crowdfunding-project

June 19, 2025

[1]:
```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
from math import *
import calendar
import datetime
```

cleaning creators table

[2]:
```
creator=pd.read_excel('/content/Crowdfunding_Creator.xlsx')
```

[3]:
```
creator.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 334841 entries, 0 to 334840
Data columns (total 3 columns):
 #   Column           Non-Null Count   Dtype
---  ------           --------------   -----
 0   id               334841 non-null  int64
 1   name             334826 non-null  object
 2   chosen_currency  732 non-null     object
dtypes: int64(1), object(2)
memory usage: 7.7+ MB
```

[4]:
```
creator.head()
```

[4]:

	id	name	chosen_currency
0	48480	Robert Maehre (deleted)	NaN
1	383340	Holly (deleted)	NaN
2	463486	Robert Deusser	NaN
3	582581	StoryShed Media, Michael Maupin (deleted)	NaN
4	905479	Mason Peterson (deleted)	NaN

[5]:
```
creator['active_names']=(creator['name']
                         .mask(creator['name']
                               .str
                               .contains('(deleted)',
                                         na=False),
```

```
                                ''))

creator['deleted_names']=(creator['name']
                          .where(creator['name']
                                 .str
                                 .contains('(deleted)',
                                           na=False),
                                 ''))

creator['deleted_names']=(creator['deleted_names']
                          .str
                          .split('(',
                                 expand=True)
                          [0])

creator.head()
```

```
/tmp/ipython-input-5-612821579.py:4: UserWarning: This pattern is interpreted as
a regular expression, and has match groups. To actually get the groups, use
str.extract.
  .contains('(deleted)',
/tmp/ipython-input-5-612821579.py:11: UserWarning: This pattern is interpreted
as a regular expression, and has match groups. To actually get the groups, use
str.extract.
  .contains('(deleted)',
```

[5]:

	id	name	chosen_currency	\
0	48480	Robert Maehre (deleted)	NaN	
1	383340	Holly (deleted)	NaN	
2	463486	Robert Deusser	NaN	
3	582581	StoryShed Media, Michael Maupin (deleted)	NaN	
4	905479	Mason Peterson (deleted)	NaN	

	active_names	deleted_names
0		Robert Maehre
1		Holly
2	Robert Deusser	
3	StoryShed Media, Michael Maupin	
4		Mason Peterson

[6]:
```
creator.drop(columns='name',
             inplace=True)
creator.head()
```

[6]:

	id	chosen_currency	active_names	deleted_names
0	48480	NaN		Robert Maehre
1	383340	NaN		Holly

```
2  463486             NaN  Robert Deusser
3  582581             NaN                  StoryShed Media, Michael Maupin
4  905479             NaN                                  Mason Peterson
```

cleaning category table

[7]:
```
category=pd.read_excel('/content/crowdfunding_Category.xlsx')
```

[8]:
```
category.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 169 entries, 0 to 168
Data columns (total 4 columns):
 #   Column     Non-Null Count  Dtype
---  ------     --------------  -----
 0   id         169 non-null    int64
 1   name       169 non-null    object
 2   parent_id  154 non-null    float64
 3   position   169 non-null    int64
dtypes: float64(1), int64(2), object(1)
memory usage: 5.4+ KB
```

[9]:
```
category.head()
```

[9]:
```
    id         name  parent_id  position
0  354    Taxidermy       26.0        12
1  347        Glass       26.0         5
2  352       Quilts       26.0        10
3  336       Flight       16.0         6
4  255  Residencies        6.0         2
```

cleaning location table

[10]:
```
location=pd.read_excel('/content/Crowdfunding_Location.xlsx')
country=pd.read_excel('/content/COUNTRY CODES.xlsx',
                      header=1)
```

[11]:
```
country.head()
```

[11]:
```
  Country_Code Full_Country_Name
0           US     United States
1           GB    United Kingdom
2           FI           Finland
3           BE           Belgium
4           PL            Poland
```

[12]:
```
location.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 23252 entries, 0 to 23251
Data columns (total 9 columns):
 #   Column            Non-Null Count  Dtype
---  ------            --------------  -----
 0   id                23252 non-null  int64
 1   displayable_name  23252 non-null  object
 2   type              23252 non-null  object
 3   name              23252 non-null  object
 4   state             23225 non-null  object
 5   short_name        23252 non-null  object
 6   is_root           23252 non-null  int64
 7   country           23246 non-null  object
 8   localized_name    10354 non-null  object
dtypes: int64(2), object(7)
memory usage: 1.6+ MB
```

[13]:
```
location.head()
```

[13]:

	id	displayable_name	type	name	state	short_name	is_root	country	localized_name
0	2351708	Accord, NY	Town	Accord	NY	Accord, NY	0	US	NaN
1	2351910	Adams Center, NY	Town	Adams Center	NY	Adams Center, NY	0	US	NaN
2	2352490	Akron, NY	Town	Akron	NY	Akron, NY	0	US	NaN
3	2353035	Alexandria Bay, NY	Town	Alexandria Bay	NY	Alexandria Bay, NY	0	US	NaN
4	2353076	Alfred, NY	Town	Alfred	NY	Alfred, NY	0	US	NaN

[14]:
```
location.drop(columns=['name',
                       'state',
                       'short_name',
                       'is_root',
                       'localized_name'],
              inplace=True)
location
```

[14]:

	id	displayable_name	type	country
0	2351708	Accord, NY	Town	US
1	2351910	Adams Center, NY	Town	US
2	2352490	Akron, NY	Town	US
3	2353035	Alexandria Bay, NY	Town	US
4	2353076	Alfred, NY	Town	US

```
…        …                  …   …     …
23247  2488828   Santa Barbara, CA  Town      US
23248  2373505       Camarillo, CA  Town      US
23249  2442047     Los Angeles, CA  Town      US
23250  2382067          Clovis, CA  Town      US
23251  2487889       San Diego, CA  Town      US

[23252 rows x 4 columns]
```

[15]:
```
location=location.merge(country,
                        how='left',
                        left_on='country',
                        right_on='Country_Code')

location.head()
```

[15]:
```
        id    displayable_name  type country Country_Code Full_Country_Name
0  2351708          Accord, NY  Town      US           US     United States
1  2351910    Adams Center, NY  Town      US           US     United States
2  2352490           Akron, NY  Town      US           US     United States
3  2353035  Alexandria Bay, NY  Town      US           US     United States
4  2353076          Alfred, NY  Town      US           US     United States
```

[16]:
```
location.drop(columns=['country',
                       'Country_Code']
              ,inplace=True)
location
```

[16]:
```
            id    displayable_name  type Full_Country_Name
0      2351708          Accord, NY  Town     United States
1      2351910    Adams Center, NY  Town     United States
2      2352490           Akron, NY  Town     United States
3      2353035  Alexandria Bay, NY  Town     United States
4      2353076          Alfred, NY  Town     United States
…        …                  …   …               …
23247  2488828   Santa Barbara, CA  Town     United States
23248  2373505       Camarillo, CA  Town     United States
23249  2442047     Los Angeles, CA  Town     United States
23250  2382067          Clovis, CA  Town     United States
23251  2487889       San Diego, CA  Town     United States

[23252 rows x 4 columns]
```

[17]:
```
location['city']=location['displayable_name'].str[:-4]

location['state']=location['displayable_name'].str[-2:]
```

```
location.head()
```

[17]:

	id	displayable_name	type	Full_Country_Name	city	state
0	2351708	Accord, NY	Town	United States	Accord	NY
1	2351910	Adams Center, NY	Town	United States	Adams Center	NY
2	2352490	Akron, NY	Town	United States	Akron	NY
3	2353035	Alexandria Bay, NY	Town	United States	Alexandria Bay	NY
4	2353076	Alfred, NY	Town	United States	Alfred	NY

[18]:
```
location['state']=(location['state']
                   .where(location['state']
                          .str
                          .isupper(),
                          ''))

location.head()
```

[18]:

	id	displayable_name	type	Full_Country_Name	city	state
0	2351708	Accord, NY	Town	United States	Accord	NY
1	2351910	Adams Center, NY	Town	United States	Adams Center	NY
2	2352490	Akron, NY	Town	United States	Akron	NY
3	2353035	Alexandria Bay, NY	Town	United States	Alexandria Bay	NY
4	2353076	Alfred, NY	Town	United States	Alfred	NY

[19]:
```
location.drop(columns=['displayable_name']
              ,inplace=True)
location.head()
```

[19]:

	id	type	Full_Country_Name	city	state
0	2351708	Town	United States	Accord	NY
1	2351910	Town	United States	Adams Center	NY
2	2352490	Town	United States	Akron	NY
3	2353035	Town	United States	Alexandria Bay	NY
4	2353076	Town	United States	Alfred	NY

crowdfunding cleaning

[20]:
```
crowdfunding=pd.read_excel('/content/Crowdfunding_projects_1.xlsx')
```

[21]:
```
crowdfunding.head()
```

[21]:

	id	state	name
0	24080365	failed	Feature Film: The Wolfes
1	27131878	failed	BarBQ 4REAL
2	30525634	failed	Down on the Street
3	31977817	failed	Descent into Madness-Stream of Conscious Endur…
4	33517733	failed	Help us add more content and deliver it faster!

```
  country  creator_id  location_id  category_id  created_at    deadline  \
0      US  1439247114    2488042.0          293  1485972639  1488571200
1      US   680525996    2466256.0           10  1427846948  1430507319
2      US   222229854    2458410.0          276  1457479696  1460073915
3      US  1978657574    2523194.0           48  1343252842  1346342564
4      US  1016683395    2433227.0           18  1427808214  1428676182

   updated_at  …  currency  currency_symbol  usd_pledged  static_usd_rate  \
0  1488571201  …       USD                $          0.0              1.0
1  1430507320  …       USD                $          0.0              1.0
2  1460073915  …       USD                $          0.0              1.0
3  1397791317  …       USD                $          0.0              1.0
4  1428676219  …       USD                $          0.0              1.0

   backers_count spotlight staff_pick  \
0              0         0          0
1              0         0          0
2              0         0          0
3              0         0          0
4              0         0          0

                                              blurb  currency_trailing_code  \
0  My film is about a boy who discovers the truth…                       1
1                            #Try our BBQ It's 4REAL                       1
2  Welcome to Down on the Street. A proposed exhi…                       1
3  Endurance writing for 72 hours, watch an autho…                       1
4  We need to upgrade our technology to create a …                       1

   disable_communication
0                      0
1                      0
2                      0
3                      0
4                      0

[5 rows x 25 columns]
```

[22]:
```
crowdfunding.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 365892 entries, 0 to 365891
Data columns (total 25 columns):
 #   Column                  Non-Null Count   Dtype
---  ------                  --------------   -----
 0   id                      365892 non-null  int64
 1   state                   365892 non-null  object
```

```
 2   name                      365842 non-null  object
 3   country                   365892 non-null  object
 4   creator_id                365892 non-null  int64
 5   location_id               364378 non-null  float64
 6   category_id               365892 non-null  int64
 7   created_at                365892 non-null  int64
 8   deadline                  365892 non-null  int64
 9   updated_at                365892 non-null  int64
 10  state_changed_at          365892 non-null  int64
 11  successful_at             140313 non-null  float64
 12  launched_at               365892 non-null  int64
 13  goal                      365892 non-null  float64
 14  pledged                   365892 non-null  float64
 15  currency                  365892 non-null  object
 16  currency_symbol           365892 non-null  object
 17  usd_pledged               365892 non-null  float64
 18  static_usd_rate           365892 non-null  float64
 19  backers_count             365892 non-null  int64
 20  spotlight                 365892 non-null  int64
 21  staff_pick                365892 non-null  int64
 22  blurb                     365836 non-null  object
 23  currency_trailing_code    365892 non-null  int64
 24  disable_communication     365892 non-null  int64
dtypes: float64(6), int64(13), object(6)
memory usage: 69.8+ MB
```

[23]:
```
crowdfunding=(crowdfunding
              .merge(country,
                     how='left',
                     left_on='country',
                     right_on='Country_Code'))

crowdfunding.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 365892 entries, 0 to 365891
Data columns (total 27 columns):
 #   Column                    Non-Null Count   Dtype
---  ------                    --------------   -----
 0   id                        365892 non-null  int64
 1   state                     365892 non-null  object
 2   name                      365842 non-null  object
 3   country                   365892 non-null  object
 4   creator_id                365892 non-null  int64
 5   location_id               364378 non-null  float64
 6   category_id               365892 non-null  int64
 7   created_at                365892 non-null  int64
 8   deadline                  365892 non-null  int64
```

```
 9   updated_at              365892 non-null  int64
 10  state_changed_at        365892 non-null  int64
 11  successful_at           140313 non-null  float64
 12  launched_at             365892 non-null  int64
 13  goal                    365892 non-null  float64
 14  pledged                 365892 non-null  float64
 15  currency                365892 non-null  object
 16  currency_symbol         365892 non-null  object
 17  usd_pledged             365892 non-null  float64
 18  static_usd_rate         365892 non-null  float64
 19  backers_count           365892 non-null  int64
 20  spotlight               365892 non-null  int64
 21  staff_pick              365892 non-null  int64
 22  blurb                   365836 non-null  object
 23  currency_trailing_code  365892 non-null  int64
 24  disable_communication   365892 non-null  int64
 25  Country_Code            365892 non-null  object
 26  Full_Country_Name       365892 non-null  object
dtypes: float64(6), int64(13), object(8)
memory usage: 75.4+ MB
```

[24]:
```
crowdfunding.drop(columns=['country',
                           'currency',
                           'currency_symbol',
                           'blurb',
                           'currency_trailing_code',
                           'Country_Code'],
                  inplace=True)

crowdfunding.head()
```

[24]:

	id	state	name	\
0	24080365	failed	Feature Film: The Wolfes	
1	27131878	failed	BarBQ 4REAL	
2	30525634	failed	Down on the Street	
3	31977817	failed	Descent into Madness-Stream of Conscious Endur…	
4	33517733	failed	Help us add more content and deliver it faster!	

	creator_id	location_id	category_id	created_at	deadline	updated_at	\
0	1439247114	2488042.0	293	1485972639	1488571200	1488571201	
1	680525996	2466256.0	10	1427846948	1430507319	1430507320	
2	222229854	2458410.0	276	1457479696	1460073915	1460073915	
3	1978657574	2523194.0	48	1343252842	1346342564	1397791317	
4	1016683395	2433227.0	18	1427808214	1428676182	1428676219	

	state_changed_at	…	launched_at	goal	pledged	usd_pledged	\
0	1488571201	…	1485977434	5000.0	0.0	0.0	

```
1        1430507320  …   1427915319  5000.0      0.0          0.0
2        1460073915  …   1457485515  5000.0      0.0          0.0
3        1346342564  …   1343750564  5000.0      0.0          0.0
4        1428676219  …   1427812182  5000.0      0.0          0.0

   static_usd_rate  backers_count  spotlight  staff_pick  \
0              1.0              0          0           0
1              1.0              0          0           0
2              1.0              0          0           0
3              1.0              0          0           0
4              1.0              0          0           0

   disable_communication  Full_Country_Name
0                      0      United States
1                      0      United States
2                      0      United States
3                      0      United States
4                      0      United States

[5 rows x 21 columns]
```

[25]:
```
dates=['created_at','deadline','updated_at',
       'state_changed_at','successful_at','launched_at']

for x in dates:
  crowdfunding[x]=pd.to_datetime(crowdfunding[x],unit='s')

for x in dates:
  crowdfunding[x]=crowdfunding[x].dt.date

crowdfunding.head()
```

[25]:
```
         id   state                                               name  \
0  24080365  failed                          Feature Film: The Wolfes
1  27131878  failed                                       BarBQ 4REAL
2  30525634  failed                                Down on the Street
3  31977817  failed  Descent into Madness-Stream of Conscious Endur…
4  33517733  failed    Help us add more content and deliver it faster!

   creator_id  location_id  category_id  created_at    deadline  updated_at  \
0  1439247114    2488042.0          293  2017-02-01  2017-03-03  2017-03-03
1   680525996    2466256.0           10  2015-04-01  2015-05-01  2015-05-01
2   222229854    2458410.0          276  2016-03-08  2016-04-08  2016-04-08
3  1978657574    2523194.0           48  2012-07-25  2012-08-30  2014-04-18
4  1016683395    2433227.0           18  2015-03-31  2015-04-10  2015-04-10

  state_changed_at  … launched_at    goal  pledged  usd_pledged  \
```

```
0       2017-03-03  …  2017-02-01  5000.0      0.0          0.0
1       2015-05-01  …  2015-04-01  5000.0      0.0          0.0
2       2016-04-08  …  2016-03-09  5000.0      0.0          0.0
3       2012-08-30  …  2012-07-31  5000.0      0.0          0.0
4       2015-04-10  …  2015-03-31  5000.0      0.0          0.0

   static_usd_rate  backers_count  spotlight  staff_pick  \
0              1.0              0          0           0
1              1.0              0          0           0
2              1.0              0          0           0
3              1.0              0          0           0
4              1.0              0          0           0

   disable_communication  Full_Country_Name
0                      0      United States
1                      0      United States
2                      0      United States
3                      0      United States
4                      0      United States

[5 rows x 21 columns]
```

[26]:
```
crowdfunding['adjusted_pledged']=␣
 ↪(crowdfunding['static_usd_rate']*crowdfunding['pledged'])

crowdfunding.head()
```

[26]:
```
         id   state                                               name  \
0  24080365  failed                           Feature Film: The Wolfes
1  27131878  failed                                       BarBQ 4REAL
2  30525634  failed                                Down on the Street
3  31977817  failed  Descent into Madness-Stream of Conscious Endur…
4  33517733  failed    Help us add more content and deliver it faster!

   creator_id  location_id  category_id  created_at    deadline  updated_at  \
0  1439247114    2488042.0          293  2017-02-01  2017-03-03  2017-03-03
1   680525996    2466256.0           10  2015-04-01  2015-05-01  2015-05-01
2   222229854    2458410.0          276  2016-03-08  2016-04-08  2016-04-08
3  1978657574    2523194.0           48  2012-07-25  2012-08-30  2014-04-18
4  1016683395    2433227.0           18  2015-03-31  2015-04-10  2015-04-10

  state_changed_at  …    goal pledged  usd_pledged  static_usd_rate  \
0       2017-03-03  …  5000.0     0.0          0.0              1.0
1       2015-05-01  …  5000.0     0.0          0.0              1.0
2       2016-04-08  …  5000.0     0.0          0.0              1.0
3       2012-08-30  …  5000.0     0.0          0.0              1.0
4       2015-04-10  …  5000.0     0.0          0.0              1.0
```

```
   backers_count  spotlight  staff_pick  disable_communication  \
0              0          0           0                      0
1              0          0           0                      0
2              0          0           0                      0
3              0          0           0                      0
4              0          0           0                      0

   Full_Country_Name  adjusted_pledged
0      United States               0.0
1      United States               0.0
2      United States               0.0
3      United States               0.0
4      United States               0.0

[5 rows x 22 columns]
```

[27]:
```
crowdfunding.drop(columns=['static_usd_rate',
                           'pledged'],
                  inplace=True)
crowdfunding.head()
```

[27]:
```
         id   state                                               name  \
0  24080365  failed                          Feature Film: The Wolfes
1  27131878  failed                                       BarBQ 4REAL
2  30525634  failed                                Down on the Street
3  31977817  failed  Descent into Madness-Stream of Conscious Endur…
4  33517733  failed    Help us add more content and deliver it faster!

   creator_id  location_id  category_id  created_at    deadline  updated_at  \
0  1439247114    2488042.0          293  2017-02-01  2017-03-03  2017-03-03
1   680525996    2466256.0           10  2015-04-01  2015-05-01  2015-05-01
2   222229854    2458410.0          276  2016-03-08  2016-04-08  2016-04-08
3  1978657574    2523194.0           48  2012-07-25  2012-08-30  2014-04-18
4  1016683395    2433227.0           18  2015-03-31  2015-04-10  2015-04-10

  state_changed_at successful_at launched_at    goal  usd_pledged  \
0       2017-03-03           NaT  2017-02-01  5000.0          0.0
1       2015-05-01           NaT  2015-04-01  5000.0          0.0
2       2016-04-08           NaT  2016-03-09  5000.0          0.0
3       2012-08-30           NaT  2012-07-31  5000.0          0.0
4       2015-04-10           NaT  2015-03-31  5000.0          0.0

   backers_count  spotlight  staff_pick  disable_communication  \
0              0          0           0                      0
1              0          0           0                      0
2              0          0           0                      0
```

```
3              0          0          0                      0
4              0          0          0                      0

  Full_Country_Name  adjusted_pledged
0     United States               0.0
1     United States               0.0
2     United States               0.0
3     United States               0.0
4     United States               0.0
```

calendar table

[28]:
```
min_date=(crowdfunding[dates]
          .stack()
          .min())

max_date=(crowdfunding[dates]
          .stack()
          .max())

all_dates=(pd.date_range(start=min_date,
                         end=max_date,
                         freq='D'))

calendar=(pd.DataFrame({'dates':all_dates}))

calendar
```

[28]:
```
          dates
0    2009-04-21
1    2009-04-22
2    2009-04-23
3    2009-04-24
4    2009-04-25
…         …
3627 2019-03-27
3628 2019-03-28
3629 2019-03-29
3630 2019-03-30
3631 2019-03-31

[3632 rows x 1 columns]
```

[29]:
```
calendar['day']=calendar['dates'].dt.day
calendar['month']=calendar['dates'].dt.month
calendar['year']=calendar['dates'].dt.year
calendar['month name']=calendar['dates'].dt.month_name()
```

```
calendar['quarter']=calendar['dates'].dt.quarter
calendar['weekday']=calendar['dates'].dt.weekday
calendar['day_name']=calendar['dates'].dt.day_name()
calendar['year_month']=calendar['dates'].dt.strftime('%Y-%b')
calendar['financial_month']=((calendar['month']-4+12)%12+1)
calendar['financial_quarter']=((calendar['financial_month']-1)//3)+1
calendar
```

[29]:

	dates	day	month	year	month name	quarter	weekday	day_name
0	2009-04-21	21	4	2009	April	2	1	Tuesday
1	2009-04-22	22	4	2009	April	2	2	Wednesday
2	2009-04-23	23	4	2009	April	2	3	Thursday
3	2009-04-24	24	4	2009	April	2	4	Friday
4	2009-04-25	25	4	2009	April	2	5	Saturday
…	…	…	…	…	…	…	…	…
3627	2019-03-27	27	3	2019	March	1	2	Wednesday
3628	2019-03-28	28	3	2019	March	1	3	Thursday
3629	2019-03-29	29	3	2019	March	1	4	Friday
3630	2019-03-30	30	3	2019	March	1	5	Saturday
3631	2019-03-31	31	3	2019	March	1	6	Sunday

	year_month	financial_month	financial_quarter
0	2009-Apr	1	1
1	2009-Apr	1	1
2	2009-Apr	1	1
3	2009-Apr	1	1
4	2009-Apr	1	1
…	…	…	…
3627	2019-Mar	12	4
3628	2019-Mar	12	4
3629	2019-Mar	12	4
3630	2019-Mar	12	4
3631	2019-Mar	12	4

[3632 rows x 11 columns]

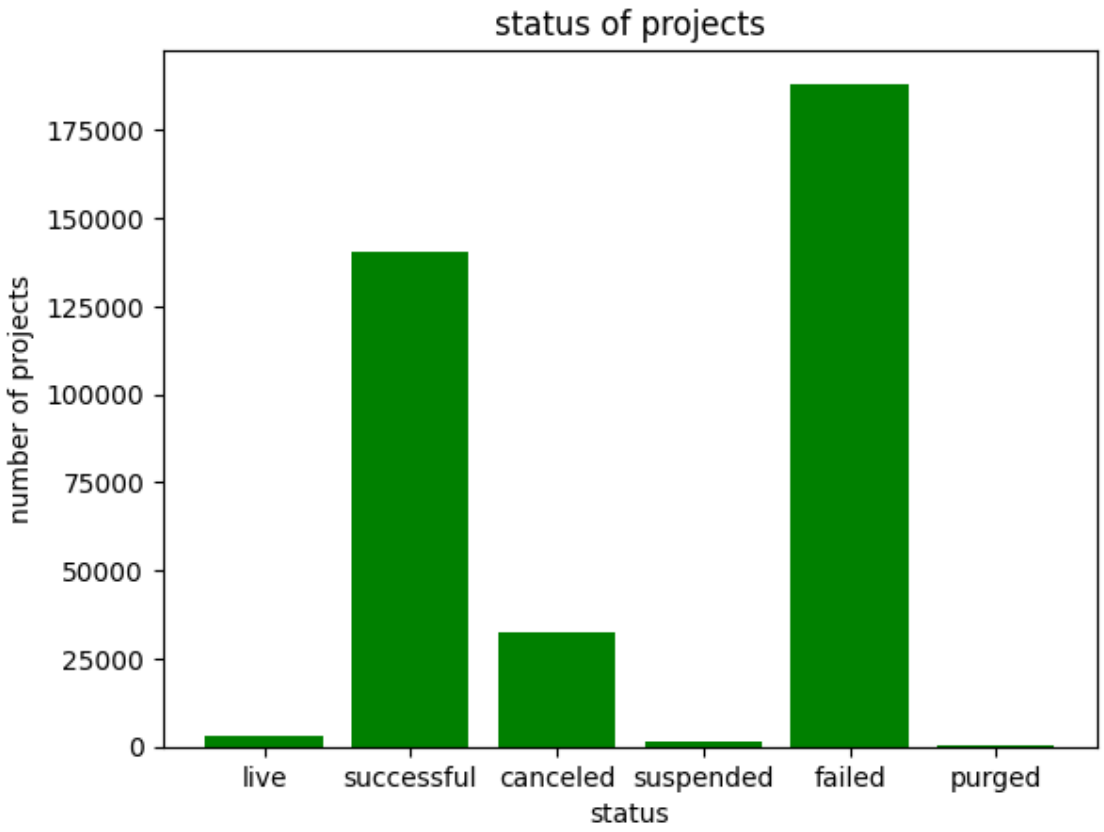
exploratory data analysis

[30]:
```
custom_order = ['live', 'successful', 'canceled',
                'suspended', 'failed', 'purged']

status_number_of_project=(crowdfunding
                          .groupby('state')['id']
                          .count()
                          .reset_index())
status_number_of_project=(status_number_of_project
                          .set_index('state')
```

```
                            .reindex(custom_order)
                            .reset_index())
status_number_of_project.rename(columns={'id':'number_of_projects'},
                                inplace=True)
print(status_number_of_project)

status_number_of_project_bar=plt.bar(
    status_number_of_project['state'],
    status_number_of_project['number_of_projects'],
     color='green')
plt.title('status of projects')
plt.xlabel('status')
plt.ylabel('number of projects')
```

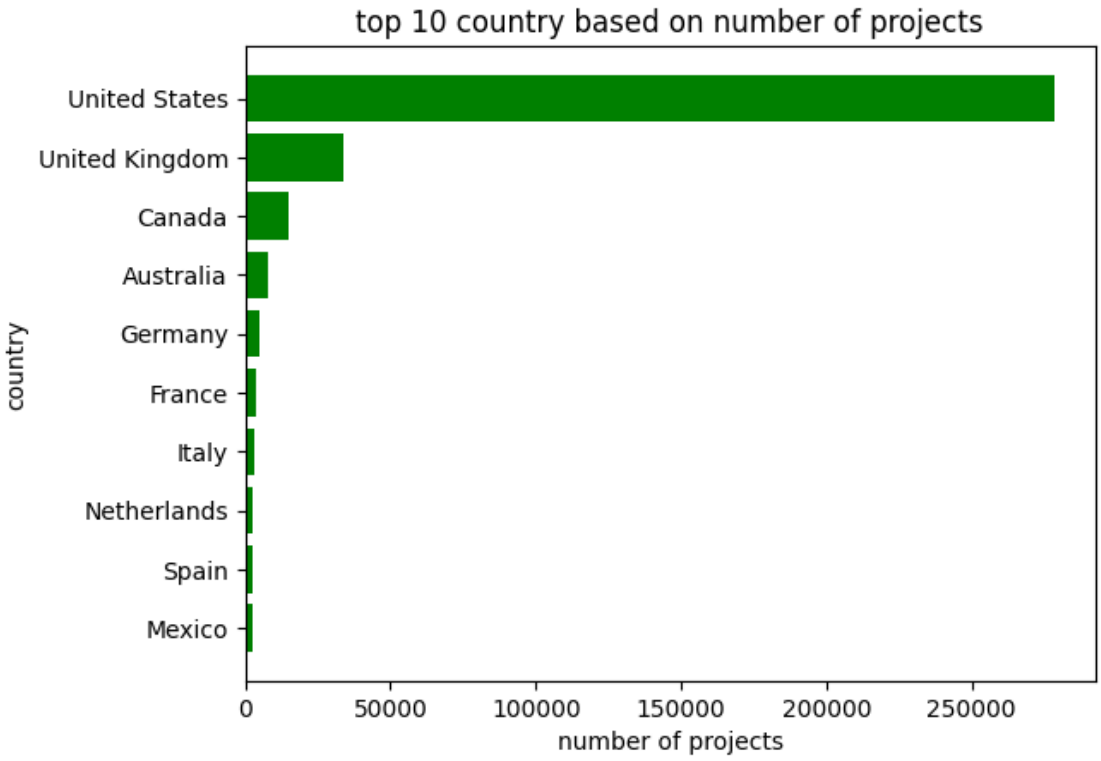
```
        state  number_of_projects
0        live                3163
1  successful              140313
2    canceled               32498
3   suspended                1501
4      failed              188239
5      purged                 178
```

[30]: Text(0, 0.5, 'number of projects')



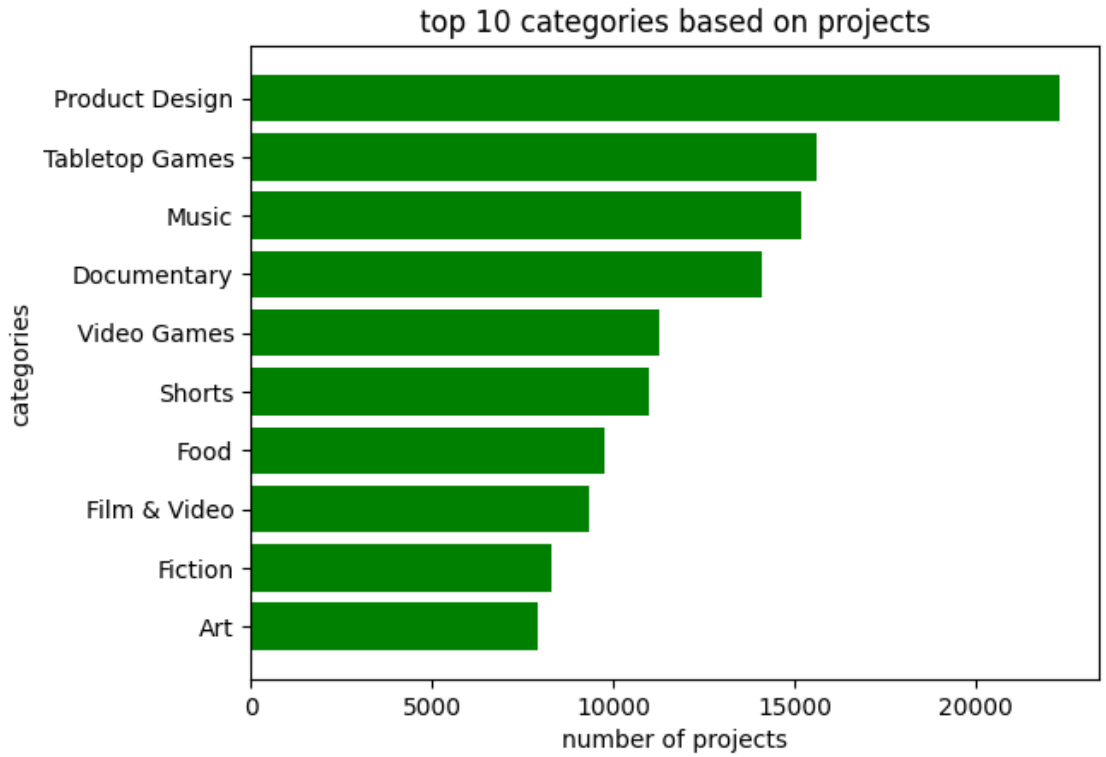
[31]:
```
location_number_of_project=(crowdfunding
                            .groupby('Full_Country_Name')['id']
                            .count()
                            .reset_index()
                            .sort_values('id',
                                         ascending=False)
                            [:10])
print(location_number_of_project)

location_number_of_project_barh=plt.barh(
    location_number_of_project['Full_Country_Name'],
  location_number_of_project['id'],
  color='green')
plt.title('top 10 country based on number of projects')
plt.xlabel('number of projects')
plt.ylabel('country')
plt.gca().invert_yaxis()
```

```
   Full_Country_Name      id
21     United States  278524
20    United Kingdom   34074
3             Canada   14774
0          Australia    7757
6            Germany    4714
5             France    3532
9              Italy    3374
13       Netherlands    2836
17             Spain    2737
12            Mexico    2677
```



[32]:
```
category_number_of_project=(crowdfunding
                            .groupby('category_id')['id']
                            .count()
                            .reset_index()
                            .sort_values('id',
                                         ascending=False)
                            [:10])

category_number_of_project=(category_number_of_project
                            .merge(category,
                                   how='left',
                                   left_on='category_id',
                                   right_on='id'))
category_number_of_project.rename(columns={'id_x':'number_of_projects'},
                                  inplace=True)
category_number_of_project[['name','number_of_projects']]

category_number_of_project_barh=plt.barh(
  category_number_of_project['name'],
  category_number_of_project['number_of_projects'],
  color='green')
plt.title('top 10 categories based on projects')
```

```
plt.xlabel('number of projects')
plt.ylabel('categories')
plt.gca().invert_yaxis()
```

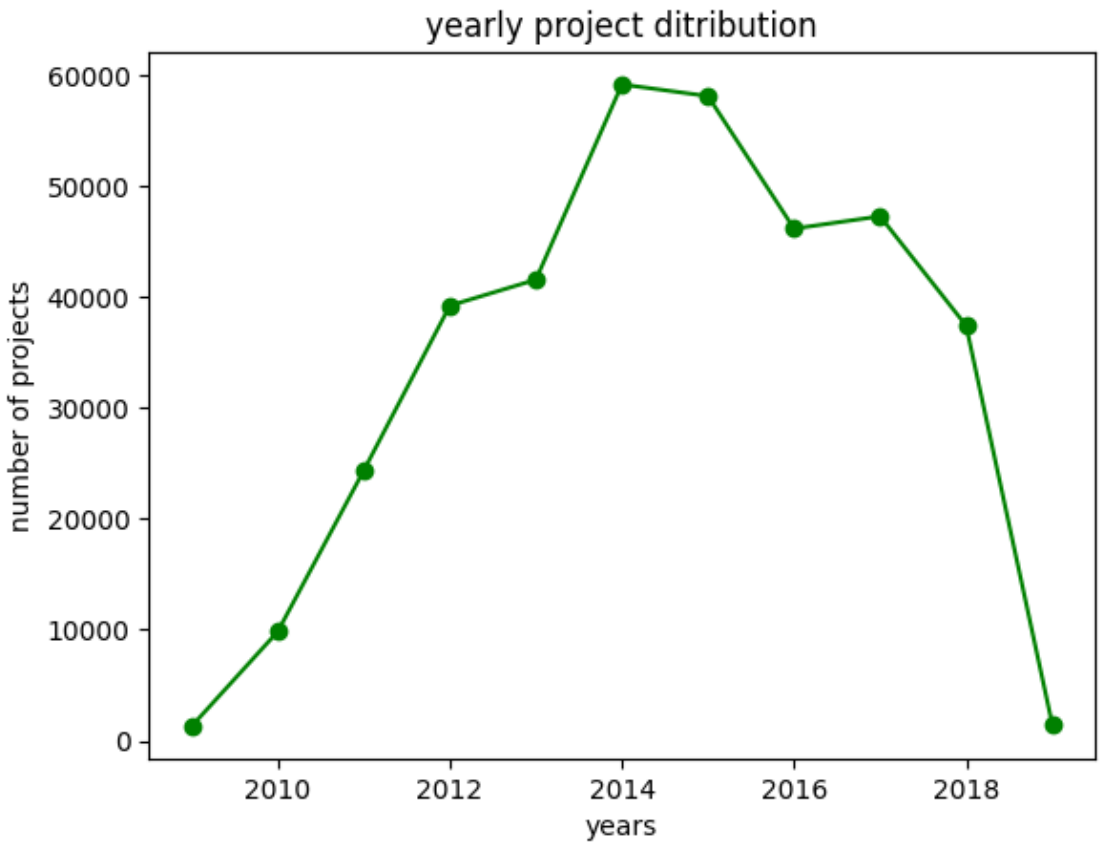


[33]:
```
crowdfunding['created_at']=(pd.to_datetime(crowdfunding['created_at']).dt
                            .normalize())
calendar['dates']=pd.to_datetime(calendar['dates']).dt.normalize()

yearly_number_of_projects=(crowdfunding
                           .merge(calendar[['dates','year','month','quarter']]
                                  ,how='left'
                                  ,left_on='created_at'
                                  ,right_on='dates'))
yearly_number_of_projects.rename(columns={'id':'number of projects'}
                                 ,inplace=True)

yearly_number_of_projects=(yearly_number_of_projects
                           .groupby('year')
                           ['number of projects']
                           .count()
                           .reset_index()
                           .sort_values('year',
```

```
                                        ascending=True))

print(yearly_number_of_projects)

yearly_number_of_projects=plt.plot(yearly_number_of_projects['year'],
                                   yearly_number_of_projects['number of␣
 ↪projects'],
                                   color='green',
                                   marker='o')
plt.title('yearly project ditribution')
plt.xlabel('years')
plt.ylabel('number of projects')
```

```
    year  number of projects
0   2009                1310
1   2010                9835
2   2011               24359
3   2012               39216
4   2013               41556
5   2014               59155
6   2015               58104
7   2016               46158
8   2017               47270
9   2018               37410
10  2019                1519
```

[33]: Text(0, 0.5, 'number of projects')

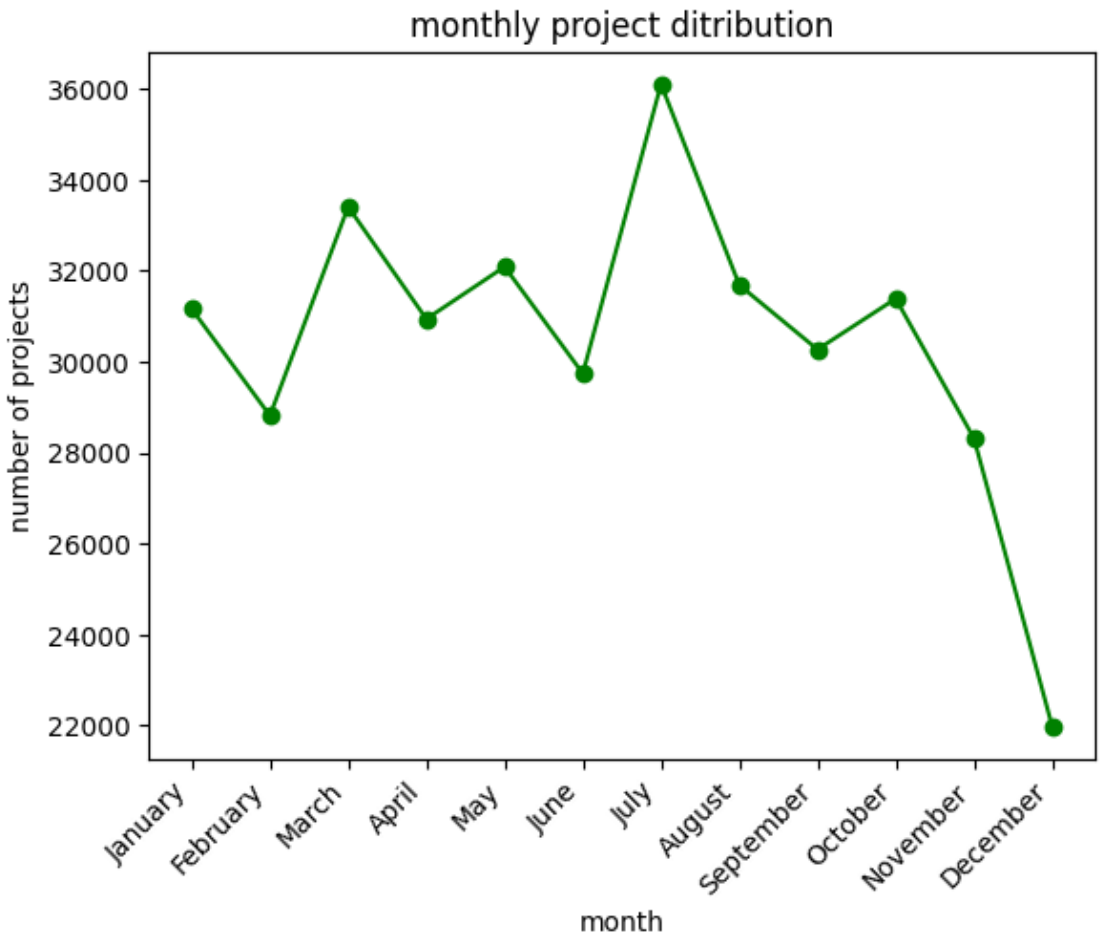


[34]:
```
crowdfunding['created_at']=(pd.to_datetime(crowdfunding['created_at']).dt
                            .normalize())
calendar['dates']=pd.to_datetime(calendar['dates']).dt.normalize()
monthly_number_of_projects=(crowdfunding
                            .merge(calendar[['dates','year','month','month␣
 ↪name']]
                                   ,how='left'
                                   ,left_on='created_at'
                                   ,right_on='dates'))
monthly_number_of_projects.rename(columns={'id':'number of projects'}
                                  ,inplace=True)

monthly_number_of_projects=(monthly_number_of_projects
                            .groupby(['month name','month'])
                            ['number of projects']
                            .count()
                            .reset_index()
                            .sort_values('month',
                                         ascending=True))
print(monthly_number_of_projects[['month name',
```

```
                                    'number of projects']])

monthly_number_of_projects=plt.plot(monthly_number_of_projects['month name'],
                                    monthly_number_of_projects['number of␣
 ↪projects'],
                                    color='green',
                                    marker='o')
plt.title('monthly project ditribution')
plt.xlabel('month')
plt.ylabel('number of projects')
plt.xticks(rotation=45,ha='right')
```

	month name	number of projects
4	January	31161
3	February	28814
7	March	33406
0	April	30939
8	May	32087
6	June	29740
5	July	36101
1	August	31686
11	September	30269
10	October	31386
9	November	28316
2	December	21987

[34]:
```
([0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11],
 [Text(0, 0, 'January'),
  Text(1, 0, 'February'),
  Text(2, 0, 'March'),
  Text(3, 0, 'April'),
  Text(4, 0, 'May'),
  Text(5, 0, 'June'),
  Text(6, 0, 'July'),
  Text(7, 0, 'August'),
  Text(8, 0, 'September'),
  Text(9, 0, 'October'),
  Text(10, 0, 'November'),
  Text(11, 0, 'December')])
```



[35]:
```
successful_usd_pledged=((crowdfunding[crowdfunding['state']=='successful']
 ['usd_pledged']
                         .sum())/1000000).round(2)
successful_backers_count=((crowdfunding[crowdfunding['state']=='successful']['backers_count']
                           .sum())/1000000).round(2)
print('amount pledged for successful projects => $ ',successful_usd_pledged, '␣
 ↪million')
print('number of backers for successful projects => ',successful_backers_count,␣
 ↪'million')
```

```
amount pledged for successful projects => $  3479.48  million
number of backers for successful projects =>  39.97 million
```

[52]:
```
crowdfunding['launched_at']=pd.to_datetime(crowdfunding['launched_at']
                                           , errors='coerce')
crowdfunding['successful_at']=pd.to_datetime(crowdfunding['successful_at']
                                             , errors='coerce')
```

```
successful_project_duration=(crowdfunding[(crowdfunding['state']=='successful')
&(crowdfunding['launched_at'].notna())
&(crowdfunding['successful_at'].notna())].copy())
successful_project_duration['duration']=(successful_project_duration['successful_at']-
                                         ␣
 ↪successful_project_duration['launched_at']).dt.days
successful_project_duration

average_duration_successful = successful_project_duration['duration'].mean().
 ↪round(2)
print('average duration of projects are => ',average_duration_successful,'␣
 ↪days')
```

```
average duration of projects are =>  31.9  days
```

[38]:
```
crowdfunding[['name','usd_pledged']].sort_values('usd_pledged',
                                                 ascending=False)[:10]
```

[38]:

	name	usd_pledged
257951	Pebble Time - Awesome Smartwatch, No Compromises	20338986.27
252760	COOLEST COOLER: 21st Century Cooler that's Act…	13285226.36
255265	Pebble 2, Time 2 + All-New Pebble Core	12779843.49
251982	Kingdom Death: Monster 1.5	12393139.69
236903	Pebble: E-Paper Watch for iPhone and Android	10266845.74
258314	The World's Best TRAVEL JACKET with 15 Feature…	9192055.66
247393	Exploding Kittens	8782571.99
355877	OUYA: A New Kind of Video Game Console	8596474.58
246519	THE 7th CONTINENT - What Goes Up, Must Come Down.	7072757.00
253297	The Everyday Backpack, Tote, and Sling	6565782.50

[39]:
```
crowdfunding[['name','backers_count']].sort_values('backers_count',
                                                   ascending=False)[:10]
```

[39]:

	name	backers_count
247393	Exploding Kittens	219382
252927	Fidget Cube: A Vinyl Desk Toy	154926
256331	Bring Reading Rainbow Back for Every Child, Ev…	105857
351287	The Veronica Mars Movie Project	91585
250606	Double Fine Adventure	87142
254217	Bears vs Babies - A Card Game	85581
257951	Pebble Time - Awesome Smartwatch, No Compromises	78471
247861	Torment: Tides of Numenera	74405
247034	Project Eternity	73986
241190	Yooka-Laylee - A 3D Platformer Rare-vival!	73206

[40]:
```
top_10_backers = crowdfunding.nlargest(10,
                                       'backers_count')[['name',
```

```
                                                    'backers_count']]
print(top_10_backers)
```

```
                                                  name  backers_count
247393                                  Exploding Kittens         219382
252927                       Fidget Cube: A Vinyl Desk Toy         154926
256331  Bring Reading Rainbow Back for Every Child, Ev…         105857
351287                     The Veronica Mars Movie Project          91585
250606                                Double Fine Adventure          87142
254217                       Bears vs Babies - A Card Game          85581
257951   Pebble Time - Awesome Smartwatch, No Compromises          78471
247861                           Torment: Tides of Numenera          74405
247034                                 Project Eternity          73986
241190         Yooka-Laylee - A 3D Platformer Rare-vival!          73206
```

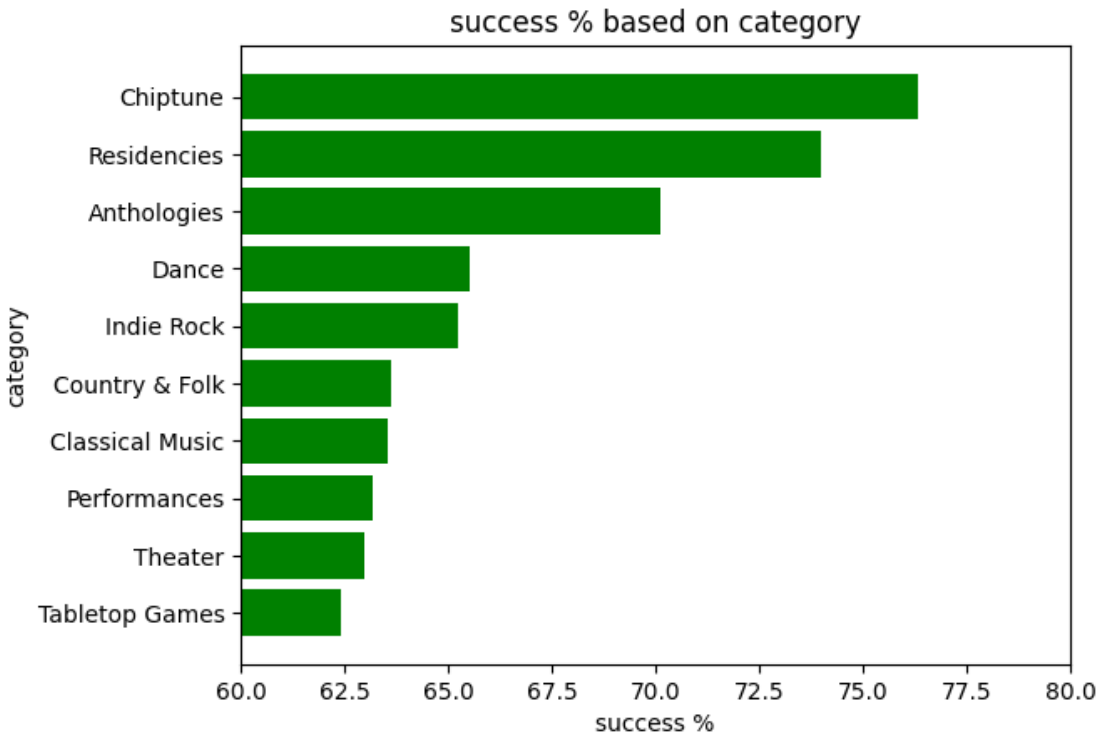
[41]:
```
total_projects=crowdfunding['id'].count()

successfull_project=(crowdfunding[crowdfunding['state']=='successful']['id']
                     .count())

successfull_percent=((successfull_project*100)/total_projects).round(2)
print('success % => ',successfull_percent,' %')
```

```
success % =>  38.35  %
```

[53]:
```
category_projects=crowdfunding.merge(category,
                                     how='left',
                                     left_on='category_id',
                                     right_on='id')
category_projects.rename(columns={'name_y':'category_name',
                                  'id_x':'id'},inplace=True)

total_category_projects=(category_projects
                         .groupby('category_name')['id']
                         .count()
                         .reset_index())
total_category_projects

successfull_category_project=(category_projects
 [category_projects['state']=='successful']
                              .groupby('category_name')['id']
                              .count()
                              .reset_index())
successfull_category_project

category_success_percent=total_category_projects.
 ↪merge(successfull_category_project
```

```
                                                    ,how='left'
                                                    ,on='category_name')
category_success_percent.rename(columns={'id_x':'total',
                                         'id_y':'success'},inplace=True)

category_success_percent['percent']=(category_success_percent['success']*100
                                     /category_success_percent['total']).
 ↪round(2)

print(category_success_percent.sort_values('percent',
                                           ascending=False)[:10])

top_10_category=category_success_percent.sort_values('percent',
                                                     ascending=False)[:10]

top_10_category_barh=plt.barh(top_10_category['category_name'],
                              top_10_category['percent'],
                              color='green')
plt.title('success % based on category')
plt.xlabel('success %')
plt.ylabel('category')
plt.xlim(60,80)
plt.gca().invert_yaxis()
```

```
       category_name  total  success  percent
21           Chiptune     38       29    76.32
122       Residencies     73       54    73.97
6         Anthologies    960      673    70.10
36              Dance   2084     1365    65.50
72         Indie Rock   5078     3313    65.24
30    Country & Folk   4246     2701    63.61
23   Classical Music   2454     1559    63.53
99       Performances   1018      643    63.16
141           Theater   6236     3927    62.97
136   Tabletop Games  15618     9749    62.42
```

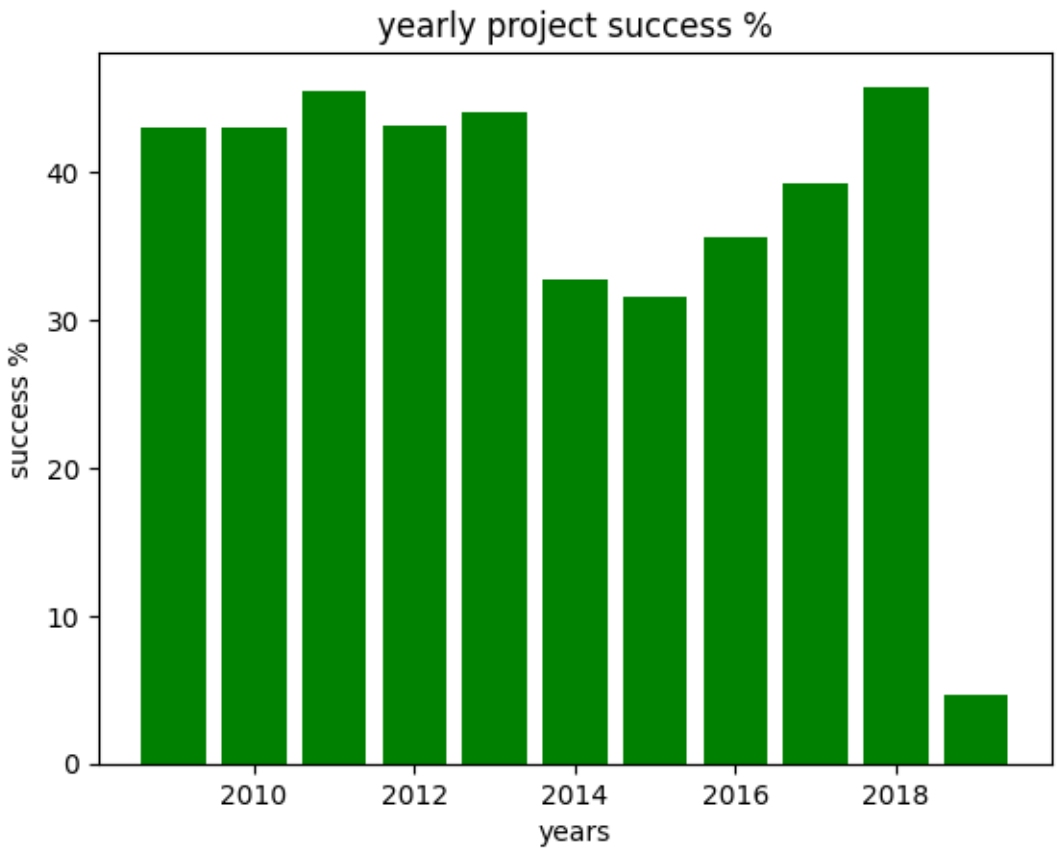


[63]:
```
yearly_project=crowdfunding.merge(calendar,
                                  how='left',
                                  left_on='launched_at',
                                  right_on='dates')
yearly_project

yearly_project_total=(yearly_project
                      .groupby('year')['id']
                      .count()
                      .reset_index()
                      .sort_values('year',
                                   ascending=True))
yearly_project_total

yearly_project_success=(yearly_project[yearly_project['state']=='successful']
                        .groupby('year')['id']
                        .count()
                        .reset_index()
                        .sort_values('year',
                                     ascending=True))
yearly_project_success

yearly_project_success_percent=(yearly_project_total
```

```
                                    .merge(yearly_project_success
                                           ,how='left'
                                           ,on='year'))
yearly_project_success_percent.rename(columns={'id_x':'total',
                                               'id_y':'success'},
                                      inplace=True)

yearly_project_success_percent['percentage']=(yearly_project_success_percent['success']*100
                                              /
 ↪yearly_project_success_percent['total']).round(2)
print(yearly_project_success_percent)

yearly_project_success_percent_bar=plt.
 ↪bar(yearly_project_success_percent['year']
                                             ␣
 ↪,yearly_project_success_percent['percentage']
                                              ,color='green')
plt.title('yearly project success %')
plt.xlabel('years')
plt.ylabel('success %')
```

```
    year  total  success  percentage
0   2009   1172      505       43.09
1   2010   9186     3955       43.05
2   2011  22968    10465       45.56
3   2012  35884    15486       43.16
4   2013  39842    17550       44.05
5   2014  58814    19284       32.79
6   2015  59346    18717       31.54
7   2016  46809    16639       35.55
8   2017  48112    18897       39.28
9   2018  40772    18675       45.80
10  2019   2987      140        4.69
```

[63]: Text(0, 0.5, 'success %')

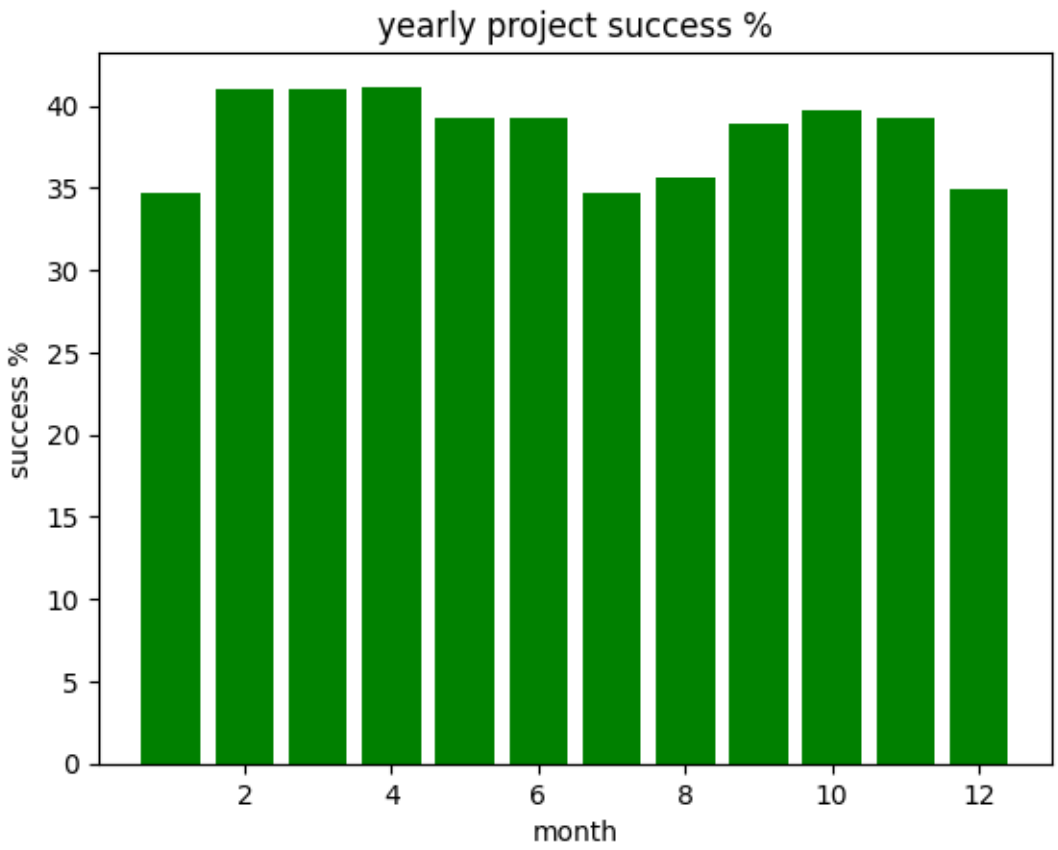


[67]:
```
monthly_project=crowdfunding.merge(calendar,
                                   how='left',
                                   left_on='launched_at',
                                   right_on='dates')
monthly_project

monthly_project_total=(monthly_project
                       .groupby(['month','month name'])['id']
                       .count()
                       .reset_index()
                       .sort_values('month',
                                    ascending=True))
monthly_project_total

monthly_project_success=(monthly_project[monthly_project['state']=='successful']
                         .groupby(['month','month name'])['id']
                         .count()
                         .reset_index()
                         .sort_values('month',
                                      ascending=True))
```

```
monthly_project_success

monthly_project_success_percent=(monthly_project_total
                                 .merge(monthly_project_success
                                        ,how='left'
                                        ,on='month'))
monthly_project_success_percent.rename(columns={'id_x':'total',
                                                'id_y':'success',
                                                 'month name_x':'month name'},
                                       inplace=True)

monthly_project_success_percent['percentage']=(monthly_project_success_percent['success']*100
                                               /
 ↪monthly_project_success_percent['total']).round(2)
print(monthly_project_success_percent[['month␣
 ↪name','total','success','percentage']])

monthly_project_success_percent=plt.bar(monthly_project_success_percent['month']
                                        ␣
 ↪,monthly_project_success_percent['percentage']
                                         ,color='green')
plt.title('yearly project success %')
plt.xlabel('month')
plt.ylabel('success %')
```

	month name	total	success	percentage
0	January	28779	9999	34.74
1	February	27171	11142	41.01
2	March	32142	13168	40.97
3	April	30137	12404	41.16
4	May	32307	12686	39.27
5	June	31214	12253	39.25
6	July	35151	12193	34.69
7	August	31758	11326	35.66
8	September	30630	11912	38.89
9	October	33511	13303	39.70
10	November	31787	12477	39.25
11	December	21305	7450	34.97

[67]: Text(0, 0.5, 'success %')



[75]:
```
spotlighted_goal=((crowdfunding[crowdfunding['spotlight']==1]
                   .groupby('spotlight')['goal']
                   .sum())/1000000).round(2)

spotlighted_pledged=((crowdfunding[crowdfunding['spotlight']==1]
                      .groupby('spotlight')['usd_pledged']
                      .sum())/1000000).round(2)

spotlighted_goal_percent=(spotlighted_pledged*100
                          /spotlighted_goal).round(2)

print('goal of spotlighted projects => $ ',spotlighted_goal[1],' million')
print('pledgef on spotlighted projects => $ ',spotlighted_pledged[1],' million')
print('goal acheived => ',spotlighted_goal_percent[1],' %')
```

```
goal of spotlighted projects => $  1723.83  million
pledgef on spotlighted projects => $  3479.48  million
goal acheived =>  201.85  %
```

[76]:
```
staff_pick_goal=((crowdfunding[crowdfunding['staff_pick']==1]
                  .groupby('staff_pick')['goal']
                  .sum())/1000000).round(2)

staff_pick_pledged=((crowdfunding[crowdfunding['staff_pick']==1]
                     .groupby('staff_pick')['usd_pledged']
                     .sum())/1000000).round(2)

staff_pick_percent=(staff_pick_pledged*100
                    /staff_pick_goal).round(2)

print('goal of staff picked projects => $ ',staff_pick_goal[1],' million')
print('pledgef on staff picked projects => $ ',staff_pick_pledged[1],' million')
print('goal acheived => ',staff_pick_percent[1],' %')
```

```
goal of staff picked projects => $  1229.37  million
pledgef on staff picked projects => $  1800.11  million
goal acheived =>  146.43  %
```