

```
In [32]: import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
from numpy import cov
```

```
In [2]: a=pd.read_csv("insta.csv")
a
```

Out[2]:

	Impressions	From Home	From Hashtags	From Explore	From Other	Saves	Comments	Shares	Likes	Profile Visits	Followers
0	3920	2586	1028	619	56	98	9	5	162	35	1
1	5394	2727	1838	1174	78	194	7	14	224	48	1
2	4021	2085	1188	0	533	41	11	1	131	62	1
3	4528	2700	621	932	73	172	10	7	213	23	1
4	2518	1704	255	279	37	96	5	4	123	8	1
...
114	13700	5185	3041	5352	77	573	2	38	373	73	1
115	5731	1923	1368	2266	65	135	4	1	148	20	1
116	4139	1133	1538	1367	33	36	0	1	92	34	1

	Impressions	From Home	From Hashtags	From Explore	From Other	Saves	Comments	Shares	Likes	Profile Visits	Followers
117	32695	11815	3147	17414	170	1095	2	75	549	148	2
118	36919	13473	4176	16444	2547	653	5	26	443	611	2

119 rows × 13 columns

Head

In [5]:

```
a.head(50)
```

Out[5]:

	Impressions	From Home	From Hashtags	From Explore	From Other	Saves	Comments	Shares	Likes	Profile Visits	Followers
0	3920	2586	1028	619	56	98	9	5	162	35	1
1	5394	2727	1838	1174	78	194	7	14	224	48	10
2	4021	2085	1188	0	533	41	11	1	131	62	1
3	4528	2700	621	932	73	172	10	7	213	23	1
4	2518	1704	255	279	37	96	5	4	123	8	1
5	3884	2046	1214	329	43	74	7	10	144	9	1
6	2621	1543	599	333	25	22	5	1	76	26	1

	Impressions	From Home	From Hashtags	From Explore	From Other	Saves	Comments	Shares	Likes	Profile Visits	Follow
7	3541	2071	628	500	60	135	4	9	124	12	0
8	3749	2384	857	248	49	155	6	8	159	36	4
9	4115	2609	1104	178	46	122	6	3	191	31	0
10	2218	1597	411	162	15	28	6	3	81	29	4
11	3234	2414	476	185	75	122	8	14	151	15	0
12	4344	2168	1274	673	40	119	7	11	162	8	0
13	3216	2524	212	201	223	121	5	5	142	20	4
14	9453	2525	5799	208	794	100	6	10	294	181	40
15	5055	2017	2351	298	108	101	7	11	159	17	0
16	4002	3401	278	128	73	111	17	18	205	16	0
17	3169	1979	707	341	32	106	8	1	121	21	0
18	6168	2177	3450	153	296	82	6	6	151	77	30
19	2407	1338	655	276	39	40	8	20	72	10	0

	Impressions	From Home	From Hashtags	From Explore	From Other	Saves	Comments	Shares	Likes	Profile Visits	Follow
20	2064	1304	362	249	37	49	4	5	76	9	0
21	3973	2415	745	676	18	72	3	4	91	11	2
22	7281	3065	1254	2081	748	167	7	9	195	144	100
23	3052	2608	201	121	87	63	5	14	129	14	0
24	4628	2406	1260	861	26	144	8	3	160	10	0
25	4082	2195	1248	541	36	135	11	5	175	19	0
26	5394	2275	2975	45	65	61	19	6	147	69	0
27	2766	2541	116	51	9	40	10	4	114	11	0
28	3924	2244	1278	326	34	139	11	3	151	19	0
29	3015	2034	771	115	41	52	11	4	92	9	0
30	6666	1977	4604	48	23	84	9	3	214	57	20
31	3854	1975	1721	60	43	81	11	15	150	13	0
32	4355	2879	139	1239	32	79	8	4	122	11	0

	Impressions	From Home	From Hashtags	From Explore	From Other	Saves	Comments	Shares	Likes	Profile Visits	Followers
33	4343	2278	1460	521	27	105	6	3	152	24	1
34	6108	2679	2803	562	26	90	7	8	196	81	20
35	2523	1659	796	29	21	34	6	0	86	4	1
36	2327	1774	435	59	35	45	3	3	85	7	1
37	3990	2123	1482	332	36	98	4	11	156	14	4
38	2191	1308	809	45	18	35	2	1	72	18	0
39	1941	1466	411	37	17	49	6	3	82	8	1
40	16062	3144	11817	564	468	252	6	20	416	330	90
41	4998	2331	2195	318	75	167	4	13	180	21	1
42	4289	2746	869	589	24	111	8	4	150	19	11
43	3880	2207	1109	199	317	90	4	2	127	32	10
44	3786	2632	616	468	25	144	9	5	167	19	4
45	4298	3050	969	181	64	263	6	19	225	21	4

	Impressions	From Home	From Hashtags	From Explore	From Other	Saves	Comments	Shares	Likes	Profile Visits	Follow
46	3630	1747	1693	72	86	137	4	10	137	14	
47	2826	2108	583	76	34	67	3	3	114	30	
48	7407	2782	1938	2237	226	288	5	15	263	39	11
49	10386	4137	3551	2355	205	668	8	41	328	42	31

Tail

In [6]:

```
a.tail(50)
```

Out[6]:

	Impressions	From Home	From Hashtags	From Explore	From Other	Saves	Comments	Shares	Likes	Profile Visits	Follow
69	3601	1570	1518	174	167	51	0	3	94	48	
70	3480	1975	1019	245	72	104	1	7	114	16	
71	3525	1323	1699	182	292	33	5	0	96	26	
72	3606	2509	183	446	300	174	5	15	138	17	
73	5542	1782	3212	213	168	46	7	6	122	52	
74	6559	2225	4041	158	72	179	8	6	257	22	

	Impressions	From Home	From Hashtags	From Explore	From Other	Saves	Comments	Shares	Likes	Profile Visits	Followers
75	3623	1179	1527	157	655	34	3	0	95	41	
76	10493	2106	7761	248	238	99	9	1	244	155	
77	4446	2454	1590	192	69	174	6	11	190	12	
78	2957	1926	349	217	369	70	4	2	118	22	
79	5538	2597	2376	412	63	149	6	6	178	20	
80	4681	2252	1674	360	308	207	7	12	170	23	
81	5273	2673	2003	433	114	318	9	22	250	25	
82	5055	2017	2351	298	108	101	7	11	159	17	
83	4002	3401	278	128	73	111	17	18	205	16	
84	3169	1979	707	341	32	106	8	1	121	21	
85	6168	2177	3450	153	296	82	6	6	151	77	

	Impressions	From Home	From Hashtags	From Explore	From Other	Saves	Comments	Shares	Likes	Profile Visits	Followers
86	2407	1338	655	276	39	40	8	20	72	10	
87	3630	1747	1693	72	86	137	4	10	137	14	
88	2826	2108	583	76	34	67	3	3	114	30	
89	7407	2782	1938	2237	226	288	5	15	263	39	
90	10386	4137	3551	2355	205	668	8	41	328	42	
91	2998	1945	794	84	139	42	4	1	126	31	
92	3052	2608	201	121	87	63	5	14	129	14	
93	4628	2406	1260	861	26	144	8	3	160	10	
94	4082	2195	1248	541	36	135	11	5	175	19	
95	5394	2275	2975	45	65	61	19	6	147	69	
96	2766	2541	116	51	9	40	10	4	114	11	

	Impressions	From Home	From Hashtags	From Explore	From Other	Saves	Comments	Shares	Likes	Profile Visits	Followers
97	3924	2244	1278	326	34	139	11	3	151	19	
98	3015	2034	771	115	41	52	11	4	92	9	
99	5409	2643	2006	1068	230	393	10	27	275	38	
100	5323	2000	2053	988	74	152	6	13	192	42	
101	8001	2261	5055	300	172	83	8	7	203	92	
102	4150	1807	1085	463	792	74	4	2	145	75	
103	4609	2032	911	857	532	94	1	12	168	21	
104	6348	2517	2660	737	154	188	4	15	194	26	
105	11068	2099	2986	5634	122	214	7	8	250	39	
106	7231	1855	4156	703	309	73	8	3	171	74	
107	17396	1817	10008	5192	251	285	7	7	416	467	20
108	6814	2816	2769	900	128	469	8	22	249	24	

	Impressions	From Home	From Hashtags	From Explore	From Other	Saves	Comments	Shares	Likes	Profile Visits	Followers
109	17713	2449	2141	12389	561	504	3	23	308	70	1
110	5563	3813	362	1135	76	149	5	8	163	22	1
111	4842	1658	694	2036	310	55	6	4	86	46	1
112	11149	4439	747	5762	53	273	4	13	210	61	1
113	10206	2371	1624	6000	117	182	10	17	172	237	10
114	13700	5185	3041	5352	77	573	2	38	373	73	1
115	5731	1923	1368	2266	65	135	4	1	148	20	1
116	4139	1133	1538	1367	33	36	0	1	92	34	1
117	32695	11815	3147	17414	170	1095	2	75	549	148	2
118	36919	13473	4176	16444	2547	653	5	26	443	611	20

Describe

Out[7]:

	Impressions	From Home	From Hashtags	From Explore	From Other	Saves	Comments
count	119.000000	119.000000	119.000000	119.000000	119.000000	119.000000	119.000000
mean	5703.991597	2475.789916	1887.512605	1078.100840	171.092437	153.310924	6.663866
std	4843.780105	1489.386348	1884.361443	2613.026132	289.431031	156.317731	3.544576
min	1941.000000	1133.000000	116.000000	0.000000	9.000000	22.000000	0.000000
25%	3467.000000	1945.000000	726.000000	157.500000	38.000000	65.000000	4.000000
50%	4289.000000	2207.000000	1278.000000	326.000000	74.000000	109.000000	6.000000
75%	6138.000000	2602.500000	2363.500000	689.500000	196.000000	169.000000	8.000000
max	36919.000000	13473.000000	11817.000000	17414.000000	2547.000000	1095.000000	19.000000

Shape

In [8]:

a.shape

Out[8]: (119, 13)

Size

In [9]:

a.size

Out[9]: 1547

isna

In [10]:

pd.isna(a)

Out[10]:

	Impressions	From Home	From Hashtags	From Explore	From Other	Saves	Comments	Shares	Likes	Profile Visits	Followers
0	False	False	False	False	False	False	False	False	False	False	False
1	False	False	False	False	False	False	False	False	False	False	False
2	False	False	False	False	False	False	False	False	False	False	False
3	False	False	False	False	False	False	False	False	False	False	False
4	False	False	False	False	False	False	False	False	False	False	False
...
114	False	False	False	False	False	False	False	False	False	False	False
115	False	False	False	False	False	False	False	False	False	False	False
116	False	False	False	False	False	False	False	False	False	False	False

	Impressions	From Home	From Hashtags	From Explore	From Other	Saves	Comments	Shares	Likes	Profile Visits	Followers
117	False	False	False	False	False	False	False	False	False	False	False
118	False	False	False	False	False	False	False	False	False	False	False

119 rows × 13 columns

fillna

In [11]:

```
a.fillna(10)
```

Out[11]:

	Impressions	From Home	From Hashtags	From Explore	From Other	Saves	Comments	Shares	Likes	Profile Visits	Followers
0	3920	2586	1028	619	56	98	9	5	162	35	
1	5394	2727	1838	1174	78	194	7	14	224	48	
2	4021	2085	1188	0	533	41	11	1	131	62	
3	4528	2700	621	932	73	172	10	7	213	23	
4	2518	1704	255	279	37	96	5	4	123	8	
...
114	13700	5185	3041	5352	77	573	2	38	373	73	
115	5731	1923	1368	2266	65	135	4	1	148	20	

	Impressions	From Home	From Hashtags	From Explore	From Other	Saves	Comments	Shares	Likes	Profile Visits	Followers
116	4139	1133	1538	1367	33	36		0	1	92	34
117	32695	11815	3147	17414	170	1095		2	75	549	148
118	36919	13473	4176	16444	2547	653		5	26	443	611

119 rows × 13 columns

dropna

In [13]:

a.dropna()

Out[13]:

	Impressions	From Home	From Hashtags	From Explore	From Other	Saves	Comments	Shares	Likes	Profile Visits	Followers
0	3920	2586	1028	619	56	98		9	5	162	35
1	5394	2727	1838	1174	78	194		7	14	224	48
2	4021	2085	1188	0	533	41		11	1	131	62
3	4528	2700	621	932	73	172		10	7	213	23
4	2518	1704	255	279	37	96		5	4	123	8

	Impressions	From Home	From Hashtags	From Explore	From Other	Saves	Comments	Shares	Likes	Profile Visits	Followers
...
114	13700	5185	3041	5352	77	573	2	38	373	73	1
115	5731	1923	1368	2266	65	135	4	1	148	20	1
116	4139	1133	1538	1367	33	36	0	1	92	34	1
117	32695	11815	3147	17414	170	1095	2	75	549	148	2
118	36919	13473	4176	16444	2547	653	5	26	443	611	2

119 rows × 13 columns

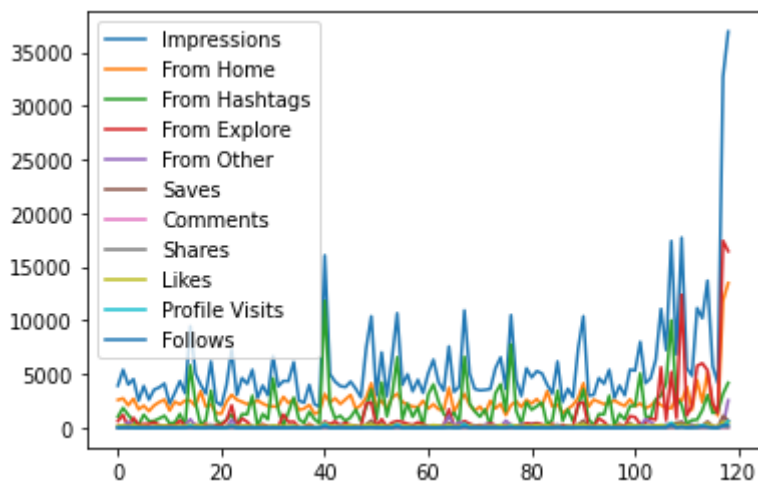
Plots

Line plot

In [17]:

a.plot.line()

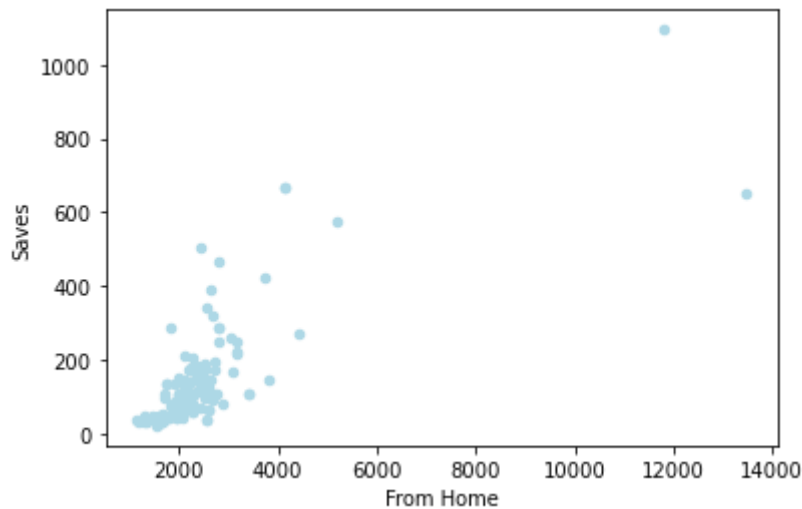
Out[17]: <AxesSubplot:>



Scatter Plot

```
In [18]: a.plot.scatter(x="From Home",y="Saves",color="lightblue")
```

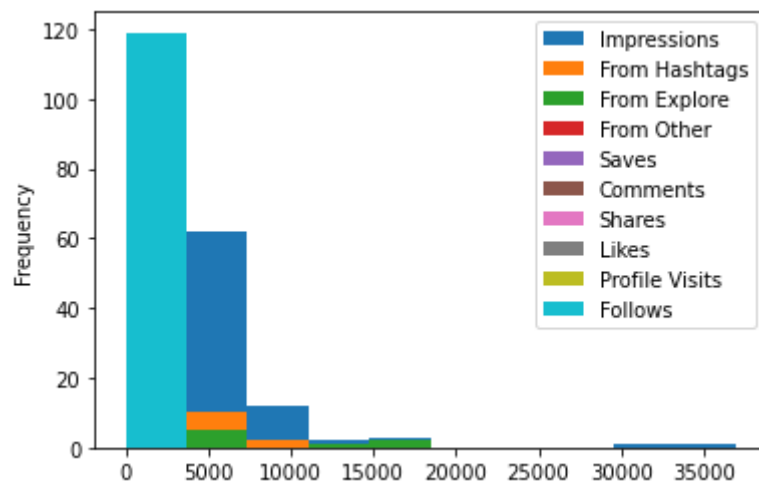
```
Out[18]: <AxesSubplot:xlabel='From Home', ylabel='Saves'>
```



Histogram

```
In [19]: a.plot.hist(x="From Home")
```

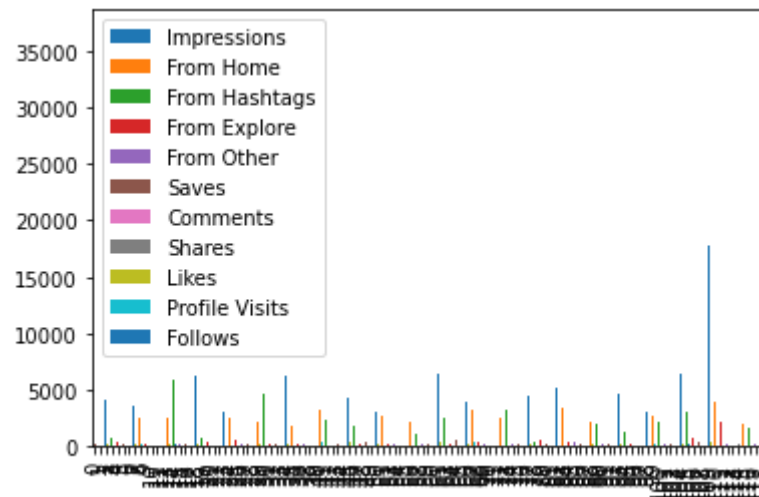
```
Out[19]: <AxesSubplot:ylabel='Frequency'>
```



Bar Chart

```
In [20]: a.plot.bar()
```

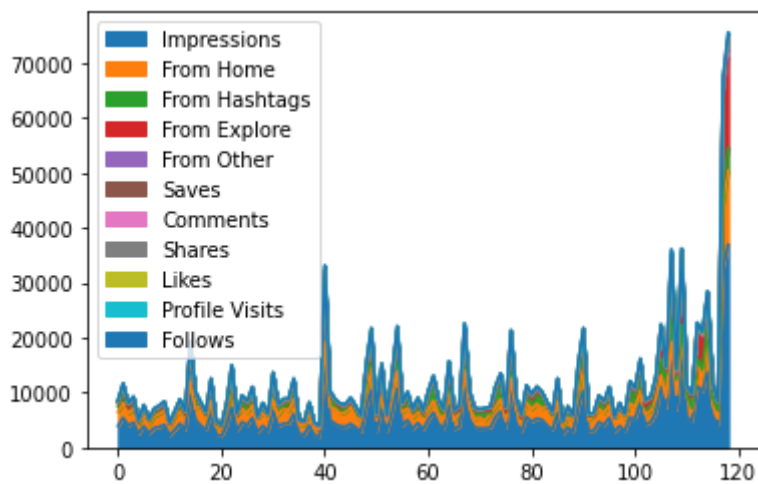
```
Out[20]: <AxesSubplot:>
```



Area Plot

```
In [21]: a.plot.area()
```

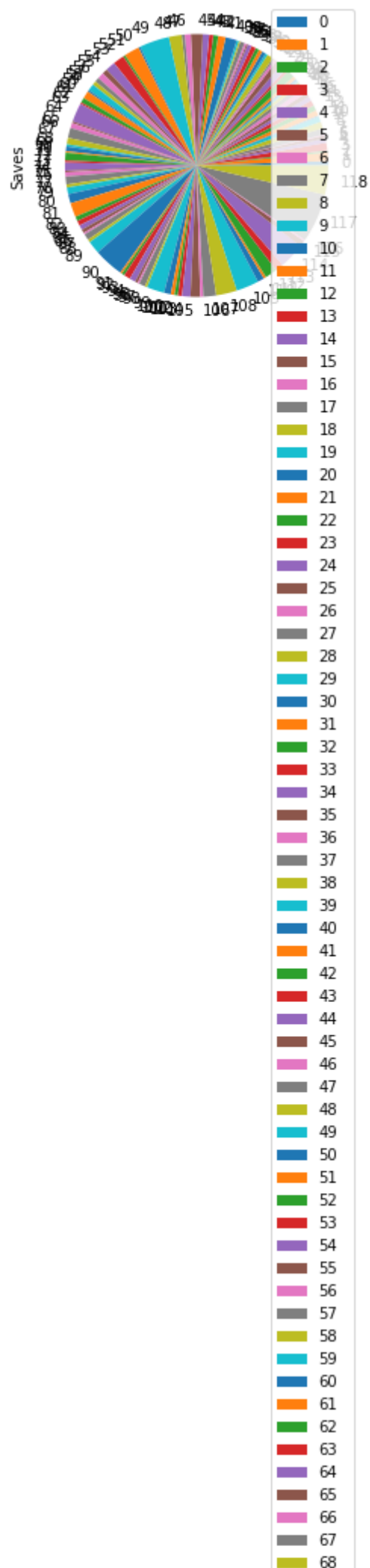
```
Out[21]: <AxesSubplot:>
```

Pie Chart

```
In [22]: a.plot.pie(y="Saves")
```

```
Out[22]: <AxesSubplot:ylabel='Saves'>
```



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	114
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	116
	117
	118

Sum

In [24]:

print(a.sum())

Impressions	678775
From Home	294619
From Hashtags	224614
From Explore	128294
From Other	20360
Saves	18244
Comments	793
Shares	1114
Likes	20680
Profile Visits	6024

Follows2470

CaptionHere are some of the most important data visua...

Hashtags#finance #money #business #investing #investme...

dtype: object

Mean

In [25]:

print(a.mean())

Impressions5703.991597

From Home2475.789916

From Hashtags1887.512605

From Explore1078.100840

From Other171.092437

Saves153.310924

Comments6.663866

Shares9.361345

Likes173.781513

Profile Visits50.621849

Follows20.756303

dtype: float64

Median

In [26]:

print(a.median())

Impressions4289.0

From Home2207.0

From Hashtags1278.0

From Explore326.0

From Other74.0

Saves109.0

Comments6.0

Shares6.0

Likes151.0

Profile Visits23.0

Follows8.0

dtype: float64

Mode

In [27]:

print(a.mode())

	Impressions	From Home	From Hashtags	From Explore	From Other	Saves	\
0	5394.0	1975.0	116	45.0	34.0	40.0	
1	NaN	NaN	201	84.0	NaN	135.0	
2	NaN	NaN	278	NaN	NaN	144.0	
3	NaN	NaN	362	NaN	NaN	NaN	
4	NaN	NaN	411	NaN	NaN	NaN	
5	NaN	NaN	583	NaN	NaN	NaN	
6	NaN	NaN	655	NaN	NaN	NaN	
7	NaN	NaN	707	NaN	NaN	NaN	
8	NaN	NaN	771	NaN	NaN	NaN	
9	NaN	NaN	794	NaN	NaN	NaN	
10	NaN	NaN	1248	NaN	NaN	NaN	
11	NaN	NaN	1260	NaN	NaN	NaN	
12	NaN	NaN	1278	NaN	NaN	NaN	
13	NaN	NaN	1693	NaN	NaN	NaN	
14	NaN	NaN	1938	NaN	NaN	NaN	
15	NaN	NaN	2351	NaN	NaN	NaN	
16	NaN	NaN	2975	NaN	NaN	NaN	

17	NaN	NaN	3450	NaN	NaN	NaN
18	NaN	NaN	3551	NaN	NaN	NaN
	Comments	Shares	Likes	Profile Visits	Follows	\
0	6.0	3.0	114.0	19.0	2.0	
1	NaN	NaN	151.0	21.0	NaN	
2	NaN	NaN	NaN	NaN	NaN	
3	NaN	NaN	NaN	NaN	NaN	
4	NaN	NaN	NaN	NaN	NaN	
5	NaN	NaN	NaN	NaN	NaN	
6	NaN	NaN	NaN	NaN	NaN	
7	NaN	NaN	NaN	NaN	NaN	
8	NaN	NaN	NaN	NaN	NaN	
9	NaN	NaN	NaN	NaN	NaN	
10	NaN	NaN	NaN	NaN	NaN	
11	NaN	NaN	NaN	NaN	NaN	
12	NaN	NaN	NaN	NaN	NaN	
13	NaN	NaN	NaN	NaN	NaN	
14	NaN	NaN	NaN	NaN	NaN	
15	NaN	NaN	NaN	NaN	NaN	
16	NaN	NaN	NaN	NaN	NaN	
17	NaN	NaN	NaN	NaN	NaN	
18	NaN	NaN	NaN	NaN	NaN	

					Caption	\
0	Here are some of the best data science project...					
1	Here are some of the best websites that you ca...					
2					NaN	
3					NaN	
4					NaN	
5					NaN	
6					NaN	
7					NaN	
8					NaN	
9					NaN	
10					NaN	
11					NaN	
12					NaN	
13					NaN	
14					NaN	
15					NaN	
16					NaN	
17					NaN	
18					NaN	

					Hashtags	
0	#data #datascience #dataanalysis #dataanalytic...					
1					NaN	
2					NaN	
3					NaN	
4					NaN	
5					NaN	
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10					NaN	
11					NaN	
12					NaN	
13					NaN	
14					NaN	
15					NaN	
16					NaN	
17					NaN	
18					NaN	

Standard Deviation

In [28]:

```
print(a.std())
```

```

Impressions      4843.780105
From Home        1489.386348
From Hashtags    1884.361443
From Explore     2613.026132
From Other       289.431031
Saves            156.317731
Comments         3.544576
Shares           10.089205
Likes            82.378947
Profile Visits   87.088402
Follows          40.921580
dtype: float64

```

Variance

In [29]:

```
print(a.var())
```

```

Impressions      2.346221e+07
From Home        2.218272e+06
From Hashtags    3.550818e+06
From Explore     6.827906e+06
From Other       8.377032e+04
Saves            2.443523e+04
Comments         1.256402e+01
Shares           1.017921e+02
Likes            6.786291e+03
Profile Visits   7.584390e+03
Follows          1.674576e+03
dtype: float64

```

min and max

In [30]:

```
print(a.min())
```

```

Impressions      1941
From Home        1133
From Hashtags    116
From Explore     0
From Other       9
Saves            22
Comments         0
Shares           0
Likes            72
Profile Visits   4
Follows          0
Caption          170 Python Projects with Source Code solved an...
Hashtags         #career #job #jobs #jobsearch #education #busi...
dtype: object

```

In [31]:

```
print(a.max())
```

```

Impressions      36919
From Home        13473
From Hashtags    11817
From Explore     17414
From Other       2547
Saves            1095
Comments         19
Shares           75

```

```

Likes                    549
Profile Visits           611
Follows                  260
Caption                  You must have seen the news divided into categ...
Hashtags                 #timeseries #time #statistics #datascience #bi...
dtype: object

```

Correlation and covariance

In [33]:

```
print(a.cov())
```

```

      Impressions      From Home      From Hashtags      From Explore \
Impressions  2.346221e+07  6.093874e+06  5.118299e+06  1.131032e+07
From Home    6.093874e+06  2.218272e+06  4.982052e+05  3.115675e+06
From Hashtags 5.118299e+06  4.982052e+05  3.550818e+06  9.377699e+05
From Explore  1.131032e+07  3.115675e+06  9.377699e+05  6.827906e+06
From Other    8.312952e+05  2.395335e+05  1.252349e+05  3.748818e+05
Saves         5.900096e+05  1.789940e+05  9.011409e+04  3.054493e+05
Comments      -4.897317e+02  6.713217e+01  1.078292e+03  -1.468644e+03
Shares        3.101650e+04  1.014281e+04  4.173288e+03  1.623273e+04
Likes         3.391060e+05  8.568091e+04  1.027827e+05  1.407142e+05
Profile Visits 3.210100e+05  6.888498e+04  1.134539e+05  1.210301e+05
Follows       1.762853e+05  4.099823e+04  4.283407e+04  8.511763e+04

      From Other      Saves      Comments      Shares \
Impressions  831295.170275  590009.646703  -489.731662  31016.503062
From Home    239533.494160  178994.048925   67.132175  10142.813844
From Hashtags 125234.875944   90114.085031  1078.292408  4173.287780
From Explore  374881.829583  305449.264991 -1468.643783  16232.734440
From Other    83770.321891   15016.530338 -111.519513   457.974790
Saves         15016.530338   24435.233015  -14.911551  1356.835850
Comments      -111.519513    -14.911551   12.564022    0.605541
Shares         457.974790   1356.835850    0.605541   101.792052
Likes          9382.477995   10889.593932   36.086953   588.274534
Profile Visits 15957.467455   4909.398234   29.854864   215.586953
Follows        6475.539667   4020.118786   -8.794474   203.571856

      Likes      Profile Visits      Follows
Impressions  339105.972725  321009.962897  176285.294545
From Home    85680.911337   68884.979205   40998.228030
From Hashtags 102782.672269  113453.864976  42834.066657
From Explore  140714.234083   121030.114727  85117.634952
From Other    9382.477995   15957.467455   6475.539667
Saves         10889.593932   4909.398234   4020.118786
Comments       36.086953    29.854864    -8.794474
Shares         588.274534   215.586953   203.571856
Likes          6786.290842   4491.848882   2515.946304
Profile Visits 4491.848882   7584.389688   3040.457912
Follows        2515.946304   3040.457912   1674.575701

```

Pearson

In [36]:

```

from scipy.stats import pearsonr
print(pearsonr(a["Impressions"],a["From Hashtags"]))

```

```
(0.5607600444158379, 3.301693237842392e-11)
```

Spearman

In [37]:

```

from scipy.stats import spearmanr
print(spearmanr(a["Impressions"],a["From Hashtags"]))

```

SpearmanrResult(correlation=0.7828488304819217, pvalue=7.273636628656232e-26)

Count

In [38]:

a.count()

Out[38]: Impressions 119
From Home 119
From Hashtags 119
From Explore 119
From Other 119
Saves 119
Comments 119
Shares 119
Likes 119
Profile Visits 119
Follows 119
Caption 119
Hashtags 119
dtype: int64

Cumsum

In [39]:

a.cumsum()

Out[39]:

	Impressions	From Home	From Hashtags	From Explore	From Other	Saves	Comments	Shares	Likes	Profile Visits	Foll
0	3920	2586	1028	619	56	98	9	5	162	35	
1	9314	5313	2866	1793	134	292	16	19	386	83	
2	13335	7398	4054	1793	667	333	27	20	517	145	
3	17863	10098	4675	2725	740	505	37	27	730	168	
4	20381	11802	4930	3004	777	601	42	31	853	176	

	Impressions	From Home	From Hashtags	From Explore	From Other	Saves	Comments	Shares	Likes	Profile Visits	Foll
...
114	599291	266275	214385	90803	17545	16325	782	1011	19448	5211	2
115	605022	268198	215753	93069	17610	16460	786	1012	19596	5231	2
116	609161	269331	217291	94436	17643	16496	786	1013	19688	5265	2
117	641856	281146	220438	111850	17813	17591	788	1088	20237	5413	2
118	678775	294619	224614	128294	20360	18244	793	1114	20680	6024	2

119 rows × 13 columns

In []: