Team Mango Component Three

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1 Team Mango Component Three

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1.1.1 Approach

Applied Pandas structural adaptations Applied Ipywidgets dropbox to select category Adapted On Street Map(OSM) to project scatter points on map Applied Ipywidgets interactive plot to plot based on selected category Formed linear regression model to explore the relationship between quants Polted 3D linear regression model using library scatter3d in R

1.1.2 Strengths :

Plot longitude and latitude based on select category Explore linear relationships in R and plot in 3D ### Weaknesses: Things became awkward if there is no linear relationship ### Further ideas: Add new methodology to study the name column. Generalize functions from a higher dimension

```
In [1]: %matplotlib inline
        import pandas as pd
        import numpy as np
```

```
In [2]: import matplotlib.pyplot as plt
        import numpy as np
        import cartopy.crs as ccrs
        from cartopy.io.img_tiles import OSM
        import matplotlib.patches as mpatches
        import cartopy.io.shapereader as shpreader
```

```
In [3]: from ipywidgets import widgets
        from ipywidgets import interact, interactive, fixed
        from IPython.display import display
        from IPython.display import clear_output
```

```
In [4]: sample = pd.read_csv("/home/hanlinz3/work/data-readonly/sample_project/samp
```

```
In [5]: sample
```

```
Out[5]:               names         dates   latitude   longitude categorical  \
        0          b'Rawad'  1.453009e+09 -19.988651  -41.435565  Category01
        1          b'Eurma'  1.471779e+09  -8.593256   27.742604  Category00
        2         b'Taleia'  1.473613e+09 -67.463164 -109.366796  Category04
        3          b'Niley'  1.481194e+09  -7.537010  -32.218540  Category03
        4           b'Acey'  1.454403e+09 -17.116866    2.949914  Category05
        5          b'Obert'  1.463099e+09  86.050560 -138.759294  Category00
        6          b'Kadel'  1.481066e+09  53.965137 -174.545084  Category04
        7       b'Jaiyanna'  1.461933e+09  37.910119 -135.568743  Category04
        8         b'Haylei'  1.469303e+09 -79.231809  168.419140  Category07
        9          b'Ayhem'  1.454702e+09  33.318067   56.065283  Category09
        10         b'Fedel'  1.477812e+09 -18.631134   74.340457  Category01
        11          b'Atha'  1.466150e+09 -15.882935   33.755634  Category01
        12       b'Taylene'  1.472723e+09  69.425034 -124.728635  Category05
        13        b'Genina'  1.482226e+09  61.685583  141.923636  Category08
        14     b'Elixander'  1.463552e+09 -67.770747   56.036081  Category09
        15        b'Jahnya'  1.461510e+09   4.296019  161.049428  Category02
        16         b'Azaya'  1.458175e+09 -89.106637 -150.374896  Category09
        17       b'Anayiah'  1.457540e+09 -51.362964 -128.872179  Category00
        18      b'Delancey'  1.473523e+09  45.301007  -74.002461  Category02
        19     b'Kristyann'  1.473232e+09  44.042561   82.124422  Category09
        20       b'Maricus'  1.479362e+09  23.635053  -34.796197  Category09
        21       b'Londrea'  1.451648e+09  24.246534  145.237564  Category05
        22       b'Estevon'  1.471408e+09  39.872263  117.499469  Category09
        23          b'Eain'  1.476578e+09 -47.091409  129.394600  Category08
        24       b'Shavell'  1.475366e+09  -0.527327   63.824952  Category09
        25       b'Dashani'  1.462195e+09  49.704764 -109.135565  Category07
        26       b'Eldonna'  1.453695e+09 -21.269648  140.776309  Category00
        27          b'Rahn'  1.464105e+09  26.076161  -64.508102  Category06
        28         b'Minot'  1.473936e+09 -87.114246  -32.314094  Category02
        29      b'Raymonda'  1.471700e+09  -9.793353   -8.718552  Category07
        ...             ...           ...        ...         ...         ...
        9970     b'Laurren'  1.458460e+09  41.109309  -82.105617  Category01
        9971       b'Jaton'  1.479829e+09 -44.566366   15.067713  Category02
        9972    b'Maimouna'  1.467342e+09 -19.613645  -74.123815  Category02
        9973     b'Aryadne'  1.474672e+09  10.342361 -120.194637  Category08
        9974     b'Shanora'  1.475273e+09 -18.285435  -55.619155  Category03
        9975      b'Sajada'  1.462412e+09  80.628859 -119.459036  Category03
        9976     b'Netanel'  1.456565e+09  45.558935   31.544488  Category05
        9977      b'Taijon'  1.456230e+09 -16.635588   29.298291  Category03
        9978    b'Sharolyn'  1.453897e+09 -60.332693 -127.608933  Category07
        9979      b'Levata'  1.468996e+09 -46.127497 -117.959590  Category02
        9980     b'Wintana'  1.463798e+09  58.996727    9.951270  Category03
        9981       b'Jetta'  1.482318e+09   8.291631 -129.460072  Category02
        9982      b'Gabria'  1.482389e+09 -85.987448   68.627340  Category03
        9983  b'Jeancarlos'  1.465042e+09   0.080870 -140.448914  Category05
        9984      b'Nykeah'  1.472588e+09 -81.868879   81.759626  Category04
        9985      b'Alessi'  1.463088e+09  43.940038  -52.933049  Category05
```

```
9986   b'Tasheyana'  1.479778e+09  79.165658 -107.304996  Category09
9987    b'Fontilla'  1.474412e+09  74.451666   96.805629  Category00
9988     b'Trashon'  1.464690e+09  67.206385   95.367839  Category03
9989    b'Jowharah'  1.451696e+09  73.461680   44.269413  Category00
9990       b'Niaja'  1.482663e+09  81.734375 -147.007016  Category03
9991  b'Kentravion'  1.455771e+09  57.677611  -60.183164  Category06
9992     b'Hamidou'  1.478331e+09 -49.829893   71.467144  Category01
9993      b'Levitt'  1.473655e+09 -29.062647   79.913371  Category02
9994       b'Vamsi'  1.461560e+09 -59.734482  -71.049606  Category05
9995      b'Luelle'  1.467967e+09  13.257298 -173.169478  Category05
9996      b'Dillon'  1.468901e+09  18.227792  156.464498  Category06
9997       b'Nijel'  1.482667e+09 -78.368112 -145.534834  Category00
9998      b'Jazlyn'  1.480075e+09 -75.182963  -24.697995  Category06
9999  b'Shamsuddin'  1.459758e+09  -9.428300  -99.558852  Category09

        quant1     quant2       quant3
0     1.933239   6.052785  6105.123120
1     1.520733 -11.065076   143.902725
2     1.863466  11.437340  2019.370225
3     0.745431  19.415543  3225.920647
4     1.031100  17.714492  4976.099324
5     0.820424 -28.240086  9725.990286
6     3.485479   9.613104  8133.741192
7     0.635373  -0.084906  8340.323743
8     0.802668  17.993627  4695.368570
9     2.353746  -9.800971  1558.909278
10    2.279198  14.212963   603.250919
11    2.313199  -9.623635  7044.723136
12    1.078249  24.543468    81.628608
13    1.544819 -29.355965  4522.289948
14    0.584293  18.746904  5441.181421
15    0.596829 -15.441511  5482.285192
16    2.465522  -8.731148  6751.807240
17    2.251502  -8.480145  5394.553440
18    2.904659   3.565720  3019.232739
19    0.099043  25.779190  7321.643212
20    3.096746  16.460597  1742.518054
21    0.784889  23.343431  3115.274165
22    2.581134   4.067460  1917.905564
23    1.700880  -5.844089  9803.118989
24    1.416720  -0.169747  8947.378554
25    0.232639   4.996006  9492.396614
26    2.243974 -19.226788  8765.931260
27    3.072518  10.650145  8885.653341
28    0.063764 -10.208023  2905.102566
29    2.736113  -2.197506  1269.268156
...        ...        ...          ...
9970  2.141946   5.910583   613.316535
```

```
9971  0.768464   4.141871  2291.365472
9972  0.809046  25.081299  4561.404428
9973  1.202602   6.223188   140.089570
9974  1.135072  10.621966  3191.708954
9975  3.212528   9.695361  6133.893736
9976  0.316655  27.446660  3859.377296
9977  3.107312  10.278640  7675.222881
9978  1.189200 -13.412873  5678.235326
9979  0.126877  18.176075  7190.940688
9980  1.271158   6.483840  2047.234461
9981  2.837812  12.497458  7290.823245
9982  2.617846 -23.778072  9770.933466
9983  2.985650   7.595019  6596.985459
9984  1.954755   3.066587  1958.578651
9985  2.218576  16.125749  8760.730550
9986  3.018528  -5.709372  8657.280110
9987  1.823004 -13.588756  3479.805493
9988  2.136117  24.660181  6079.967268
9989  1.311099 -21.443044  7105.817791
9990  0.393455 -24.667801  2314.685705
9991  1.761091  17.765023   270.382435
9992  1.030869  29.892049  3015.544626
9993  0.203698 -18.495980  9028.010032
9994  3.261224   6.662387  1443.032872
9995  1.936396  -9.293667  3673.375737
9996  2.890116  -2.320328  3133.787828
9997  2.885366  19.212612  9403.773994
9998  0.436459   2.483019  4740.240843
9999  2.876299  21.152533  6740.272452

[10000 rows x 8 columns]
```

```
In [6]: category = list(sample['categorical'].drop_duplicates().values)
```

```
In [7]: category.sort()
```

```
In [8]: cat_display = widgets.Dropdown(
            options=category,
            description=u'Category',
            disabled=False,
            continuous_update=True
        )
```

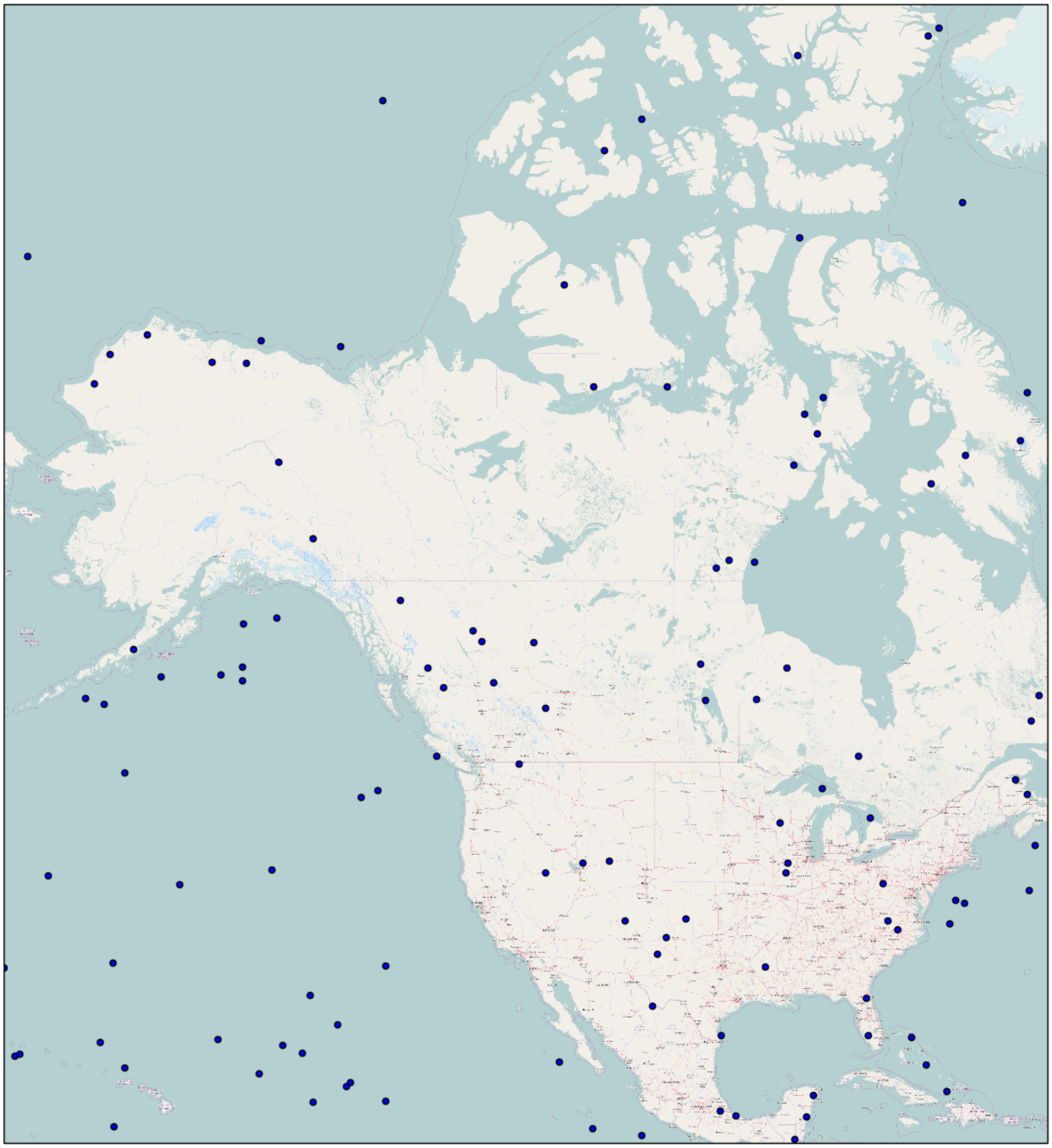
```
In [18]: def draw_map():
             display(cat_display)
             select = sample['categorical'] == cat_display.value

             lat, lon=43.979, -117.583
             dlat, dlon=28, 55
```

```
    osm_tiles=OSM()
    plt.figure(figsize=(15,15))
    ax = plt.axes(projection=osm_tiles.crs)
    ax.set_extent([lon-dlon,lon+dlon,lat - dlat, lat + dlat])
    ax.add_image(osm_tiles,6)
    ax.stock_img()

    ax.scatter(list(sample["longitude"][select]),list(sample["latitude"][s
    plt.show()
```

```
In [19]: widgets.interact(draw_map)
```



```
Out[19]: <function __main__.draw_map>

In [11]: len(sample["names"].unique())

Out[11]: 9501
```