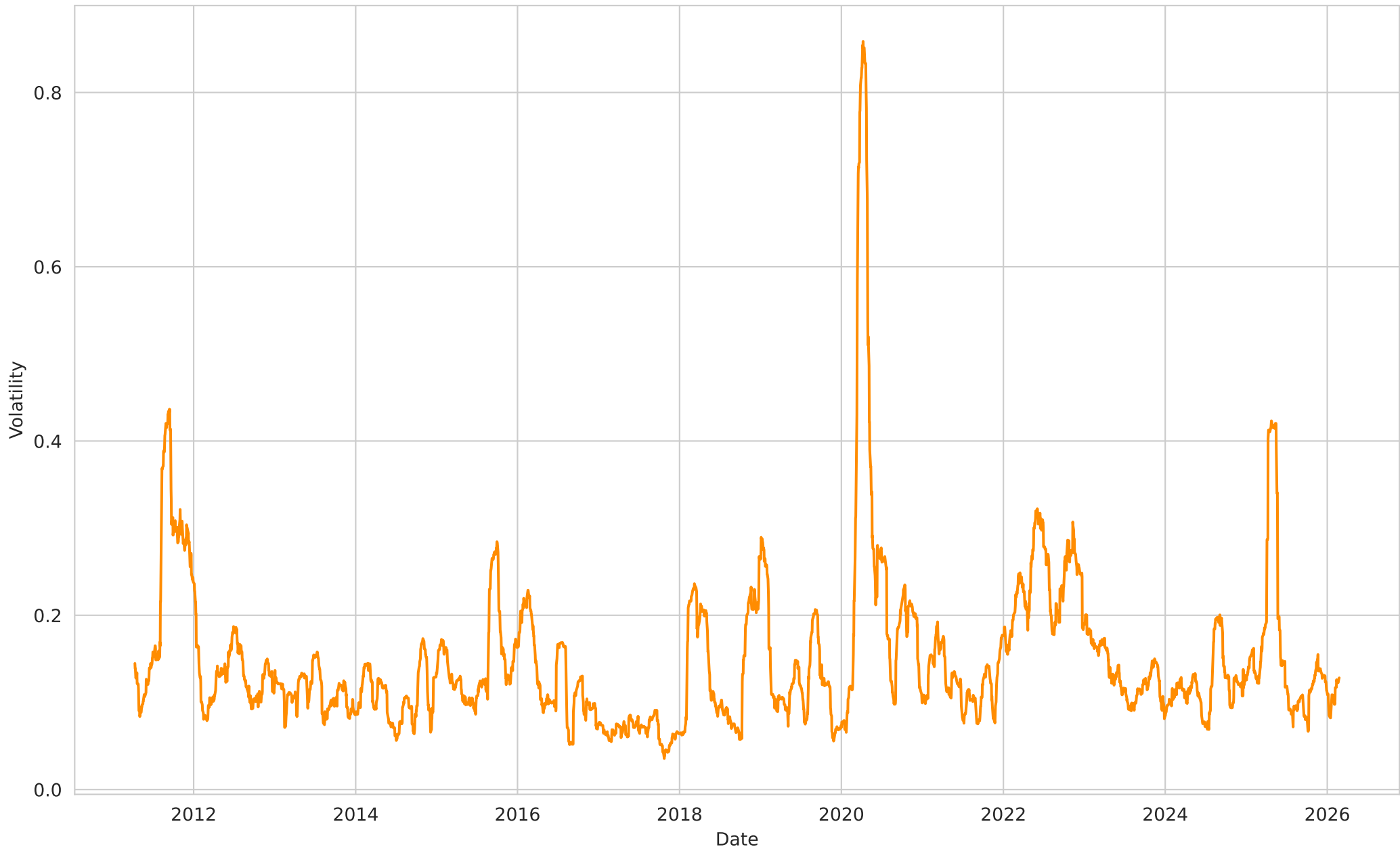
^GSPC • Correlation (numeric)



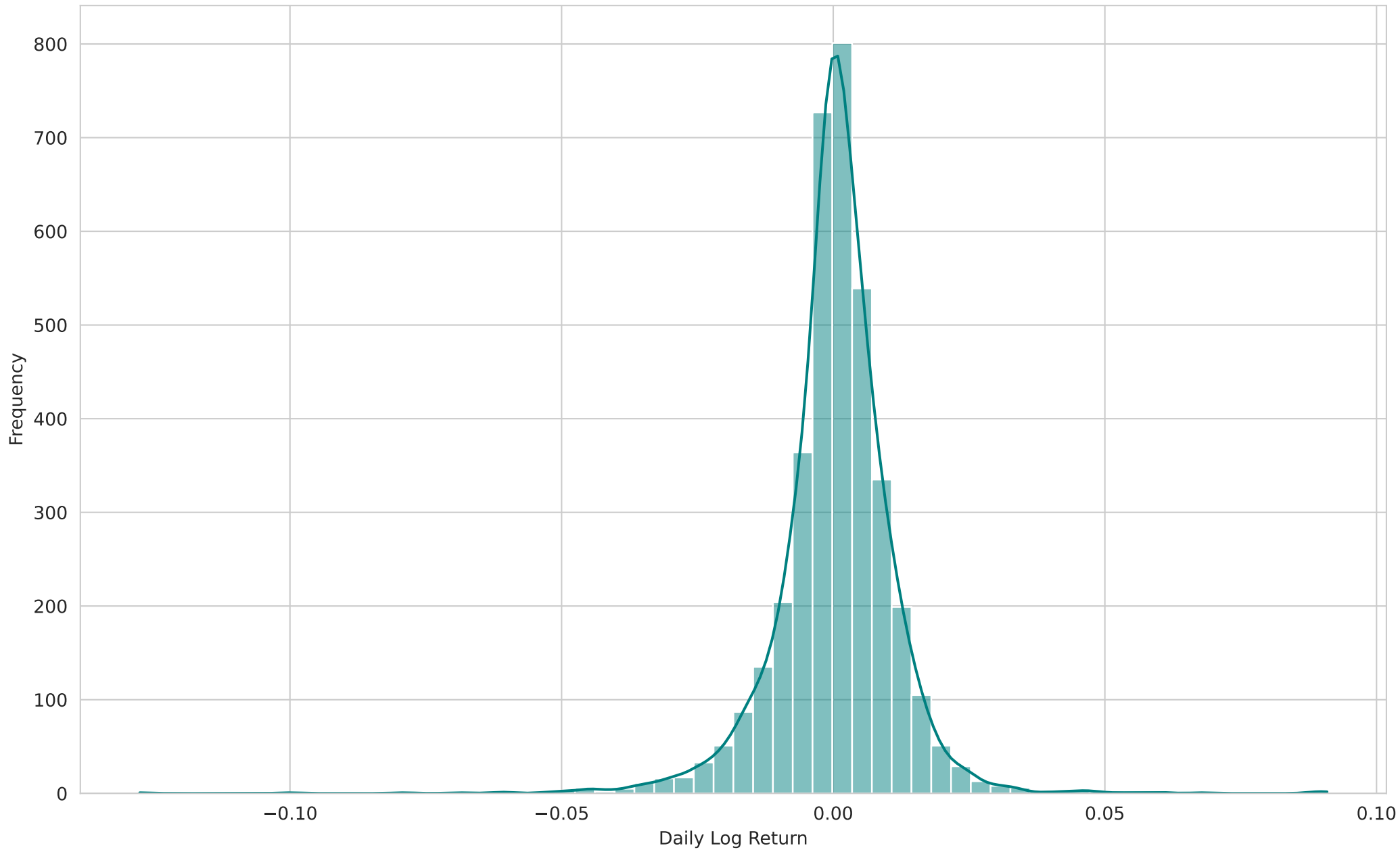
^GSPC • Adj Close|^GSPC Price



^GSPC • Rolling 30D Volatility (Annualized)



^GSPC • Daily Log Returns Distribution



^VIX • Schema & Missingness (All Columns)

Column	dtype	non_null	missing	missing_%	unique	sample
Adj Close ^VIX	float64	3770	0	0.0	1663	18.35
Close ^VIX	float64	3770	0	0.0	1663	18.35
High ^VIX	float64	3770	0	0.0	1736	19.27
Low ^VIX	float64	3770	0	0.0	1596	18.14
Open ^VIX	float64	3770	0	0.0	1653	19.12
Volume ^VIX	int64	3770	0	0.0	1	0.0

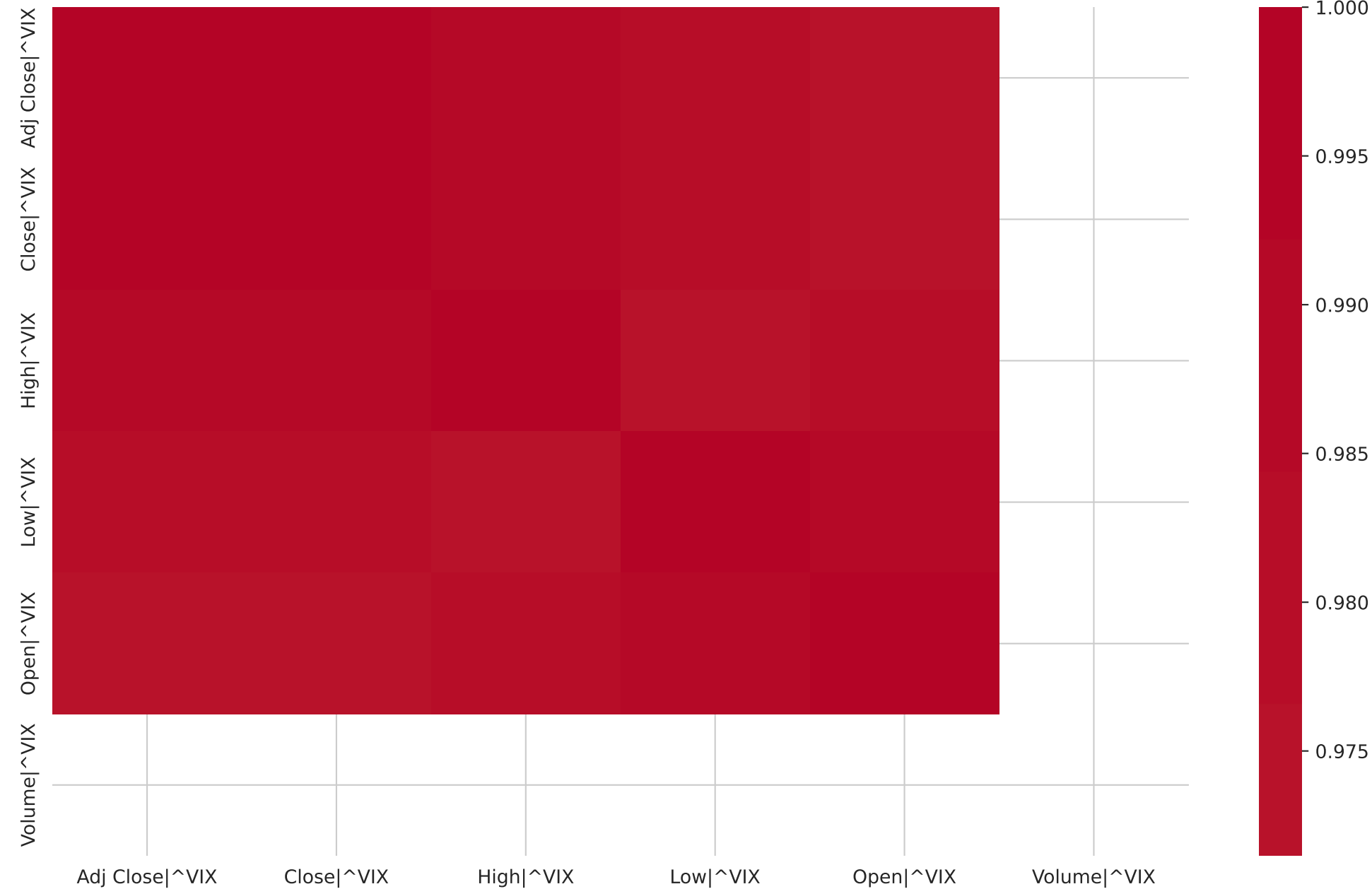
^VIX • Numeric Quality & Ranges

[illegible]

^VIX • Numeric Overview (Describe)

[illegible]

^VIX • Correlation (numeric)



^VIX • Adj Close|^VIX Price

Adj Close|^VIX

Price (USD)

80
70
60
50
40
30
20
10

2012

2014

2016

2018

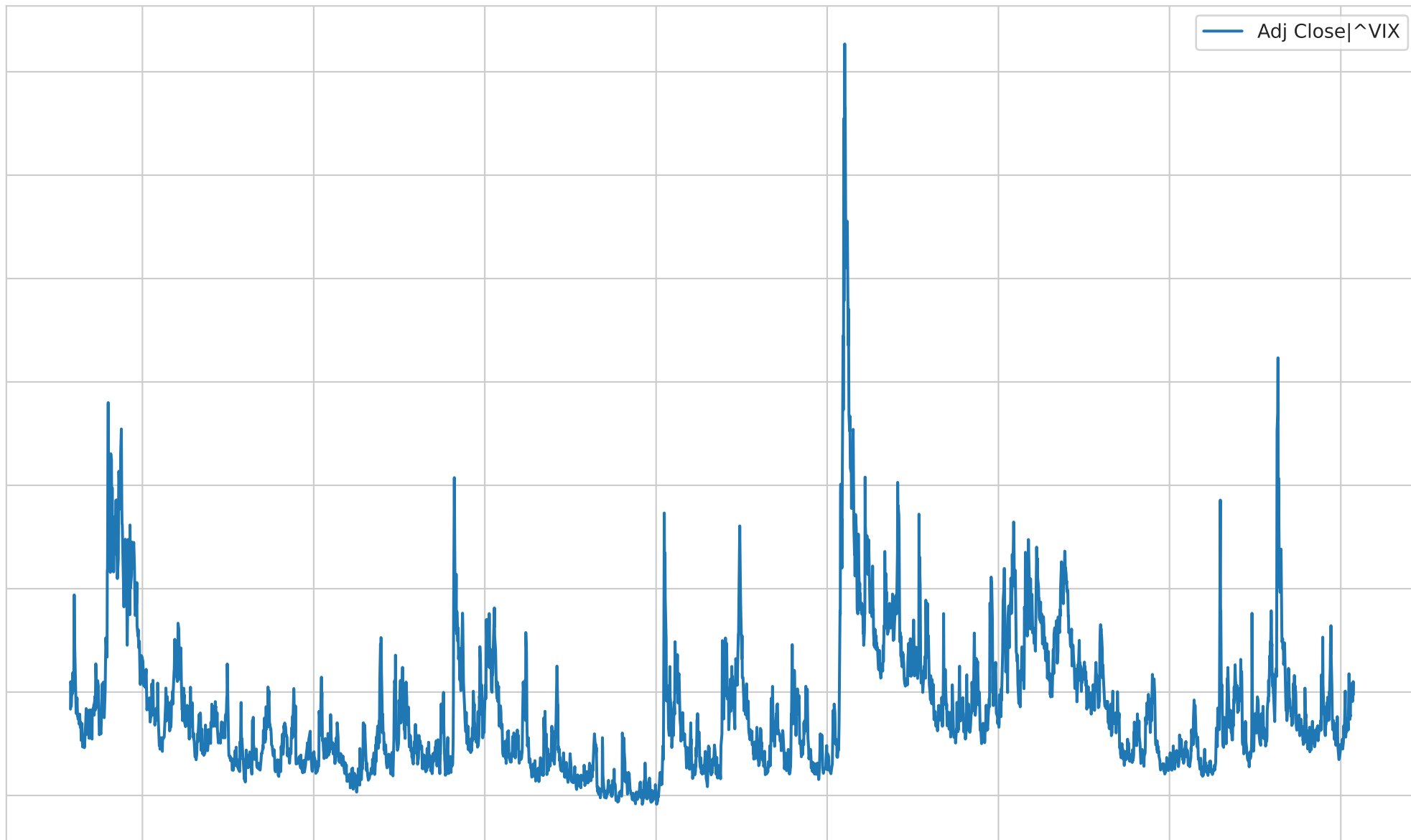
2020

2022

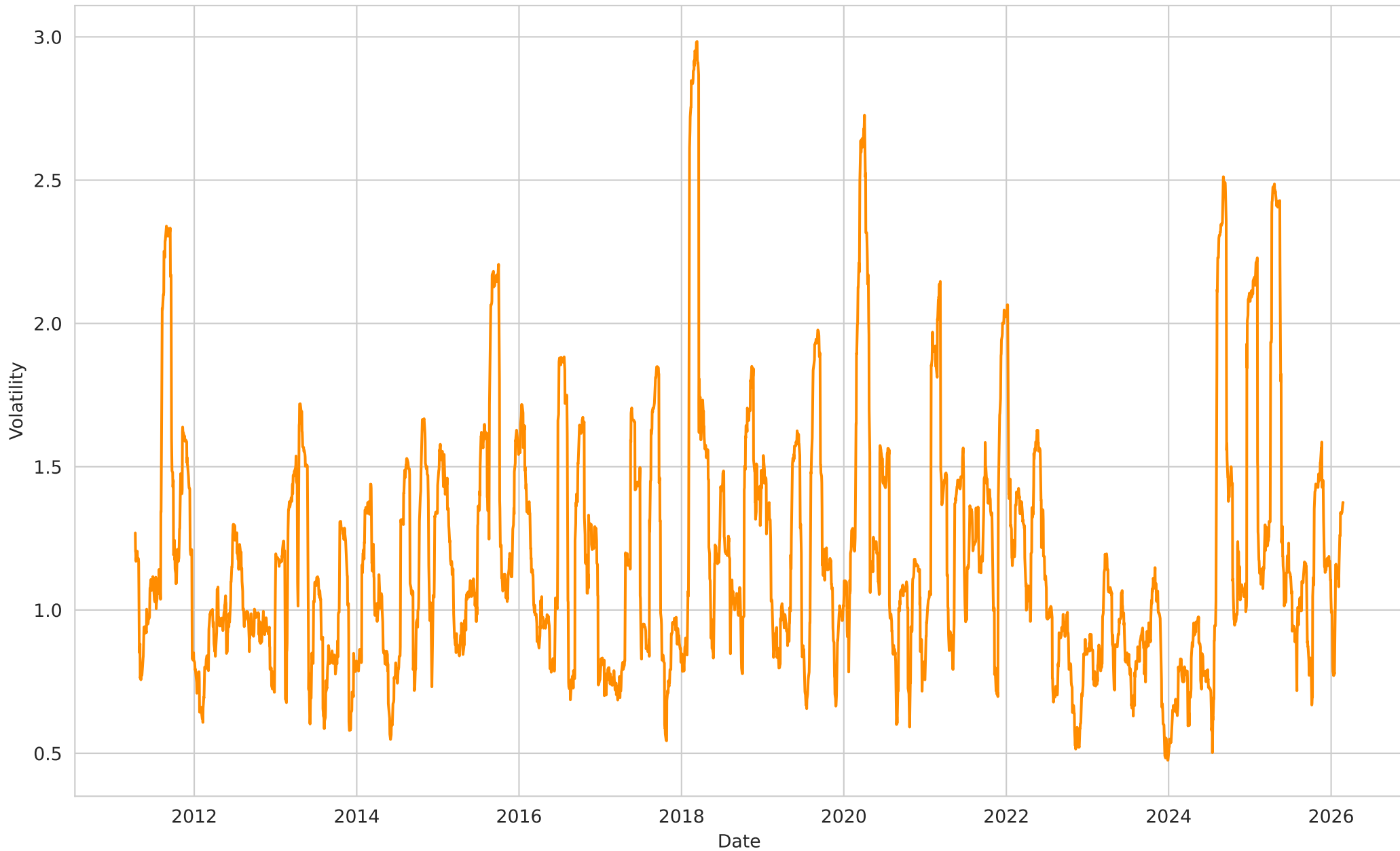
2024

2026

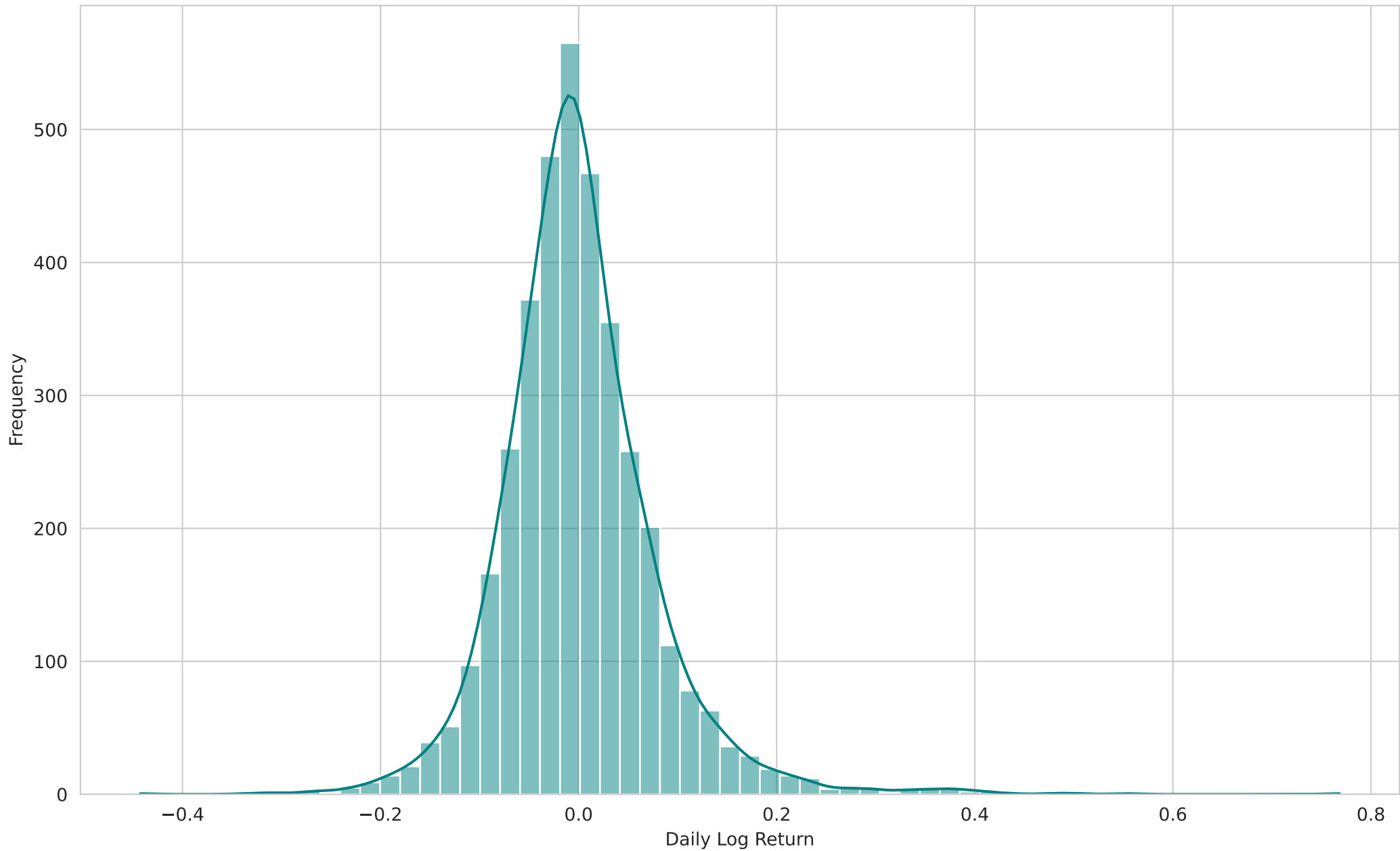
Date



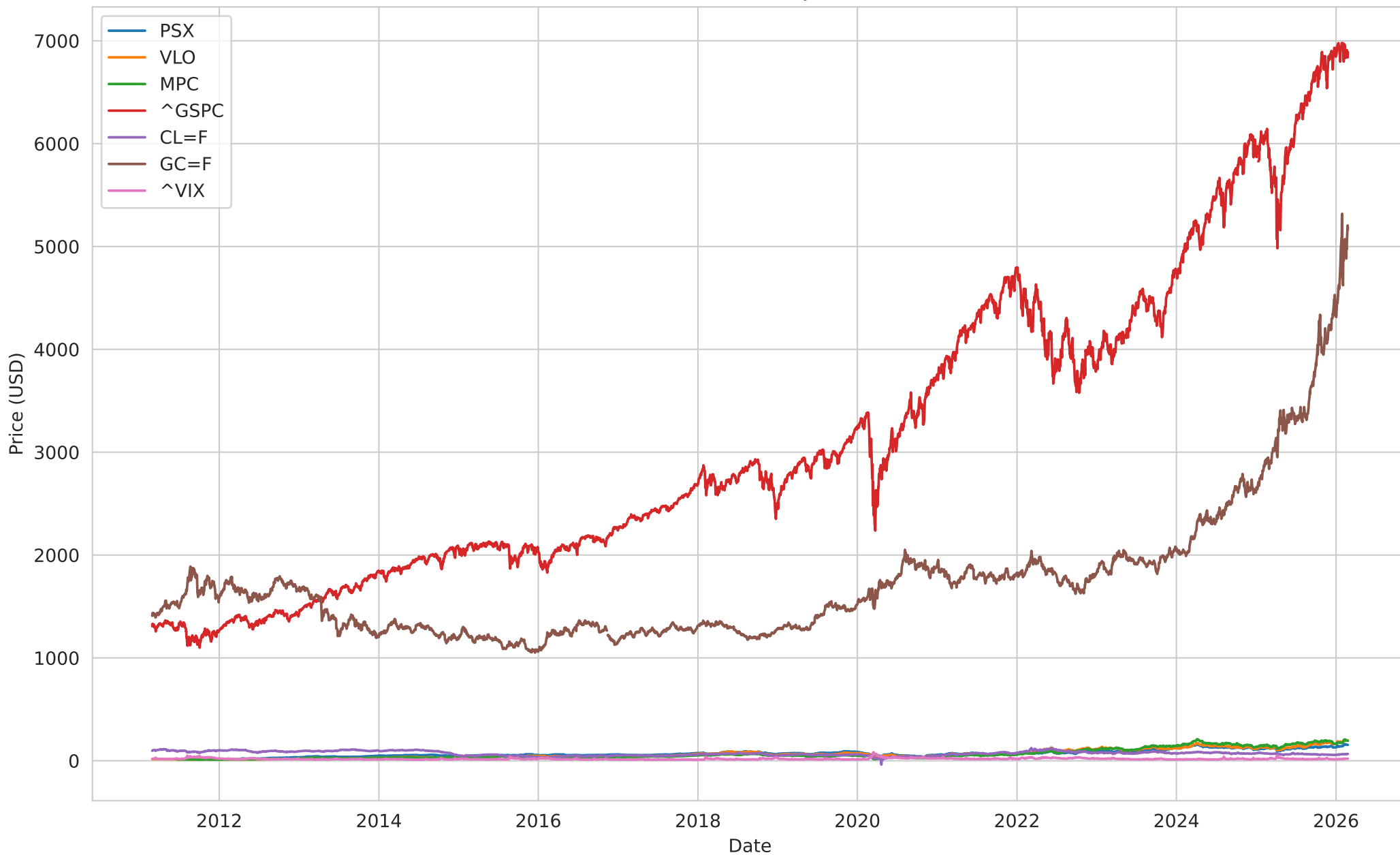
^VIX • Rolling 30D Volatility (Annualized)



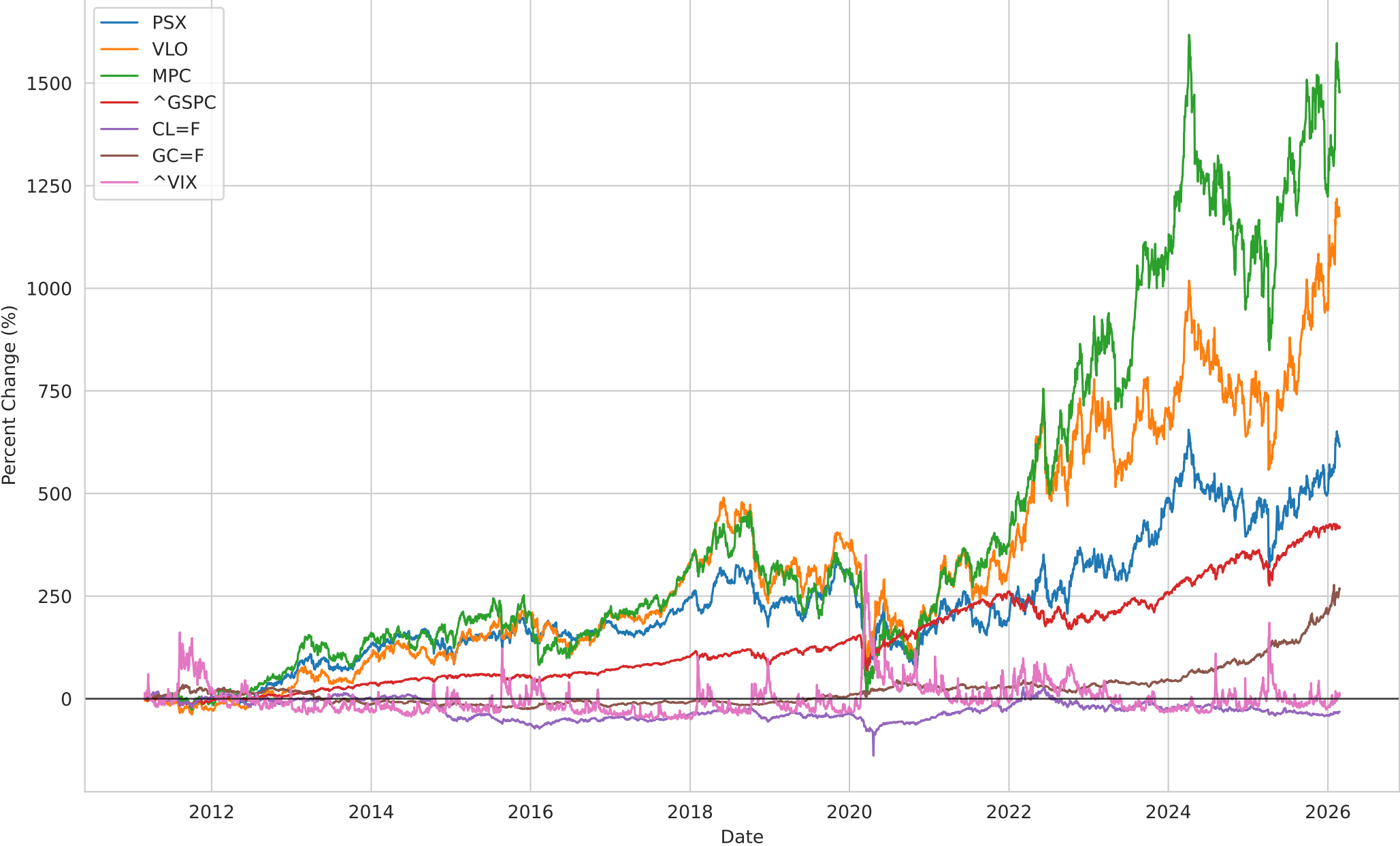
\wedge VIX • Daily Log Returns Distribution



Cross-Ticker • Close/Adj Close Prices



Cross-Ticker • Close/Adj Close Price % Change (From First Available Date)



Cross-Ticker • Daily Log Returns Correlation

