

Applying NorgateData.com Unbiased History to CIMI Strategy Backtesting

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Objectives of this Study

- To secure an Index Membership data source accurate for 20 years.
- To validate Norgate Data claim of maintaining a Survivorship Bias-free data base for 16 US stock indexes.
- To automate data retrieval and re-formatting to match CIMI's current monthly Backtesting Automation methods.

The Norgate Data Updater [NDU]


- WinTel-only Python client for local copy of data on PC

The screenshot displays the Norgate Data Updater (NDU) application interface. The title bar reads "Norgate Data Updater" with a program version of 4.0.8.37. A green circular icon is visible next to the title. The interface is divided into several sections:

- Subscriber Information:** Displays "Hello Roderick Thorne" and a message: "You have a free trial that is due to end in 17 days."
- System Information:** Shows "Last update attempt was successful."
- Service Information:** Includes links for "Editions Report", "Bulletins Archive", and "Version Change Log".
- Editions:** States "Editions are currently running on time."
- Bulletins:** States "No Bulletins have been published in the last week."
- Update Information:** Shows "Next Update (Automatic mode): Due in 4 hrs and 11 mins on 3/25/2021 at 3:00:00 AM" and "Last Update: Wednesday, March 24, 2021 at 10:26:07 PM". A "Check for Updates" button is located in the bottom right corner of this section.

A sidebar on the left contains navigation options: Update, Settings, Information, Tools, Database, Watchlist Library, and Integration. A "Support Webpage" link is located at the bottom left of the interface.

Supported Investment Databases






Database

The Database List describes individual databases that have been installed on your machine or are available for Download.

Location: C:\ProgramData\Norgate Data\ [Change Location](#)

	Database List	Extent	State	Last Edition	Last Date
<input type="checkbox"/>	Cash Commodities	Subset	Active	Final	3/24/2021
<input type="checkbox"/>	Economic	Subset	Active	Final	3/24/2021
<input type="checkbox"/>	Forex Spot	Subset	Active	Single	3/24/2021
<input type="checkbox"/>	Futures Continuous	Subset	Active	Final	3/24/2021
<input type="checkbox"/>	US Equities	2 years (trial)	Active	Final	3/24/2021
<input type="checkbox"/>	US Equities Delisted	2 years (trial)	Active	Final	3/24/2021
<input type="checkbox"/>	US Indices	2 years (trial)	Active	Interim 4	3/24/2021
<input type="checkbox"/>	World Indices	Full	Active	Final	3/24/2021

 Download  Pause/Unpause  Cleanup

Refresh data pushed to clients daily

Schedule
 Indicative times at which data updates can be expected for your installed databases.
 To filter the Schedule by Database, click the filter icon at the top right corner of the corresponding header cell.

Time	Database	Type	Key Contents
3/25/2021 3:00:00 AM	World Indices	Initial	S&P/ASX 200, KOSPI 200, Nikkei 225 etc
3/25/2021 4:00:00 AM	Futures Continuous	Initial	ASX Futures (no open interest)
3/25/2021 4:00:00 AM	US Indices	Final	Any same-day corrections
3/25/2021 4:30:00 AM	Economic	Initial	S&P/ASX Fixed Interest Indices
3/25/2021 6:00:00 AM	World Indices	Interim 2	Hang Seng, Shanghai Composite, Straits Times etc
3/25/2021 7:30:00 AM	World Indices	Interim 3	BSE Sensex, CNX Nifty
3/25/2021 2:00:00 PM	World Indices	Interim 4	CAC, DAX, FTSE 100 etc
3/25/2021 4:30:00 PM	US Indices	Initial	16 benchmark indices (DJIA, Nasdaq 100, S&P 500 etc.)
3/25/2021 5:00:00 PM	US Equities	Initial	Prices as of market close for major exchanges
3/25/2021 5:30:00 PM	World Indices	Interim 5	S&P 500, S&P/TSX 60, Mexico IPC etc
3/25/2021 5:40:00 PM	Cash Commodities	Initial	London precious metals
3/25/2021 5:40:00 PM	Futures Continuous	Interim 2	ASX (includes open interest), Korea, Hong Kong, Sing...
3/25/2021 5:55:00 PM	Forex Spot	Single	Prices as of 5.00 pm NY time for the global trading day
3/25/2021 6:00:00 PM	US Equities	Interim 2	Prices as of market close for OTC securities
3/25/2021 6:30:00 PM	Economic	Final	CBOE US Treasury Yields
3/25/2021 6:30:00 PM	World Indices	Final	Bloomberg Commodity Indices, S&P Global 100 etc
3/25/2021 7:15:00 PM	US Indices	Interim 2	Most broad market indices
3/25/2021 7:25:00 PM	Futures Continuous	Interim 3	CBOE, CME Group, Eurex, Euronext (LIFFE) - Financi...
3/25/2021 8:25:00 PM	Cash Commodities	Interim 2	LME cash and forwards
3/25/2021 8:30:00 PM	US Indices	Interim 3	S&P Sector & Industry indices
3/25/2021 8:40:00 PM	Cash Commodities	Final	Oil and Gas prices
3/25/2021 8:40:00 PM	Futures Continuous	Final	Final prices for the global day
3/25/2021 10:00:00 PM	US Equities	Interim 3	Final prices for major exchanges
3/25/2021 10:30:00 PM	US Indices	Interim 4	Late-arriving Total Return indices

Rich index lists of traded symbols

\$DJC	Dow Jones Composite Average
\$DJCTR	Dow Jones Composite Average Total Return
\$DJDVP	Dow Jones US Select Dividend Index
\$DJDVY	Dow Jones US Select Dividend Total Return In...
\$DJECOM	Dow Jones Internet Commerce Index
\$DJGSP	Dow Jones Precious Metals Index
\$DJI	Dow Jones Industrial Average
\$DJINET	Dow Jones Internet Composite Index
\$DJISVC	Dow Jones Internet Services Index
\$DJIT	Dow Jones Industrial Average (Theoretical)
\$DJITR	Dow Jones Industrial Average Total Return
\$DJSM	Dow Jones Select Micro-Cap Index
\$DJT	Dow Jones Transportation Average
\$DJTTR	Dow Jones Transportation Average Total Return
\$DJU	Dow Jones Utility Average
\$DJUS	Dow Jones U.S. Index
\$DJUSDIV	Dow Jones US Dividend 100 Index
\$DJUSGL	DJ US Large-Cap Growth Index
\$DJUSGM	DJ US Mid-Cap Growth Index
\$DJUSGS	DJ US Small-Cap Growth Index
\$DJUSL	Dow Jones U.S. Large-Cap Index
\$DJUSLW	Dow Jones U.S. Low-Cap Index
\$DJUSM	Dow Jones U.S. Mid-Cap Index
\$DJUSS	Dow Jones U.S. Small-Cap Index
\$DJUSTP	Dow Jones U.S. Top-Cap Index
\$DJUSVL	DJ US Large-Cap Value Index
\$DJUSVM	DJ US Mid-Cap Value Index
\$DJUSVS	DJ US Small-Cap Value Index
\$DJUTR	Dow Jones Utility Average Total Return

\$RLG	Russell 1000 Growth Index
\$RLV	Russell 1000 Value Index
\$RMC	Russell Midcap Index
\$RMCTR	Russell Midcap Total Return Index
\$RMEMC	Russell Midcap Equal Weight Index
\$RMEM...	Russell Midcap Equal Weight Total Return Index
\$RMV	Russell Midcap Value Index
\$RT200	Russell Top 200 Index
\$RT200...	Russell Top 200 Total Return Index
\$RUA	Russell 3000 Index
\$RUATR	Russell 3000 Total Return Index
\$RUFUS...	Russell RAFI US Large Company Total Return ...
\$RUFUS...	Russell RAFI US Large Company Index
\$RUFUS...	Russell RAFI US Small Company Total Return I...
\$RUFUS...	Russell RAFI US Small Company Index
\$RUFUS...	Russell RAFI US Total Return Index
\$RUFUS...	Russell RAFI US Index
\$RUI	Russell 1000 Index
\$RUITR	Russell 1000 Total Return Index
\$RUJ	Russell 2000 Value Index
\$RUMIC	Russell Microcap Index
\$RUMIC...	Russell Microcap Total Return Index
\$RUO	Russell 2000 Growth Index
\$RUT	Russell 2000 Index
\$RUTTR	Russell 2000 Total Return Index
\$RVX	Cboe Russell 2000 Volatility Index

Popular Indexes with their indicators

Sym...	Name
#NDX%...	Nasdaq-100 % Stocks above MA100
#NDX%...	Nasdaq-100 % Stocks above MA150
#NDX%...	Nasdaq-100 % Stocks above MA20
#NDX%...	Nasdaq-100 % Stocks above MA200
#NDX%...	Nasdaq-100 % Stocks above MA50
#NDX13...	Nasdaq-100 13W New Highs
#NDX13...	Nasdaq-100 Cumulative 13W New Highs-New ...
#NDX13...	Nasdaq-100 13W New Lows
#NDX26...	Nasdaq-100 26W New Highs
#NDX26...	Nasdaq-100 Cumulative 26W New Highs-New ...
#NDX26...	Nasdaq-100 26W New Lows
#NDX4...	Nasdaq-100 4W New Highs
#NDX4...	Nasdaq-100 Cumulative 4W New Highs-New L...
#NDX4...	Nasdaq-100 4W New Lows
#NDX52...	Nasdaq-100 52W New Highs
#NDX52...	Nasdaq-100 Cumulative 52W New Highs-New ...
#NDX52...	Nasdaq-100 52W New Lows
#NDXAD	Nasdaq-100 Cumulative Advance-Decline Line
#NDXA...	Nasdaq-100 Advance/Decline Ratio
#NDXADV	Nasdaq-100 Advancing Issues
#NDXA...	Nasdaq-100 Avg Bollinger Band %B
#NDXA...	Nasdaq-100 Avg Williams %R
#NDXB...	Nasdaq-100 Cumulative Bollinger Band %B Line
#NDXC...	Nasdaq-100 Coppock Indicator
#NDXDEC	Nasdaq-100 Declining Issues
#NDXIT...	Nasdaq-100 Intermediate-Term Breadth Mome...
#NDXIT...	Nasdaq-100 Intermediate-Term Volume Momen...
#NDXM...	Nasdaq-100 McClellan Oscillator
#NDXM...	Nasdaq-100 McClellan Volume Oscillator
#NDXM...	Nasdaq-100 McClellan Summation
#NDXS...	Nasdaq-100 Swenlin Trading Oscillator
#NDXT...	Nasdaq-100 Ams Index
#NDXU...	Nasdaq-100 Unchanged Issues
#NDXW...	Nasdaq-100 Cumulative Williams %R Line
#NDXZ...	Nasdaq-100 Zweig Breadth Thrust

16 Index histories to 1990 or 1950

Watchlist Library
Use the Library to create and manage Watchlists that can be accessed by integrated applications.

4.1.6.69

Search

Watchlist Name	Type	Author
Dow Jones Industrial Average Current & Past	Dynamic	Norgate
Dow Jones Industrial Average	Dynamic	Norgate
NASDAQ 100 Current & Past	Dynamic	Norgate
NASDAQ 100	Dynamic	Norgate
Nasdaq Biotechnology Current & Past	Dynamic	Norgate
Nasdaq Biotechnology	Dynamic	Norgate
Nasdaq Next Generation 100 Current & Past	Dynamic	Norgate
Nasdaq Next Generation 100	Dynamic	Norgate
Nasdaq Q-50 Current & Past	Dynamic	Norgate
Nasdaq Q-50	Dynamic	Norgate
RodsN100 Current&Past	Dynamic	Me
RodsN100	Dynamic	Me
Russell 1000 Current & Past	Dynamic	Norgate
Russell 1000	Dynamic	Norgate
Russell 2000 Current & Past	Dynamic	Norgate
Russell 2000	Dynamic	Norgate
Russell 3000 Current & Past	Dynamic	Norgate
Russell 3000	Dynamic	Norgate
Russell Micro Cap Current & Past	Dynamic	Norgate
Russell Micro Cap	Dynamic	Norgate

Create Dynamic Modify Create Static

Clone Import Rename Delete

At reasonable rates

Package Comparison	Silver	Gold	Platinum	Diamond
All currently listed securities	✓	✓	✓	✓
History extent for currently-listed	Last 10 years	Last 20 years	Back to 1990	Back to 1950
US Indices	✓	✓	✓	✓
Current index constituents	✓	✓	✓	✓
World Indices	✓	✓	✓	✓
Extras		✓	✓	✓
Current Fundamentals		✓	✓	✓
Delisted Securities			Back to 1990	Back to 1950
OTC (previously listed)			✓	✓
Historical index constituents			✓	✓
6-month subscription (USD)	\$148.50	\$198.00	\$346.50	\$433.13
12-month subscription (USD)	\$270.00	\$360.00	\$630.00	\$787.50

Eliminates Statistical Survivorship Bias

- Recall the story of the WWII Columbia U. statistician Abraham Wald who observed bullet hole hit rates in returning aircraft. He concluded, opposite to the military observers, to increase armor on areas with low hit rates because there were no returning survivors to enumerate those hits...valid data was unobservable.
- The conceptual error was to mistake the skewed distribution statistics of the survivors for the distribution representative of the whole population.
- It's not profound that decisions made from faulty statistics are likely to be in error. But the root cause for statistical bias can be subtle.

Population skew over N100 History

- The N100 first appeared in 1985. In 36 years 487 different companies have been members, for annual turnover of 13%.
- Only 6 current members survive from the original 100. Four continuously, [AAPL, COST, INTC, PCAR] two have been in and out [KLA & MU].
- Two effects of the sample changes can be imagined:
 - One is the use of the Index itself as a metric for the whole population to make long/short investment decisions. Low performers have been continuously replaced by high flyers to skew the buy and hold cagr higher than the S&P500.
 - The second is use of individual index constituents as the universe for selecting companies to buy just before they're ejected.

Dow-30 Population Turnover

- The DJI appeared in 1896 and has had 57 changes in 125 years.
 - 12 member names in 1896
 - 20 member names in 1916
 - 30 member names since 1928
- 12 Survivors '28 to '85
- 7 Survivors '85 to '20 vs 6 for N100
- August '20 XOM, PFE, RTX replaced by CRM, HON, AMGN
- A 1 yr history scan might choose CRM to buy when it has no valid recent history in the DJI. Nor do HON or AMGN.
- So we need both accurate ensemble distributions as well as individual constituent names depending on the decision model

Two Norgate Data Files for each Index

- “Current & Past” file adds new members but does not clear former members, so a cumulative list.
- “Current” is daily record of names added and deleted over time.
- Comparing the two Pandas DataFrames enables construction of a sparse Incidence Matrix of names vs EndOfMonth dates with X for members to include in regression metrics and blanks otherwise.
- Dropped symbols include the month deleted,
eg CELG-201911

Typical Data Frames: 3 Names in N100

[504 rows x 8 columns] <_io.TextIOWrapper name='log.txt' mode='w' encoding='cp1252'>

TEAM	Open	High	Low	Close	Volume	Turnover	Unadjusted Close	Dividend
Date								
2019-03-21	112.339996	115.879997	112.099998	115.500000	1098204.0	126073272.0	115.500000	0.0
2019-03-22	114.690002	115.053802	109.730003	109.830002	1433213.0	159819152.0	109.830002	0.0
2019-03-25	109.330002	110.389999	107.900002	109.860001	890709.0	97458800.0	109.860001	0.0
2019-03-26	111.629997	112.949997	110.500000	111.550003	727757.0	81371168.0	111.550003	0.0
2019-03-27	111.400002	112.000000	105.200104	106.989998	2086836.0	223483856.0	106.989998	0.0
...
2021-03-15	228.149994	237.110001	225.949997	236.619995	1088384.0	252931296.0	236.619995	0.0
2021-03-16	237.350006	241.039993	233.179993	235.889999	1076847.0	255271424.0	235.889999	0.0
2021-03-17	233.729996	236.509995	226.100006	234.000000	799419.0	185262240.0	234.000000	0.0
2021-03-18	229.000000	229.000000	219.145004	219.279999	1492480.0	332152160.0	219.279999	0.0
2021-03-19	221.210007	222.255005	215.220001	219.089996	2251748.0	492306208.0	219.089996	0.0

[504 rows x 8 columns] <_io.TextIOWrapper name='log.txt' mode='w' encoding='cp1252'>

TMUS	Open	High	Low	Close	Volume	Turnover	Unadjusted Close	Dividend
Date								
2019-03-21	72.080002	72.739998	71.989998	72.260002	2329154.0	1.683405e+08	72.260002	0.0
2019-03-22	71.930000	72.470001	71.809998	71.900002	3265936.0	2.353848e+08	71.900002	0.0
2019-03-25	71.849998	72.410004	71.639999	72.309998	1972354.0	1.422491e+08	72.309998	0.0
2019-03-26	72.580002	73.360001	72.370003	73.339996	2857171.0	2.080926e+08	73.339996	0.0
2019-03-27	73.389999	73.790001	71.959999	72.239998	4989666.0	3.629767e+08	72.239998	0.0
...
2021-03-15	128.320007	128.570007	124.080002	125.629997	5601115.0	7.020785e+08	125.629997	0.0
2021-03-16	125.800003	128.809998	124.839996	127.779999	4433176.0	5.645308e+08	127.779999	0.0
2021-03-17	126.330002	128.020004	125.519997	127.300003	3471786.0	4.409554e+08	127.300003	0.0
2021-03-18	125.375000	126.540001	124.820000	124.910004	3835061.0	4.810973e+08	124.910004	0.0
2021-03-19	124.730003	125.709999	122.959999	124.190002	8848346.0	1.098143e+09	124.190002	0.0

[504 rows x 8 columns] <_io.TextIOWrapper name='log.txt' mode='w' encoding='cp1252'>

TSLA	Open	High	Low	Close	Volume	Turnover	Unadjusted Close	Dividend
Date								
2019-03-21	54.520000	55.290005	53.690002	54.803997	29735490.0	1.621320e+09	274.019989	0.0
2019-03-22	54.515999	54.559998	52.799999	52.906002	43728044.0	2.337052e+09	264.529999	0.0
2019-03-25	51.941998	52.635998	50.892002	52.084003	51075144.0	2.648295e+09	260.420013	0.0
2019-03-26	52.888000	54.052002	52.885998	53.553997	36754740.0	1.967162e+09	267.769989	0.0
2019-03-27	53.750000	55.074001	53.636761	54.966000	43895828.0	2.387728e+09	274.829987	0.0
...
2021-03-15	694.090027	713.179993	684.039978	707.940002	29423480.0	2.066442e+10	707.940002	0.0
2021-03-16	703.349976	707.919983	671.000000	676.880005	32195672.0	2.226548e+10	676.880005	0.0
2021-03-17	656.869995	703.729980	651.010010	701.809998	40372452.0	2.744836e+10	701.809998	0.0
2021-03-18	684.289978	689.229980	652.000000	653.159973	33369022.0	2.242003e+10	653.159973	0.0
2021-03-19	646.599976	657.229980	624.620117	654.869995	42893976.0	2.766345e+10	654.869995	0.0

Two Lists Reveal Member Changes

Dow Jones 30 Industrial Average

UNH	V	VZ	AAPL	AMGN	AXP	BA	CAT	CRM	CSCO	CVX	DD	DIS	DOW	GS	HD	HON	IBM	INTC	JNJ	JPM	KD	MCD	MMM	MRK	MSFT	NKE	PFE	PG	RTX	TRV
2019-03-21	1	1	1	0	1	1	1	0	1	1	1	1	0	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2019-03-22	1	1	1	0	1	1	1	0	1	1	1	1	0	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2019-03-25	1	1	1	0	1	1	1	0	1	1	1	1	0	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2019-03-26	1	1	1	0	1	1	1	0	1	1	1	1	0	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2019-03-27	1	1	1	0	1	1	1	0	1	1	1	1	0	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2019-03-28	1	1	1	0	1	1	1	0	1	1	1	1	0	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2020-08-21	1	1	1	0	1	1	1	0	1	1	0	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2020-08-24	1	1	1	0	1	1	1	0	1	1	0	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2020-08-25	1	1	1	0	1	1	1	0	1	1	0	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2020-08-26	1	1	1	0	1	1	1	0	1	1	0	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2020-08-27	1	1	1	0	1	1	1	0	1	1	0	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2020-08-28	1	1	1	0	1	1	1	0	1	1	0	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2020-08-31	1	1	1	0	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	0	1

Change List Step

S&P 100 CHANGELIST				
	Date	Add	Delete	
8	20190402	DOW		
9	20190403		HAL	
6	20191121		CELG-201911	
15	20191121	TMO		
13	20200403		RTN-202004	
2	20200406	AMT		
0	20200511		AGN-202005	
7	20200512	CRM		
4	20201106		BIIB	
5	20201109	BIIB		
12	20201221		OXY	
17	20201221	TSLA		
1	20210322		ALL	
10	20210322		KMI	
14	20210322		SLB	
3	20210322	AVGO		
11	20210322	LIN		
16	20210322	TMUS		

Latest Symbols step

	LATEST SYMBOLS																
	Dow Jones	NASDAQ 100	Nasdaq Biotech	Nasdaq NDX	Nasdaq Comp	Russell 1000	Russell 2000	Russell 3000	Russell MidCap	Russell MicroCap	S&P 100	S&P 500 D	S&P 500	S&P Comp	S&P MidCap	S&P SmallCap	Cap 600
A	0	0	0	0	0	1	0	1	0	1	0	0	1	1	0	0	
AA	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	
AAIC	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	
AAL	0	0	0	0	0	1	0	1	0	1	0	0	1	1	0	0	
AAME	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	
AAN	0	0	0	0	0	0	1	1	0	1	0	0	0	1	0	1	
AAOI	0	0	0	0	0	0	1	1	1	0	0	0	0	1	0	1	
AAON	0	0	0	0	0	0	1	1	0	0	0	0	0	1	0	1	
AAP	0	0	0	0	0	1	0	1	0	1	0	0	1	1	0	0	
AAPL	1	1	0	0	0	1	0	1	0	0	1	0	1	1	0	0	
AAT	0	0	0	0	0	0	1	1	0	0	0	0	0	1	0	1	
AAWW	0	0	0	0	0	0	1	1	0	0	0	0	0	1	0	1	
ABBV	0	0	0	0	0	1	0	1	0	0	1	1	1	1	0	0	
ABC	0	0	0	0	0	1	0	1	0	1	0	0	1	1	0	0	
ABCB	0	0	0	0	0	0	1	1	0	0	0	0	0	1	0	1	
ABEO	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	
ABG	0	0	0	0	0	0	1	1	0	0	0	0	0	1	0	1	
ABM	0	0	0	0	0	0	1	1	0	0	0	0	0	1	0	1	
ABMD	0	0	0	1	1	1	0	1	0	1	0	0	1	1	0	0	
ABR	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	
ABT	0	0	0	0	0	1	0	1	0	0	1	1	1	1	0	0	
ABTX	0	0	0	0	0	0	1	1	1	0	0	0	0	1	0	1	
ABUS	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	
AC	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	

Company Info Step

	COMPANY INFO				
	symbol	name			
0	A	Agilent Technologies Inc Common			
1	AA	Alcoa Corp Common			
2	AACH-202	AAC Holdings Inc Common			
3	AAIC	Arlington Asset Investment Corp Class A Common			
4	AAL	American Airlines Group Inc Common			
5	AAMC	Altisource Asset Management Corp Common			
6	AAME	Atlantic American Corp Common			
7	AAN	Aaron's Company Inc Common			
8	AAOI	Applied Optoelectronics Inc Common			
9	AAON	Aaon Inc Common			
10	AAP	Advance Auto Parts Inc Common			
11	AAPL	Apple Inc Common			
12	AAT	American Assets Trust Common			
13	AAWW	Atlas Air Worldwide Holdings Inc Common			
14	ABBV	Abbvie Inc Common			
15	ABC	Amerisourcebergen Corp Common			
16	ABCB	Ameris Bancorp Common			
17	ABEO	Abeona Therapeutics Inc Common			
18	ABG	Asbury Automotive Group Inc Common			
19	ABM	ABM Industries Inc Common			
20	ABMD	ABIOMED Inc Common			
21	ABR	Arbor Realty Trust Common			
22	ABT	Abbott Laboratories Common			
23	ABTX	Allegiance Bancshares Inc Common			
24	ABUS	Arbutus Biopharma Corp Common			
25	AC	Associated Capital Group Inc Class A Common			
26	ACA	Arcosa Inc Common			

Nasdaq100 Incidence Matrix Python to Excel

	Name	3/29/2019	4/30/2019	5/31/2019	6/28/2019	7/31/2019	8/30/2019	9/30/2019	10/31/2019	11/29/2019	12/31/2019	1/31/2020	2/28/2020
AAL	American Airlines Group Inc Common	X	X	X	X	X	X	X	X	X	X	X	X
AAPL	Apple Inc Common	X	X	X	X	X	X	X	X	X	X	X	X
ADBE	Adobe Inc Common	X	X	X	X	X	X	X	X	X	X	X	X
ADI	Analog Devices Inc Common	X	X	X	X	X	X	X	X	X	X	X	X
ADP	Automatic Data Processing Inc Common	X	X	X	X	X	X	X	X	X	X	X	X
ADSK	Autodesk Inc Common	X	X	X	X	X	X	X	X	X	X	X	X
AEP	American Electric Power Company Inc C												
ALGN	Align Technology Inc Common	X	X	X	X	X	X	X	X	X	X	X	X
ALXN	Alexion Pharmaceuticals Inc Common	X	X	X	X	X	X	X	X	X	X	X	X
AMAT	Applied Materials Inc Common	X	X	X	X	X	X	X	X	X	X	X	X
AMD	Advanced Micro Devices Inc Common	X	X	X	X	X	X	X	X	X	X	X	X
AMGN	Amgen Inc Common	X	X	X	X	X	X	X	X	X	X	X	X
AMZN	Amazon.com Inc Common	X	X	X	X	X	X	X	X	X	X	X	X
ANSS	ANSYS Inc Common										X	X	X
ASML	ASML Holding NV ADR	X	X	X	X	X	X	X	X	X	X	X	X
ATVI	Activision Blizzard Inc Common	X	X	X	X	X	X	X	X	X	X	X	X
AVGO	Broadcom Inc Common	X	X	X	X	X	X	X	X	X	X	X	X
BIDU	Baidu Inc ADR	X	X	X	X	X	X	X	X	X	X	X	X
BIIB	Biogen Inc Common	X	X	X	X	X	X	X	X	X	X	X	X
BKNG	Booking Holdings Inc Common	X	X	X	X	X	X	X	X	X	X	X	X
BMRN	Biomarin Pharmaceutical Inc Common	X	X	X	X	X	X	X	X	X	X	X	X
CDNS	Cadence Design Systems Inc Common	X	X	X	X	X	X	X	X	X	X	X	X
CDW	CDW Corp Common										X	X	X
CELG-201911	Celgene Corp Common	X	X	X	X	X	X	X	X				
CERN	Cerner Corp Common	X	X	X	X	X	X	X	X	X	X	X	X
CHKP	Check Point Software Technologies Ltd	X	X	X	X	X	X	X	X	X	X	X	X
CHTR	Charter Communications Inc Class A Cor	X	X	X	X	X	X	X	X	X	X	X	X
CMCSA	Comcast Corp Class A Common	X	X	X	X	X	X	X	X	X	X	X	X
COST	Costco Wholesale Corp Common	X	X	X	X	X	X	X	X	X	X	X	X
CPRT	Copart Inc Common										X	X	X
CSCO	Cisco Systems Inc Common	X	X	X	X	X	X	X	X	X	X	X	X
CSGP	CoStar Group Inc Common										X	X	X
CSX	CSX Corp Common	X	X	X	X	X	X	X	X	X	X	X	X
CTAS	Cintas Corp Common	X	X	X	X	X	X	X	X	X	X	X	X
CTSH	Cognizant Technology Solutions Corp Cl	X	X	X	X	X	X	X	X	X	X	X	X
CTXS	Citrix Systems Inc Common	X	X	X	X	X	X	X	X	X	X	X	X
DLTR	Dollar Tree Inc Common	X	X	X	X	X	X	X	X	X	X	X	X
DOCU	DocuSign Inc Common												
DXCM	Dexcom Inc Common												
EA	Electronic Arts Inc Common	X	X	X	X	X	X	X	X	X	X	X	X

















Typical Pandas Data Frames returned

- All 16 Indexes are processed in a 5 minute run time on the local machine's Norgate Data files.

Dow Jones Industrial Average S&P 100
Nasdaq 100 S&P 500 Dividend Aristocrats
Nasdaq Biotechnology S&P 500
Nasdaq Next Generation S&P Composite 1500
Nasdaq Q-50 S&P Mid Cap 400
Russell 1000 S&P Small Cap 600
Russell 2000
Russell 3000
Russell Micro Cap
Russell Mid Cap

Pandas to Excel for 16 Indexes

- In Don's preferred data format...

 Dow Jones Industrial Average.csv	3/27/2021 11:36 AM	Microsoft Excel C...	3 KB
 NASDAQ 100.csv	3/27/2021 11:36 AM	Microsoft Excel C...	11 KB
 Nasdaq Biotechnology.csv	3/27/2021 11:36 AM	Microsoft Excel C...	29 KB
 Nasdaq Next Generation 100.csv	3/27/2021 11:36 AM	Microsoft Excel C...	12 KB
 Nasdaq Q-50.csv	3/27/2021 11:36 AM	Microsoft Excel C...	9 KB
 Russell 1000.csv	3/27/2021 11:36 AM	Microsoft Excel C...	92 KB
 Russell 2000.csv	3/27/2021 11:36 AM	Microsoft Excel C...	212 KB
 Russell 3000.csv	3/27/2021 11:36 AM	Microsoft Excel C...	293 KB
 Russell Micro Cap.csv	3/27/2021 11:36 AM	Microsoft Excel C...	162 KB
 Russell Mid Cap.csv	3/27/2021 11:36 AM	Microsoft Excel C...	78 KB
 S&P 100.csv	3/27/2021 11:36 AM	Microsoft Excel C...	9 KB
 S&P 500 Dividend Aristocrats.csv	3/27/2021 11:36 AM	Microsoft Excel C...	6 KB
 S&P 500.csv	3/27/2021 11:36 AM	Microsoft Excel C...	44 KB
 S&P Composite 1500.csv	3/27/2021 11:36 AM	Microsoft Excel C...	134 KB
 S&P MidCap 400.csv	3/27/2021 11:36 AM	Microsoft Excel C...	41 KB
 S&P SmallCap 600.csv	3/27/2021 11:36 AM	Microsoft Excel C...	61 KB

You'll have access to NorgateData.com

- A shared Dropbox access with Rod's PC enables you to pass and view both target.py code files and their output to target.log
- A batch utility executes your code with the Norgate Data library on Rod's PC and passes back the result.
- Path is Dropbox > _Rod_Bill > NorgateEval
- After dropping your code through Dropbox, just text or e-mail Rod to push the execute button and the rest is automatic.

Project Current Status

- Files created in Don's formats:
 - Incidence Matrices (Tickers over time) for 16 indexes
 - Current constituents for each of 16 indexes
 - Company names for union of tickers and indexes
- Cross-checked 2 year ticker changes with Wikipedia
 - NASDAQ 100 matches
 - DJIA matches
 - S&P 100 matches
- Norgate Data explained all discrepancies
 - Corporate name changes while members
 - Data padding needed for symbols during trading halts
 - NaN prints flag inconsistent queries
 - Excellent response and thorough replies to our questions

Zipline Backtester follow-on Project

- **Zipline** is an open-source Pythonic algorithmic trading library and backtest engine originated by Quantopian [now defunct].
- Unique ability to backtest portfolios: most retail backtesters only handle single names at a time.
- Norgatedata integrates their historic data with Zipline for simplified creation of Survivorship bias-free bundles.
- Includes index membership and dividend events.
- Runs only on Wintel PC with Norgate Data Updater.