plots-bv-encoding

October 25, 2021

```python
from results_loader import load_data
import matplotlib.pyplot as plt
import numpy as np
```

```python
# Reset_index makes a column called "index" with the column index
df = load_data('nontesting_most_downloads').reset_index()
```

```python
def maybe_dictionary_len(d):
    if d != None:
        num_non_link = 0
        for k in d:
            dep_data = d[k]
            if not ("link" in dep_data and dep_data["link"]):
                num_non_link = num_non_link + 1
        return num_non_link
    else:
        return np.nan

df['npm_number_deps'] = df['npm solve'].apply(maybe_dictionary_len)
df['rosette_number_deps'] = df['rosette solve'].apply(maybe_dictionary_len)
```

```python
df['ratio_num_deps'] = df['rosette_number_deps']/df['npm_number_deps']
```

```python
df['ratio'] = df['rosette time'] / df['npm time']
```

```python
df
```

```
        index    project_name  npm success   npm time  \
0           0   supports-color         True  17.038827
1           1            debug         True  16.933676
2           2           semver         True   4.659977
3           3            chalk         True  10.882163
4           4               ms         True   4.156216
..        ...              ...          ...        ...
995       995     is-directory         True   2.906567
996       996      whatwg-fetch         True   6.489405
997       997       decimal.js         True   0.400362
```

```
998    998    lodash.merge         True    0.394715
999    999  clone-response         True    9.715984


                                        npm solve npm error  \
0     {'node_modules/has-flag': {'version': '5.0.1',…      None
1     {'node_modules/ms': {'version': '2.1.2', 'reso…      None
2     {'node_modules/lru-cache': {'version': '6.0.0'…      None
3     {'node_modules/ansi-styles': {'version': '4.3…       None
4                                               {}      None
..                                              …       …
995                                             {}      None
996                                             {}      None
997                                             {}      None
998                                             {}      None
999   {'node_modules/mimic-response': {'version': '1…      None


      rosette success  rosette time  \
0                True      2.670986
1                True      2.351109
2                True      2.381426
3                True      3.595008
4                True      2.125782
..                 …           …
995              True      2.175580
996              True      2.130667
997              True      2.159171
998              True      2.119727
999              True      2.549335


                                    rosette solve rosette error  \
0     {'node_modules/has-flag': {'version': '5.0.0',…          None
1     {'node_modules/ms': {'version': '2.1.2', 'inte…          None
2     {'node_modules/lru-cache': {'version': '6.0.0'…          None
3     {'node_modules/ansi-styles': {'version': '4.1…           None
4                                               {}          None
..                                              …            …
995                                             {}          None
996                                             {}          None
997                                             {}          None
998                                             {}          None
999   {'node_modules/mimic-response': {'version': '1…          None


      npm_number_deps  rosette_number_deps  ratio_num_deps      ratio
0                 1.0                  1.0             1.0   0.156759
1                 1.0                  1.0             1.0   0.138842
2                 2.0                  2.0             1.0   0.511038
3                 5.0                  5.0             1.0   0.330358
```
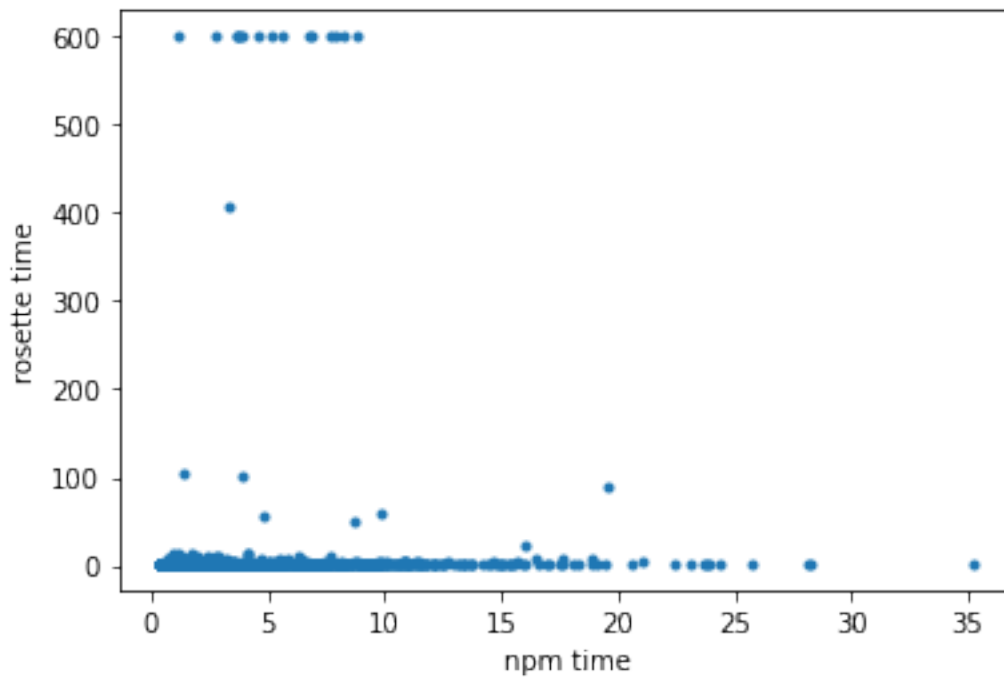
|				
4	0.0	0.0	NaN	0.511471
..	...	...	...	...
995	0.0	0.0	NaN	0.748505
996	0.0	0.0	NaN	0.328330
997	0.0	0.0	NaN	5.393040
998	0.0	0.0	NaN	5.370275
999	1.0	1.0	1.0	0.262386

[1000 rows x 14 columns]

```python
plt.scatter(x=df['npm time'], y=df['rosette time'], marker='.')
plt.xlabel('npm time') #x label
plt.ylabel('rosette time') #y label
plt.show()
```



```python
plt.scatter(x=df['npm time'], y=df['rosette time'], marker='.')
plt.xlabel('npm time') #x label
plt.ylabel('rosette time') #y label
plt.ylim([0, 25])
plt.xlim([0, 25])
plt.show()
```
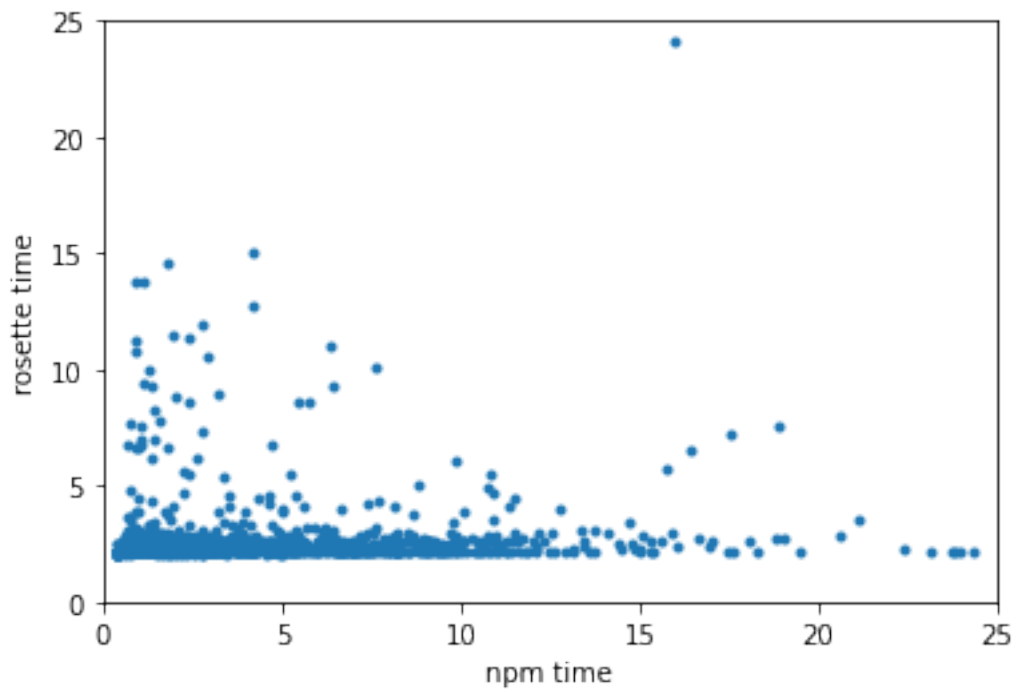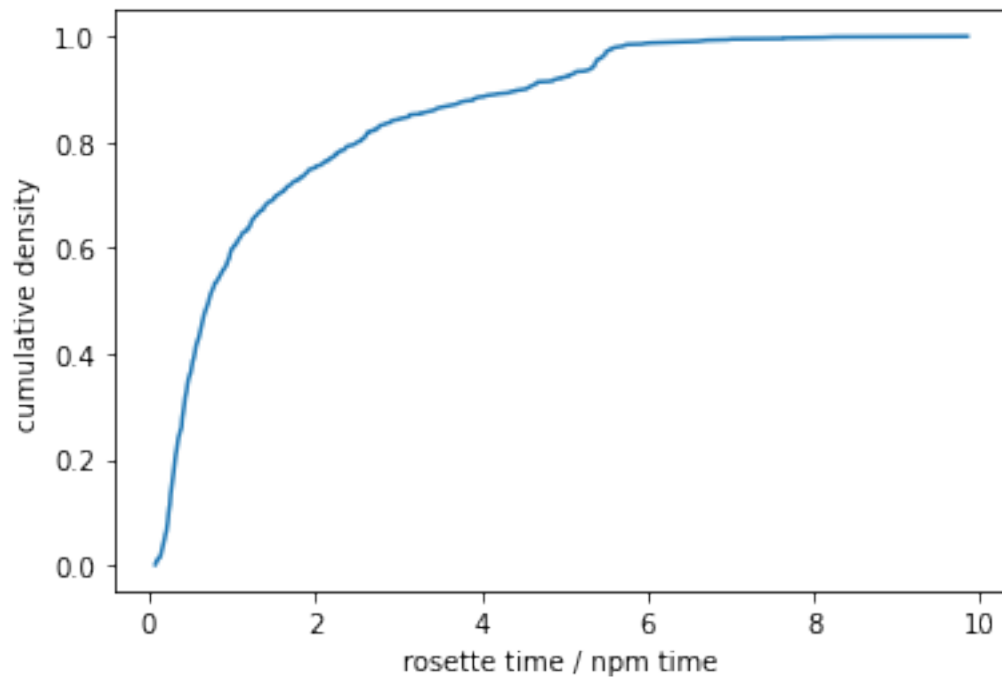
```
[ ]: plt.plot(np.sort(df['ratio']), np.arange(1, len(df)+1)/len(df))
     plt.show()
```
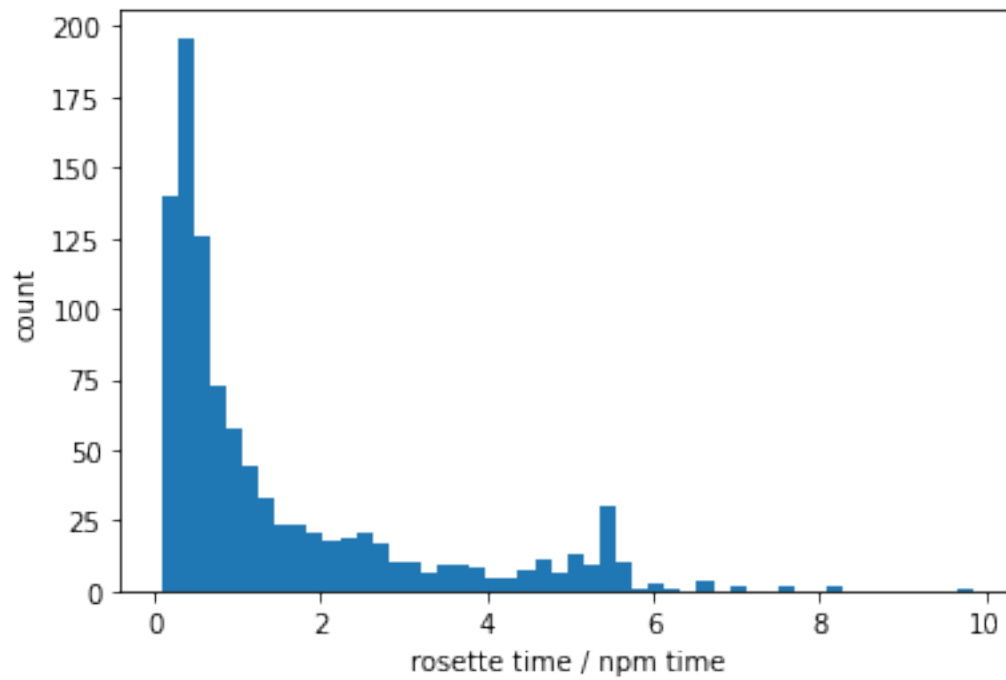

4
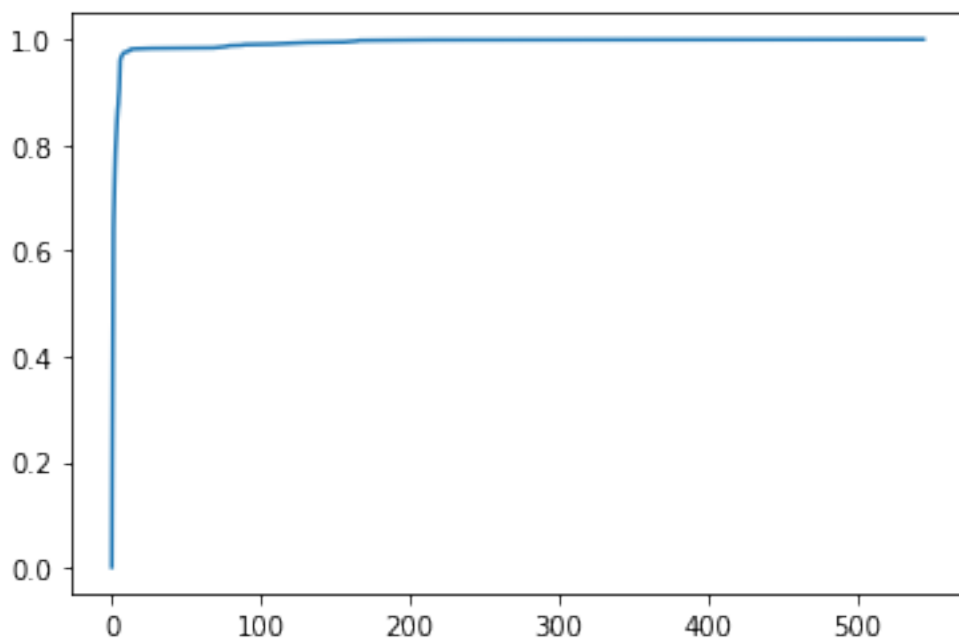
```
[ ]: non_outlier_ratio = df['ratio'][df['ratio'] < 10]

     plt.plot(np.sort(non_outlier_ratio), np.arange(1, len(non_outlier_ratio)+1)/
      ↪len(non_outlier_ratio))
     plt.xlabel('rosette time / npm time')
     plt.ylabel('cumulative density')
     plt.show()
```
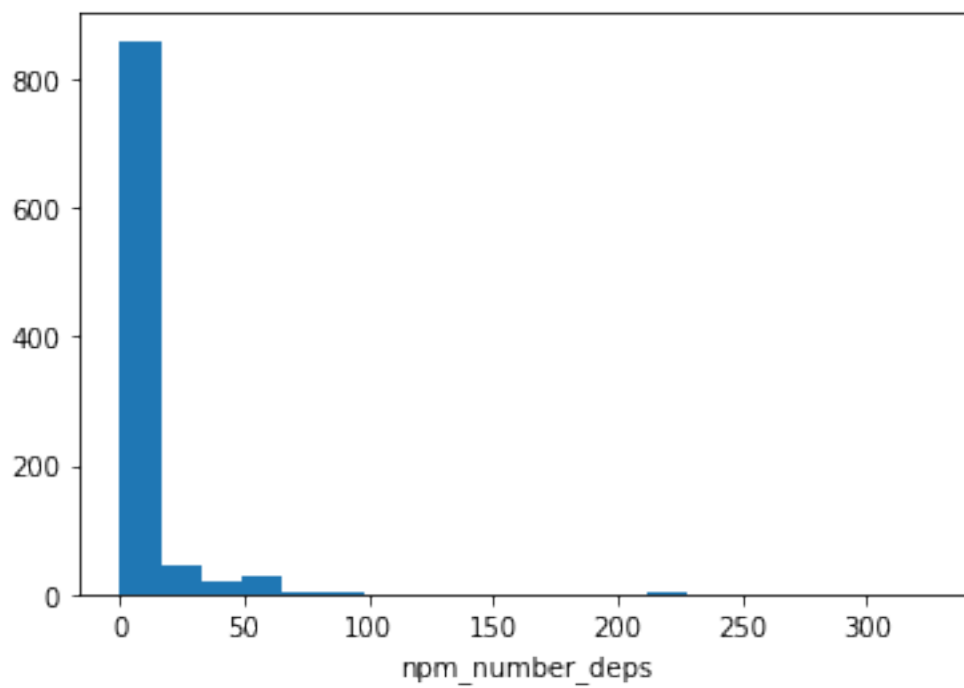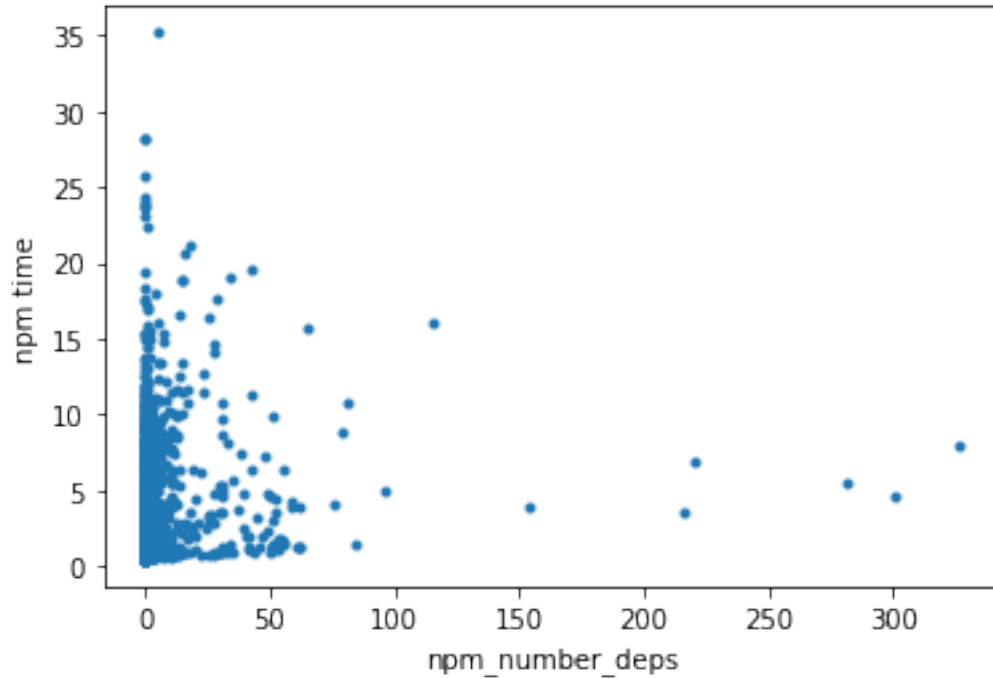


```
[ ]: plt.hist(non_outlier_ratio, bins=50)
     plt.xlabel('rosette time / npm time')
     plt.ylabel('count')
     plt.show()
```
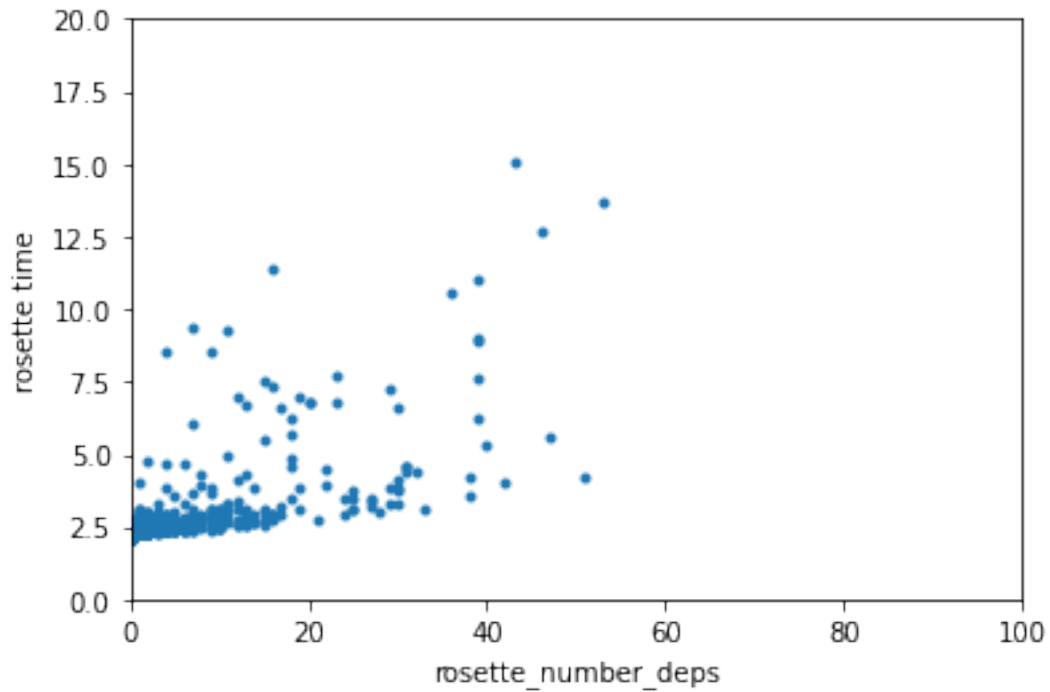
```
[ ]: plt.hist(df['npm_number_deps'], bins=20)
     plt.xlabel('npm_number_deps');
```

```
[ ]: plt.scatter(x=df['npm_number_deps'], y=df['npm time'], marker='.')
     plt.xlabel('npm_number_deps') #x label
     plt.ylabel('npm time') #y label
     plt.show()
```



```
[ ]: plt.scatter(x=df['rosette_number_deps'], y=df['rosette time'], marker='.')
     plt.xlabel('rosette_number_deps') #x label
     plt.ylabel('rosette time') #y label
     plt.xlim([0, 100])
     plt.ylim([0, 20])
     plt.show()
```

```
[ ]: plt.scatter(x=df['npm_number_deps'], y=df['rosette_number_deps'], marker='.')
     plt.plot([0, 100], [0, 100], color='r')
     plt.xlabel('npm_number_deps') #x label
     plt.ylabel('rosette_number_deps') #y label
     plt.xlim([0, 100])
     plt.ylim([0, 100])
     plt.show()
```
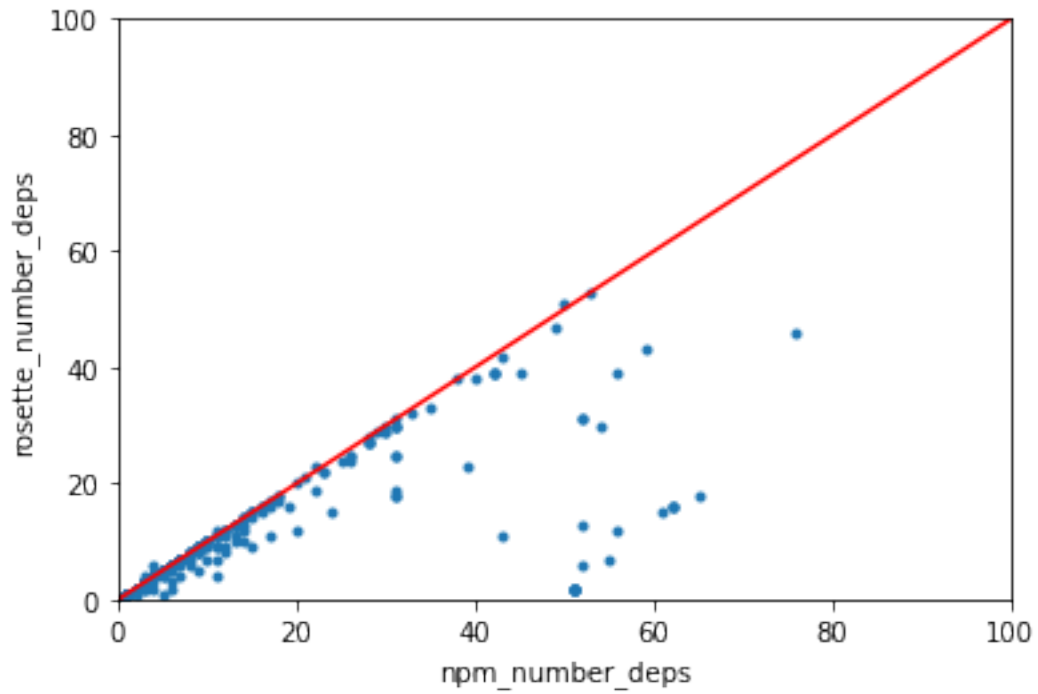
```
[ ]: plt.plot(np.sort(df['ratio_num_deps']), np.arange(1,␣
    ↪len(df['ratio_num_deps'])+1)/len(df['ratio_num_deps']))
    plt.xlabel('rosette deps / npm deps')
    plt.show()
```
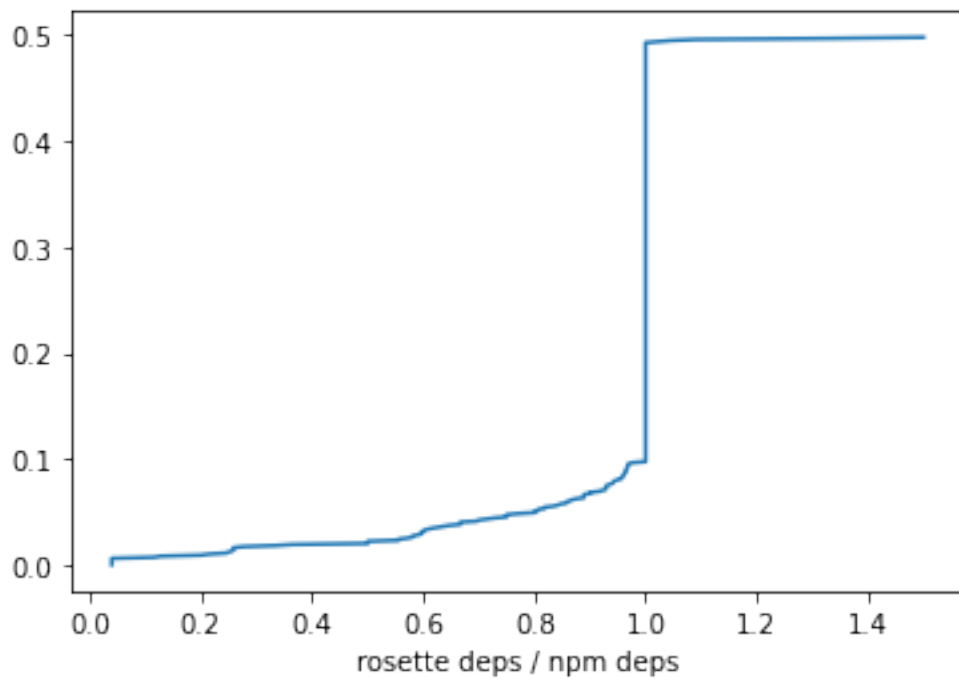
```
[ ]: df[(df['rosette success'] == False) & df['npm success']].
     ↪sort_values('npm_number_deps')
```

```
[ ]:       index              project_name  npm success    npm time  \
     50       50                   fs-extra         True    8.549419
     280     280              dom-serializer         True    4.732515
     295     295                      terser         True    4.052353
     441     441                  htmlparser2         True    3.553952
     482     482                 unset-value         True    1.430401
     808     808                  create-ecdh         True    8.239763
     162     162               find-cache-dir         True    5.425197
     968     968      @istanbuljs/load-nyc-config         True    8.693694
     882     882                  tar-stream         True    2.425313
     352     352                         send         True    3.553832
     792     792                        boxen         True    6.443344
     382     382                 serve-static         True    4.440935
     263     263        terser-webpack-plugin         True   16.443702
     972     972             copy-concurrently         True    3.308203
     942     942              @eslint/eslintrc         True    4.779036
     976     976             move-concurrently         True    2.774770
     806     806               browserify-sign         True    5.248305
     451     451                util.promisify         True    8.131803
     468     468                    snapdragon         True   19.082071
     682     682             babel-preset-jest         True    1.381024
     902     902                   mississippi         True    0.909577
     230     230                       cacache         True    3.736334
     508     508              jest-message-util         True    2.426270
     815     815             crypto-browserify         True   19.577438
     641     641              @jest/test-result         True    0.868205
     679     679               @jest/fake-timers         True    1.308151
     745     745               @jest/environment         True    1.918587
     319     319                       extglob         True    7.318671
     431     431                       express         True    4.826466
     772     772                   jest-watcher         True    0.910920
     450     450          istanbul-lib-instrument         True    9.886804
     325     325                expand-brackets         True    1.722980
     537     537                          meow         True    3.967857
     703     703          babel-plugin-istanbul         True    8.773729
     801     801            eslint-plugin-import         True   10.852374
     872     872              node-libs-browser         True    1.357703
     462     462                     nanomatch         True    5.001672
     369     369                        eslint         True   15.974387
     376     376              @babel/preset-env         True    3.847399
     818     818             @jest/test-sequencer         True    3.613398
     737     737                  jest-jasmine2         True    6.850095
```

```
760   760                    jest-runner        True   5.565075
727   727                    jest-config        True   4.570873
744   744                          jest         True   7.939964

                                          npm solve npm error  \
50    {'node_modules/graceful-fs': {'version': '4.2…       None
280   {'node_modules/domelementtype': {'version': '2…      None
295   {'node_modules/buffer-from': {'version': '1.1…       None
441   {'node_modules/dom-serializer': {'version': '1…      None
482   {'node_modules/get-value': {'version': '3.0.1'…      None
808   {'node_modules/bn.js': {'version': '4.12.0', '…      None
162   {'node_modules/commondir': {'version': '1.0.1'…      None
968   {'node_modules/argparse': {'version': '1.0.10'…      None
882   {'node_modules/base64-js': {'version': '1.5.1'…      None
352   {'node_modules/debug': {'version': '2.6.9', 'r…      None
792   {'node_modules/ansi-align': {'version': '3.0.1…      None
382   {'node_modules/depd': {'version': '1.1.2', 're…      None
263   {'node_modules/@types/json-schema': {'version'…      None
972   {'node_modules/aproba': {'version': '1.2.0', '…      None
942   {'node_modules/acorn': {'version': '8.5.0', 'r…      None
976   {'node_modules/aproba': {'version': '1.2.0', '…      None
806   {'node_modules/asn1.js': {'version': '5.4.1', …      None
451   {'node_modules/call-bind': {'version': '1.0.2'…      None
468   {'node_modules/assign-symbols': {'version': '1…      None
682   {'node_modules/@babel/code-frame': {'version':…      None
902   {'node_modules/buffer-from': {'version': '1.1…      None
230   {'node_modules/@gar/promisify': {'version': '1…      None
508   {'node_modules/@babel/code-frame': {'version':…      None
815   {'node_modules/asn1.js': {'version': '5.4.1', …      None
641   {'node_modules/@babel/code-frame': {'version':…      None
679   {'node_modules/@babel/code-frame': {'version':…      None
745   {'node_modules/@babel/code-frame': {'version':…      None
319   {'node_modules/array-unique': {'version': '0.3…      None
431   {'node_modules/accepts': {'version': '1.3.7', …      None
772   {'node_modules/@babel/code-frame': {'version':…      None
450   {'node_modules/@babel/code-frame': {'version':…      None
325   {'node_modules/assign-symbols': {'version': '1…      None
537   {'node_modules/@babel/code-frame': {'version':…      None
703   {'node_modules/@babel/code-frame': {'version':…      None
801   {'node_modules/@types/json5': {'version': '0.0…      None
872   {'node_modules/asn1.js': {'version': '5.4.1', …      None
462   {'node_modules/arr-diff': {'version': '4.0.0',…      None
369   {'node_modules/@babel/code-frame': {'version':…      None
376   {'node_modules/@babel/code-frame': {'version':…      None
818   {'node_modules/@babel/code-frame': {'version':…      None
737   {'node_modules/@babel/code-frame': {'version':…      None
760   {'node_modules/@babel/code-frame': {'version':…      None
```

```
727    {'node_modules/@babel/code-frame': {'version':…    None
744    {'node_modules/@babel/code-frame': {'version':…    None


     rosette success   rosette time rosette solve   \
50            False       2.184626           None
280           False       2.176780           None
295           False       2.201325           None
441           False       2.309703           None
482           False       2.180292           None
808           False       2.938243           None
162           False       2.281953           None
968           False      49.582789           None
882           False       2.391804           None
352           False       2.319268           None
792           False       2.688855           None
382           False       2.465890           None
263           False       6.562594           None
972           False     408.097803           None
942           False      56.570793           None
976           False     600.062573           None
806           False       5.498849           None
451           False       4.079314           None
468           False       2.752334           None
682           False       9.272772           None
902           False      13.824529           None
230           False       3.205396           None
508           False       8.554345           None
815           False      89.079564           None
641           False      10.742083           None
679           False       9.986082           None
745           False      11.444229           None
319           False       2.903787           None
431           False       2.676187           None
772           False      11.234355           None
450           False      58.738153           None
325           False       2.853691           None
537           False       3.892797           None
703           False     600.078003           None
801           False       5.514634           None
872           False     105.620193           None
462           False       3.950849           None
369           False      24.064950           None
376           False     100.803448           None
818           False     600.102192           None
737           False     600.102923           None
760           False     600.103602           None
727           False     600.102059           None
```

```
744           False       600.102109         None

                                          rosette error   npm_number_deps  \
50    {'stage': 'install', 'command': 'npm install -…                3.0
280   {'stage': 'install', 'command': 'npm install -…                3.0
295   {'stage': 'install', 'command': 'npm install -…                5.0
441   {'stage': 'install', 'command': 'npm install -…                6.0
482   {'stage': 'install', 'command': 'npm install -…                6.0
808   {'stage': 'install', 'command': 'npm install -…                8.0
162   {'stage': 'install', 'command': 'npm install -…               10.0
968   {'stage': 'install', 'command': 'npm install -…               13.0
882   {'stage': 'install', 'command': 'npm install -…               13.0
352   {'stage': 'install', 'command': 'npm install -…               18.0
792   {'stage': 'install', 'command': 'npm install -…               19.0
382   {'stage': 'install', 'command': 'npm install -…               20.0
263   {'stage': 'install', 'command': 'npm install -…               25.0
972   {'stage': 'install', 'command': 'npm install -…               27.0
942   {'stage': 'install', 'command': 'npm install -…               28.0
976   {'stage': 'install timeout', 'command': 'npm i…               28.0
806   {'stage': 'install', 'command': 'npm install -…               30.0
451   {'stage': 'install', 'command': 'npm install -…               33.0
468   {'stage': 'install', 'command': 'npm install -…               34.0
682   {'stage': 'install', 'command': 'npm install -…               34.0
902   {'stage': 'install', 'command': 'npm install -…               35.0
230   {'stage': 'install', 'command': 'npm install -…               37.0
508   {'stage': 'install', 'command': 'npm install -…               39.0
815   {'stage': 'install', 'command': 'npm install -…               43.0
641   {'stage': 'install', 'command': 'npm install -…               44.0
679   {'stage': 'install', 'command': 'npm install -…               46.0
745   {'stage': 'install', 'command': 'npm install -…               47.0
319   {'stage': 'install', 'command': 'npm install -…               48.0
431   {'stage': 'install', 'command': 'npm install -…               49.0
772   {'stage': 'install', 'command': 'npm install -…               50.0
450   {'stage': 'install', 'command': 'npm install -…               51.0
325   {'stage': 'install', 'command': 'npm install -…               53.0
537   {'stage': 'install', 'command': 'npm install -…               59.0
703   {'stage': 'install timeout', 'command': 'npm i…               79.0
801   {'stage': 'install', 'command': 'npm install -…               81.0
872   {'stage': 'install', 'command': 'npm install -…               84.0
462   {'stage': 'install', 'command': 'npm install -…               96.0
369   {'stage': 'install', 'command': 'npm install -…              116.0
376   {'stage': 'install', 'command': 'npm install -…              154.0
818   {'stage': 'install timeout', 'command': 'npm i…              216.0
737   {'stage': 'install timeout', 'command': 'npm i…              220.0
760   {'stage': 'install timeout', 'command': 'npm i…              282.0
727   {'stage': 'install timeout', 'command': 'npm i…              301.0
744   {'stage': 'install timeout', 'command': 'npm i…              326.0
```

	rosette_number_deps	ratio_num_deps	ratio
50	NaN	NaN	0.255529
280	NaN	NaN	0.459963
295	NaN	NaN	0.543221
441	NaN	NaN	0.649897
482	NaN	NaN	1.524252
808	NaN	NaN	0.356593
162	NaN	NaN	0.420621
968	NaN	NaN	5.703305
882	NaN	NaN	0.986184
352	NaN	NaN	0.652610
792	NaN	NaN	0.417307
382	NaN	NaN	0.555264
263	NaN	NaN	0.399095
972	NaN	NaN	123.359378
942	NaN	NaN	11.837282
976	NaN	NaN	216.256688
806	NaN	NaN	1.047738
451	NaN	NaN	0.501649
468	NaN	NaN	0.144237
682	NaN	NaN	6.714416
902	NaN	NaN	15.198861
230	NaN	NaN	0.857899
508	NaN	NaN	3.525719
815	NaN	NaN	4.550113
641	NaN	NaN	12.372749
679	NaN	NaN	7.633737
745	NaN	NaN	5.964926
319	NaN	NaN	0.396764
431	NaN	NaN	0.554482
772	NaN	NaN	12.332982
450	NaN	NaN	5.941066
325	NaN	NaN	1.656253
537	NaN	NaN	0.981083
703	NaN	NaN	68.394867
801	NaN	NaN	0.508150
872	NaN	NaN	77.793285
462	NaN	NaN	0.789906
369	NaN	NaN	1.506471
376	NaN	NaN	26.200413
818	NaN	NaN	166.076967
737	NaN	NaN	87.605048
760	NaN	NaN	107.833881
727	NaN	NaN	131.288280
744	NaN	NaN	75.579955

```
[ ]: df[df['npm_number_deps'] < df['rosette_number_deps']]
```

```
[ ]:       index                          project_name  npm success  npm time  \
      267     267                              inquirer         True  4.661160
      579     579  @babel/plugin-transform-regenerator         True  1.175446
      667     667                            wide-align         True  2.865605
      754     754                             jest-each         True  0.743430
      861     861                           compression         True  6.407093


                                          npm solve npm error  \
      267  {'node_modules/ansi-escapes': {'version': '4.3…        None
      579  {'node_modules/@babel/runtime': {'version': '7…        None
      667  {'node_modules/ansi-regex': {'version': '3.0.0…        None
      754  {'node_modules/@jest/types': {'version': '27.2…        None
      861  {'node_modules/accepts': {'version': '1.3.7', …        None


           rosette success  rosette time  \
      267             True      4.234227
      579             True      2.936475
      667             True      2.447098
      754             True      7.670850
      861             True      3.134862


                                      rosette solve rosette error  \
      267  {'node_modules/ansi-escapes': {'version': '4.2…          None
      579  {'node_modules/regenerator-transform': {'versi…          None
      667  {'node_modules/string-width': {'version': '1.0…          None
      754  {'node_modules/@jest/types': {'version': '27.1…          None
      861  {'node_modules/accepts': {'version': '1.3.5', …          None


           npm_number_deps  rosette_number_deps  ratio_num_deps       ratio
      267             50.0                 51.0        1.020000    0.908406
      579              3.0                  4.0        1.333333    2.498179
      667              4.0                  6.0        1.500000    0.853955
      754             22.0                 23.0        1.045455   10.318185
      861             11.0                 12.0        1.090909    0.489280
```

```
[ ]:
```