In [117]:

```
import pandas as pd
import pandas
import seaborn as sns
import pyodbc
from gensim import corpora, models, similarities
import nltk
import re
import random
import binascii
import logging, gensim, bz2
from nltk.tag import pos_tag
import logging
import re
import tempfile
import tarfile, zipfile
import numpy as np
from gensim.utils import tokenize
from collections import defaultdict
logging.basicConfig(format='%(asctime)s : %(levelname)s : %(message)s', lev
el=logging.INFO)

import vertica_python

frequency = defaultdict(int)

conn_info = {'host': 'vertica04.reputation.ec2',
             'port': 5433,
             'user': 'rep_engine_user',
             'password': 'r3p_3ng1n3',
             'database': 'rwarehouse'}

cnxn = vertica_python.connect(**conn_info)

%matplotlib inline
```

In [119]:

```
## query for top 10 locations per industry
query_top10 = """
select
industry,
score,
AVG(weighted_rating) as a_weighted_rating,
AVG(visibility) as a_visibility,
AVG(spread) as a_spread,
AVG(volume) as a_volume,
AVG(time) as a_time, AVG(length) as a_length,
score as a_score from (
select industry, location_id, country, weighted_rating, visibility, spread,
volume, time, length, score, RANK() over (
partition by industry order by score desc
) as rank
from (
SELECT locations.industry,
mongo_repbiz_scores.score,
```

```
mongo_repbiz_scores.weighted_rating,
mongo_repbiz_scores.visibility,
mongo_repbiz_scores.spread,
mongo_repbiz_scores.volume,
mongo_repbiz_scores."time",
mongo_repbiz_scores.length,
mongo_repbiz_scores.location_id,
locations.country
FROM r4e_mongo.locations, r4e_mongo.mongo_repbiz_scores
WHERE (locations.location_id = mongo_repbiz_scores.location_id)
) as b
)
as a
where rank <= 10
group by industry, score
order by industry asc
"""

result_top10 = pd.read_sql(query_top10, cnxn)
del result_top10['score']
del result_top10['a_score']

result_top10.loc[0] = np.array([1, 2, 3, 4, 5, 6, 7])
result_top10.columns = result_top10.iloc[0] # set column header
result_top10.loc[0] = np.array(['thermometer', 'weighted_rating',
'visibility', 'spread', 'volume', 'time', 'length'])
#result_top10
```

In [120]:

```
# query random 1000 locations from each industry, note some industries don'
t have that many locations
query_random1000 = """
select industry, AVG(weighted_rating) as a_weighted_rating, AVG(visibility)
as a_visibility, AVG(spread) as a_spread, AVG(volume) as a_volume, AVG(time
) as a_time, AVG(length) as a_length, score as a_score from (
select industry, location_id, country, weighted_rating, visibility, spread,
volume, time, length, score, rank() over (
partition by industry order by random() desc
) as rank
from
(SELECT locations.industry,
mongo_repbiz_scores.score,
mongo_repbiz_scores.weighted_rating,
mongo_repbiz_scores.visibility,
mongo_repbiz_scores.spread,
mongo_repbiz_scores.volume,
mongo_repbiz_scores."time",
mongo_repbiz_scores.length,
mongo_repbiz_scores.location_id,
locations.country
FROM r4e_mongo.locations, r4e_mongo.mongo_repbiz_scores
WHERE (locations.location_id = mongo_repbiz_scores.location_id)) as b
)
as a
where rank <= 1000
group by industry, a_score
order by industry
"""
```

```
result_random1000 = pd.read_sql(query_random1000, cnxn)
del result_random1000['a_score']

result_random1000.loc[0] = np.array([1, 2, 3, 4, 5, 6, 7])
result_random1000.columns = result_random1000.iloc[0] # set column header
result_random1000.loc[0] = np.array(['thermometer', 'weighted_rating', 'vis
ibility', 'spread', 'volume', 'time', 'length'])

#result_random1000
```

In [121]:

```
top10_data_industry = result_top10
top10_data_industry = top10_data_industry.transpose()
top10_data_industry.columns = top10_data_industry.iloc[0] # set column head
er

top10_data_industry['cat'] = "top 10" # create top/overall cat
#top10_data_industry.columns = top10_data_industry.iloc[0] # set column
header
top10_data_industry.drop(top10_data_industry.head(1).index, inplace=True)
#top10_data_industry = top10_data_industry.drop(0) # drop duplicated row
#top10_data_industry = top10_data_industry.rename(columns={'industry':'ther
mometer'})


random_data = result_random1000
random_data = random_data.transpose()
random_data.columns = random_data.iloc[0] # set column header

random_data['cat'] = "random" # create top/overall cat
random_data.drop(random_data.head(1).index, inplace=True)

#random_data = random_data.drop("industry") # drop duplicated row
#random_data = random_data.rename(columns={'industry':'thermometer'})

#top10_data_industry
```

In [122]:

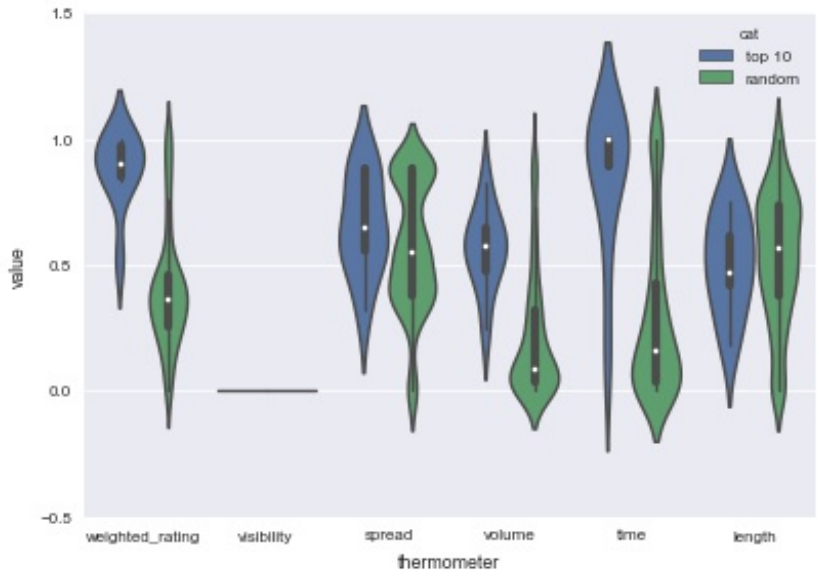
```
#random_data
```

In [123]:

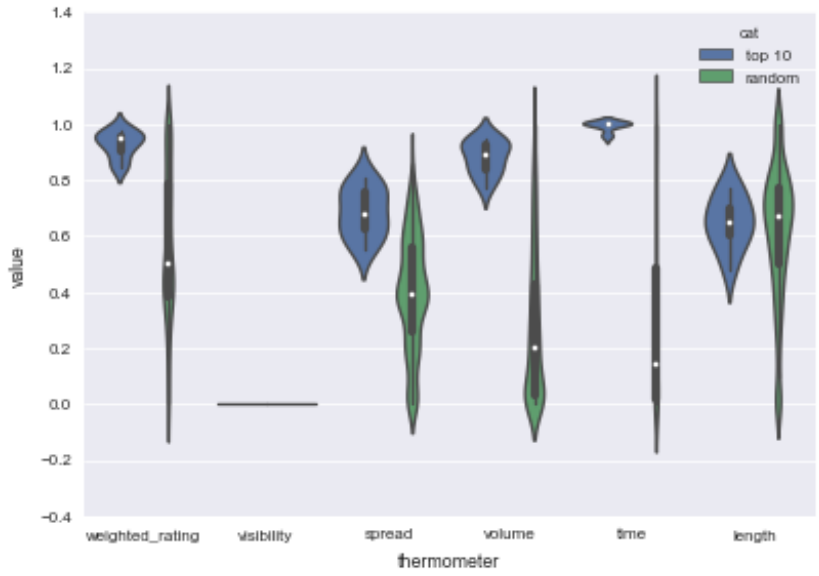
```
import matplotlib.pyplot as plt

prev = None # print unique columns

for column in top10_data_industry:
    if column != "cat" and column != "thermometer" and column != prev:
        print column
        prev = column
        temp = pd.melt(top10_data_industry, id_vars=['thermometer', 'cat'],
value_vars=[column])
        temp_random = pd.melt(random_data, id_vars=['thermometer', 'cat'], v
alue_vars=[column])
        result = temp.append(temp_random)
        result['value'] = result['value'].astype(float)
        sns.set()
        sns.set_context("paper")
```

```
        sns.violinplot(x="thermometer", y="value", hue='cat', data=result)
        plt.show()
```

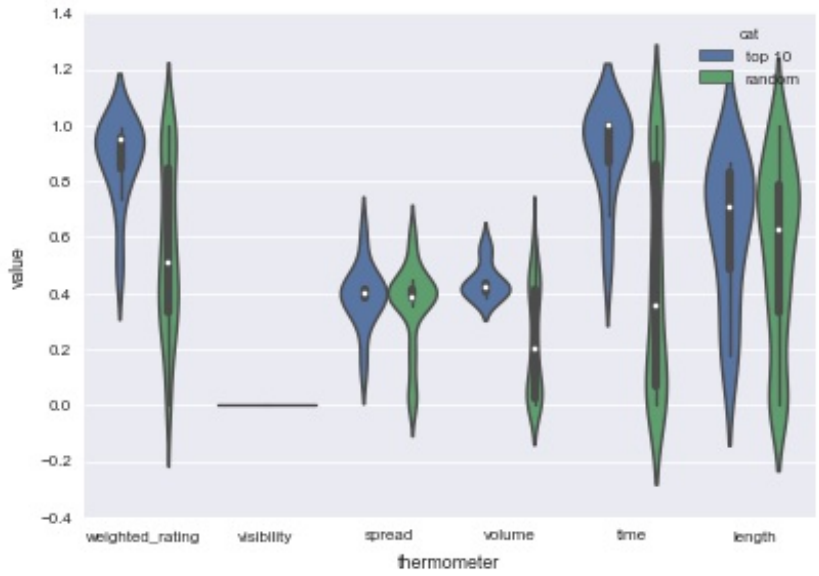
automotive-automotive-other



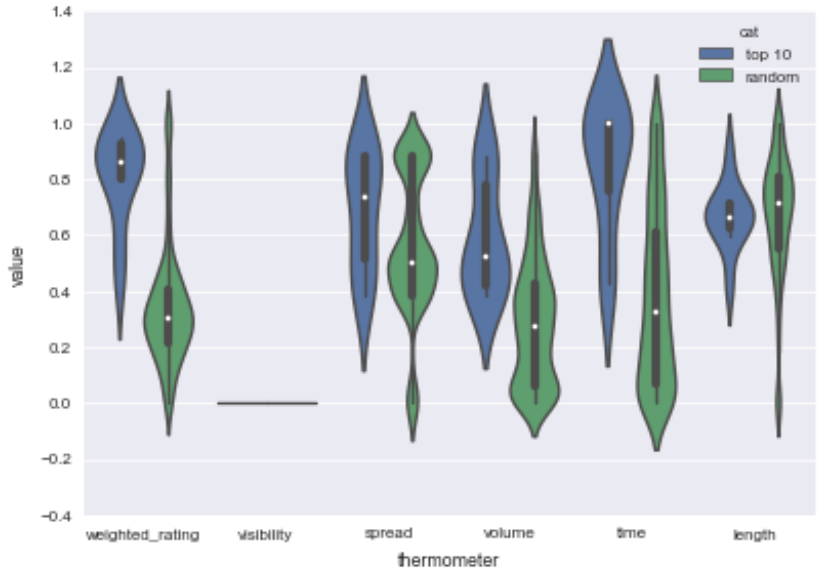
automotive-dealer



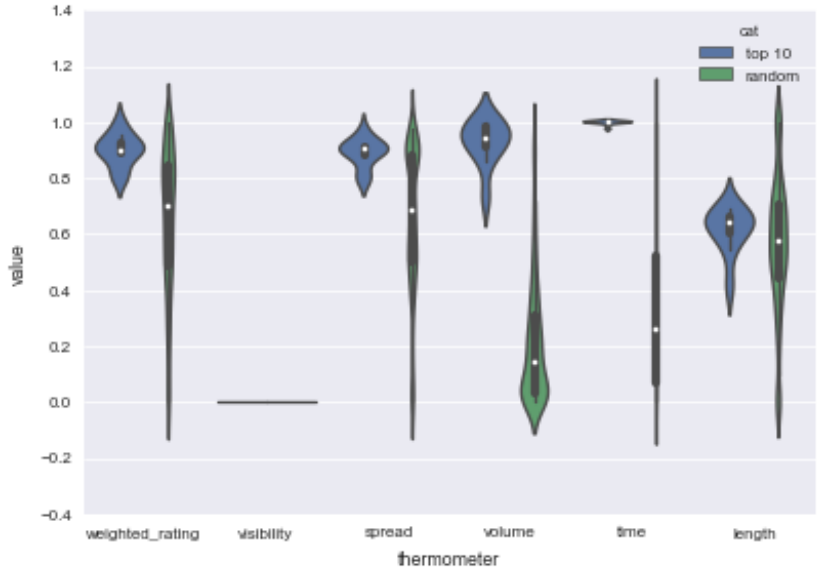
automotive-oem



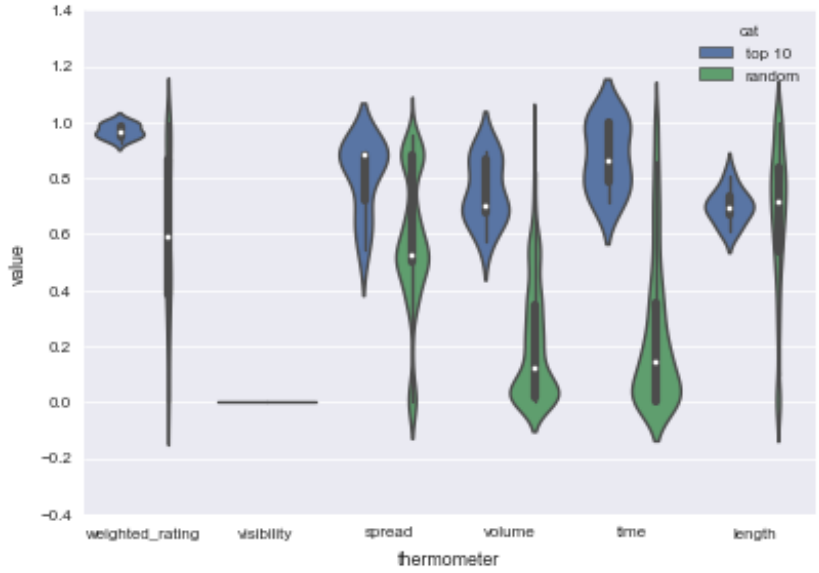
automotive-parts



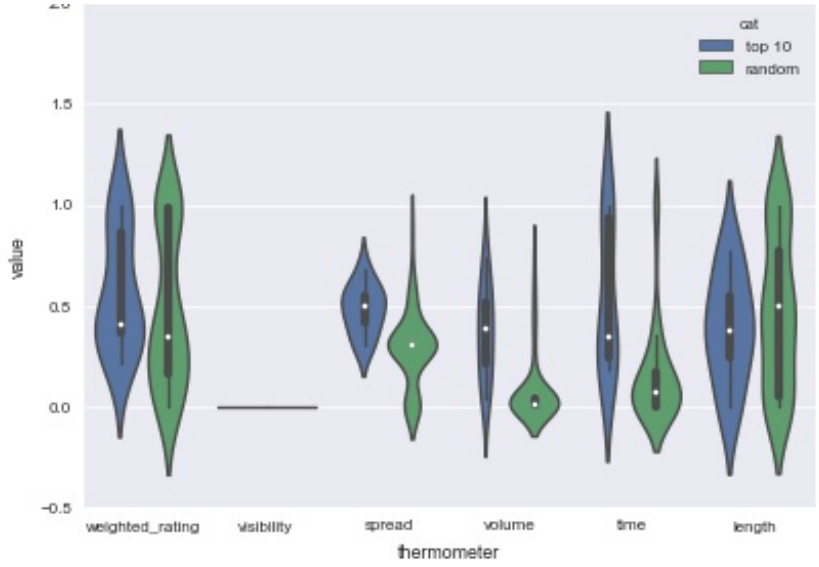
automotive-rental



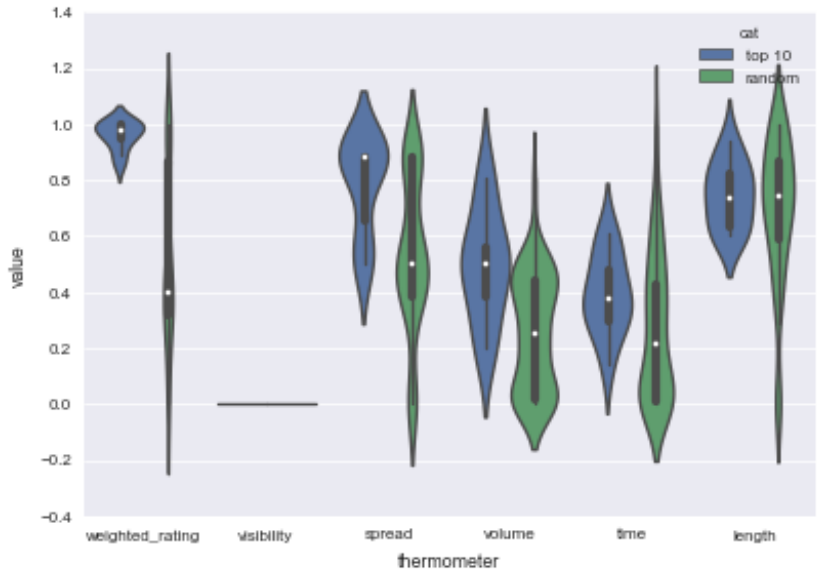
automotive-repair-&-service



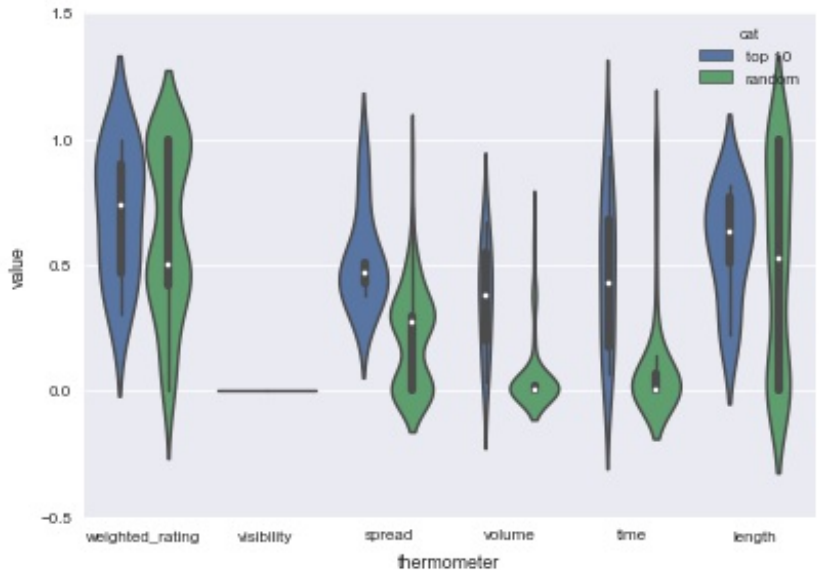
automotive-tires



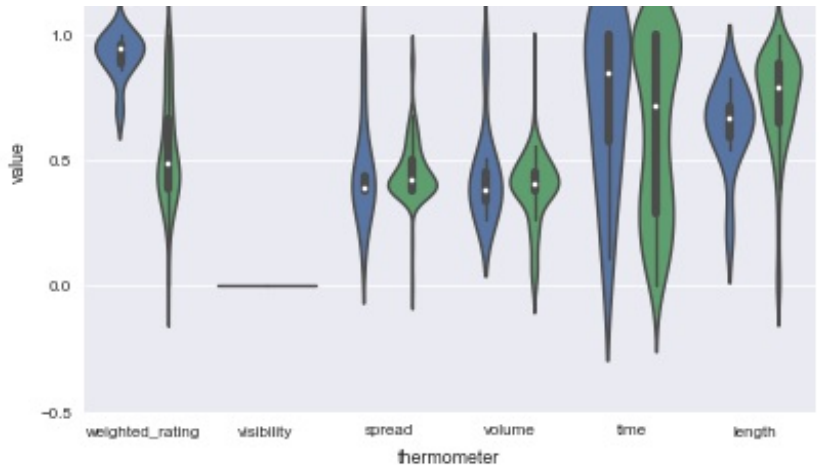
beauty-beauty-other



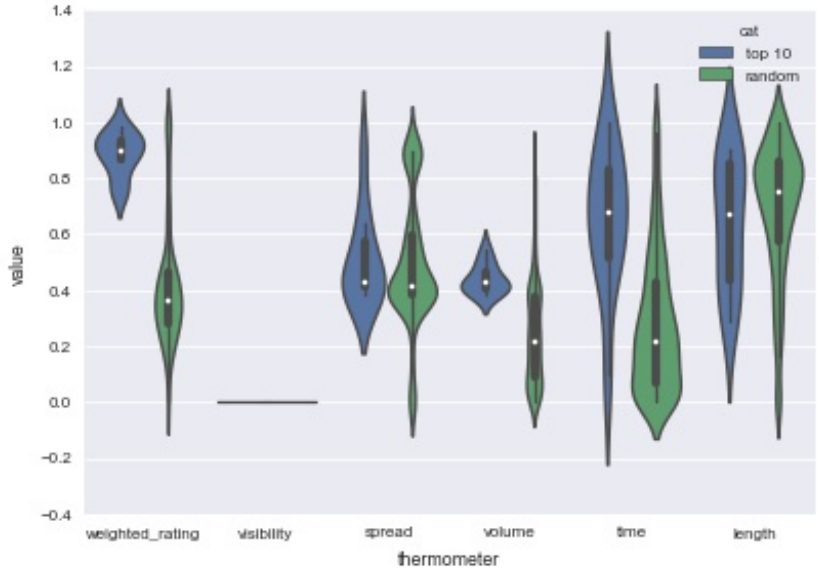
beauty-hair-grooming



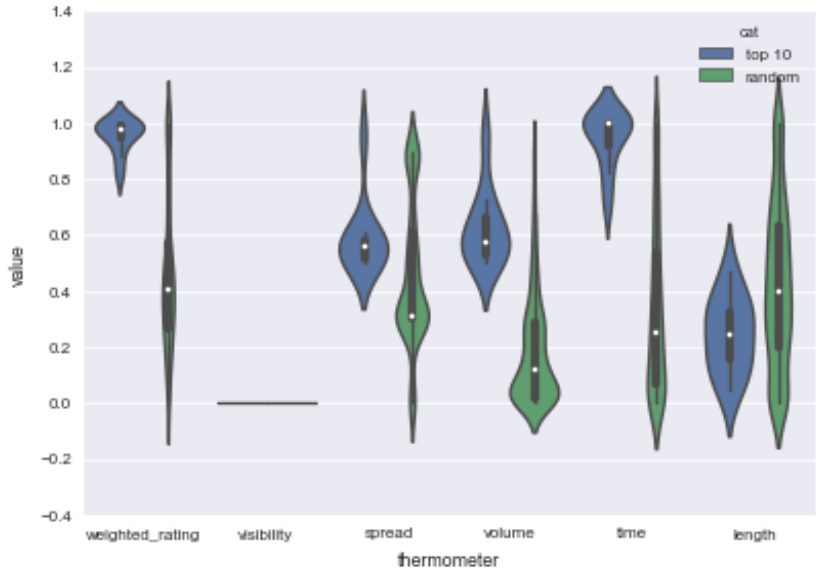
beauty-skin-care



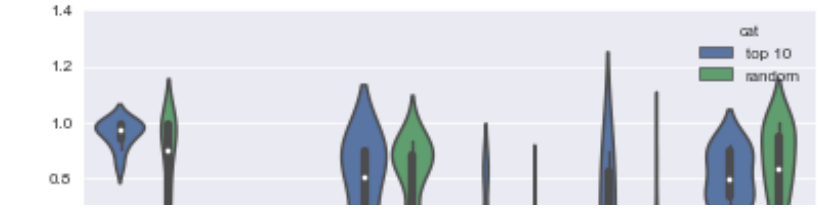
beauty-spa

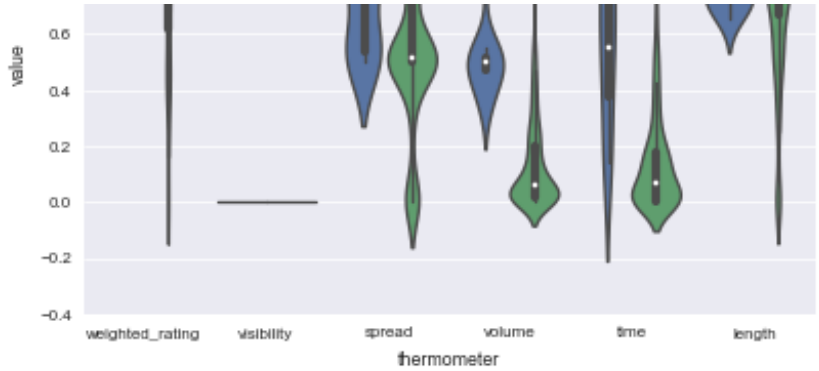


default-default

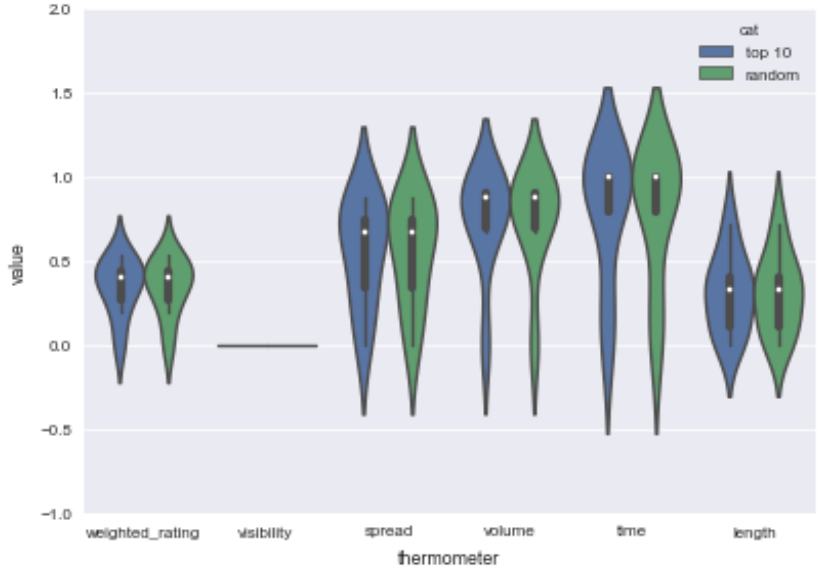


education-education-other

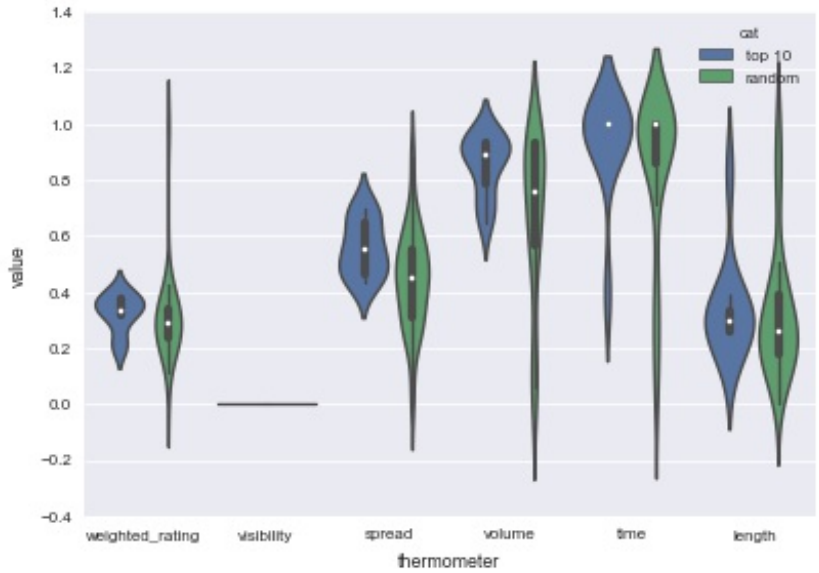




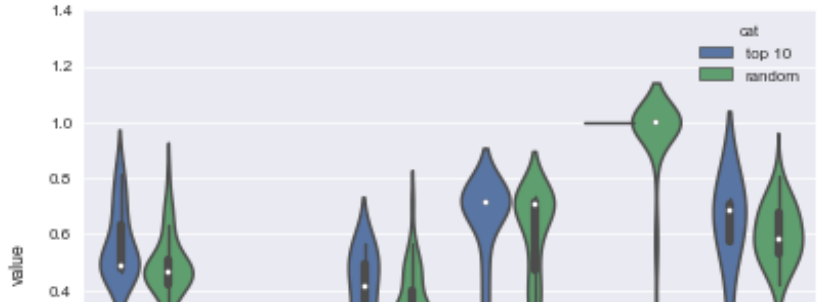
entertainment-amusement-park

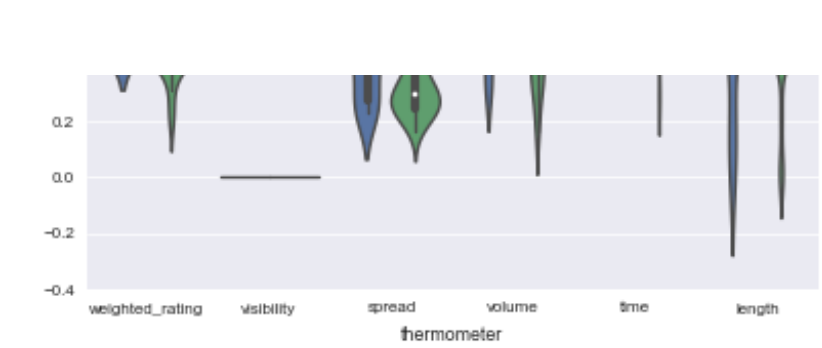


entertainment-live-performance-&-sports

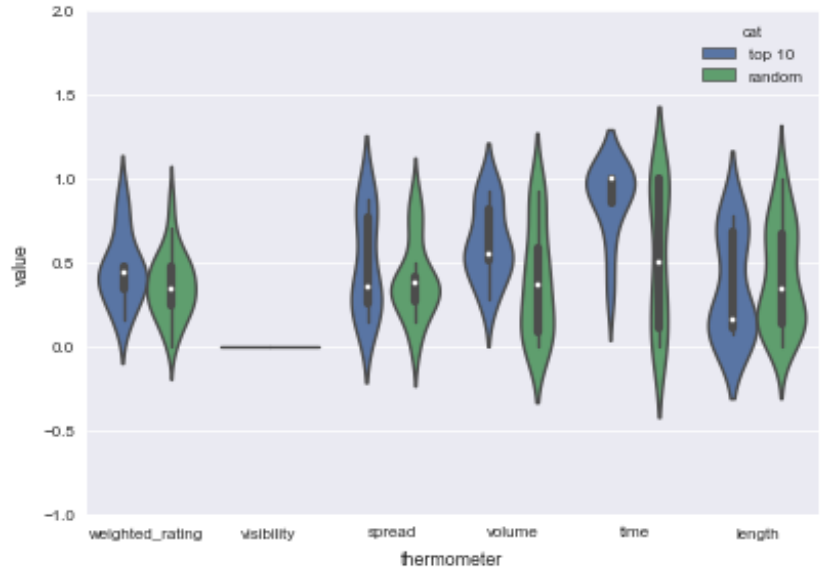


entertainment-museums-and-parks

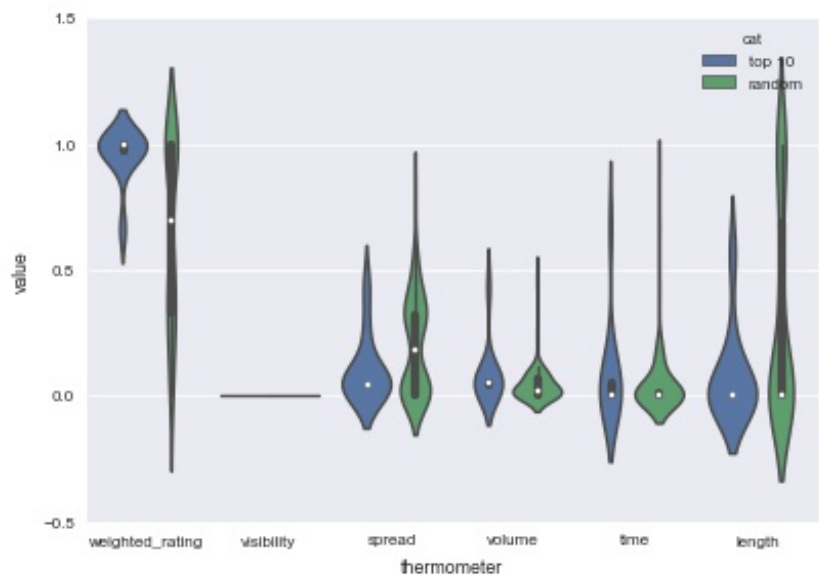




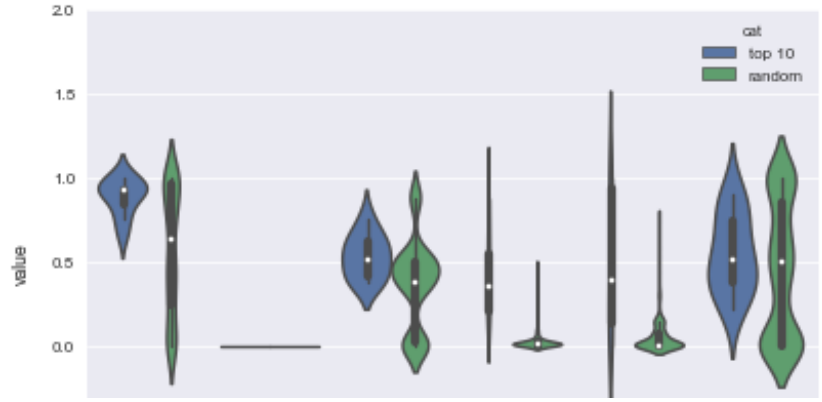
entertainment-other



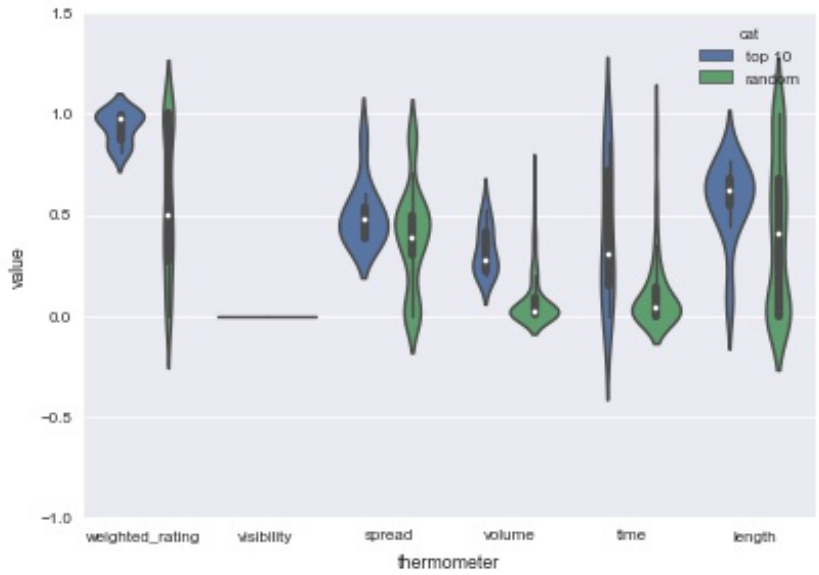
financial-services-accounting



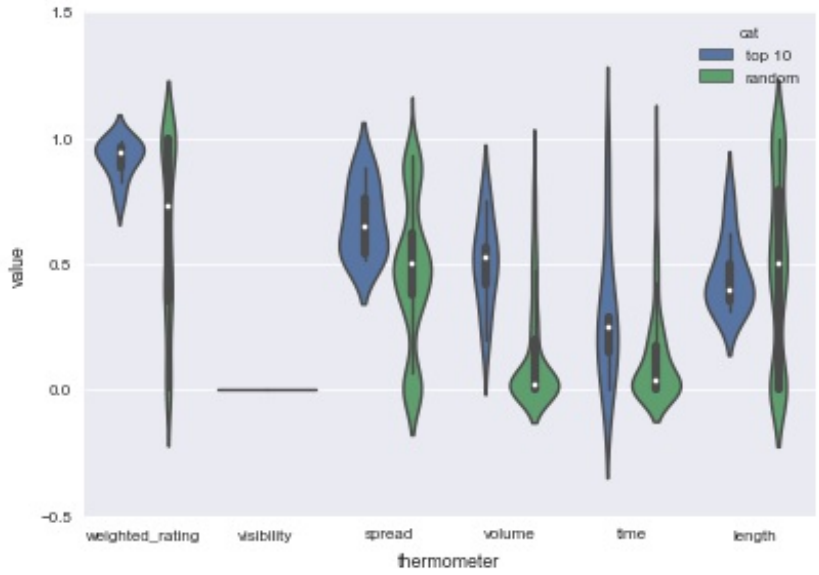
financial-services-banks



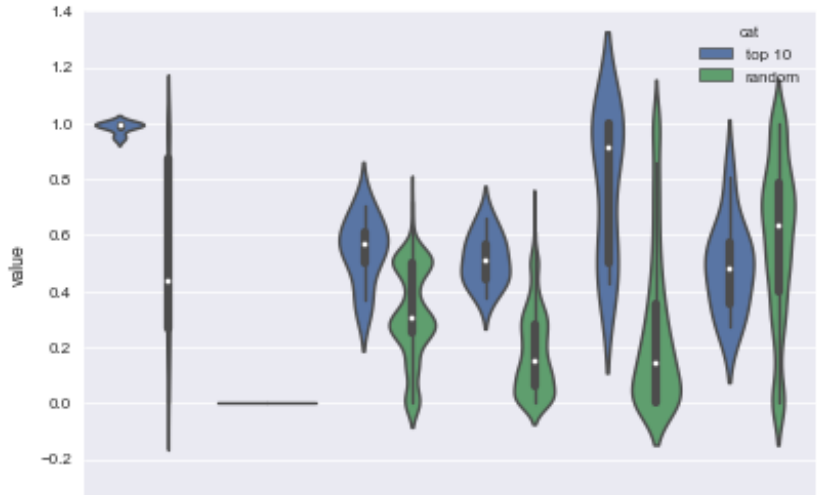
financial-services-financial-services-other



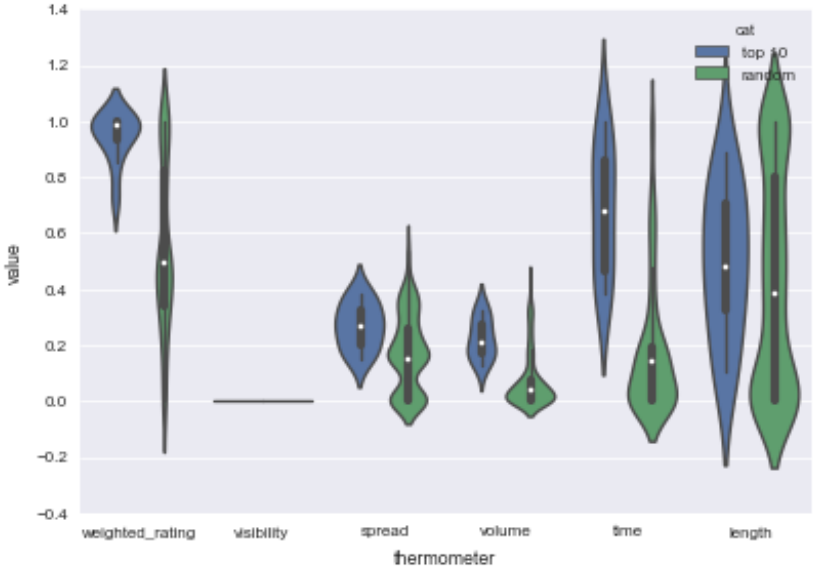
financial-services-insurance



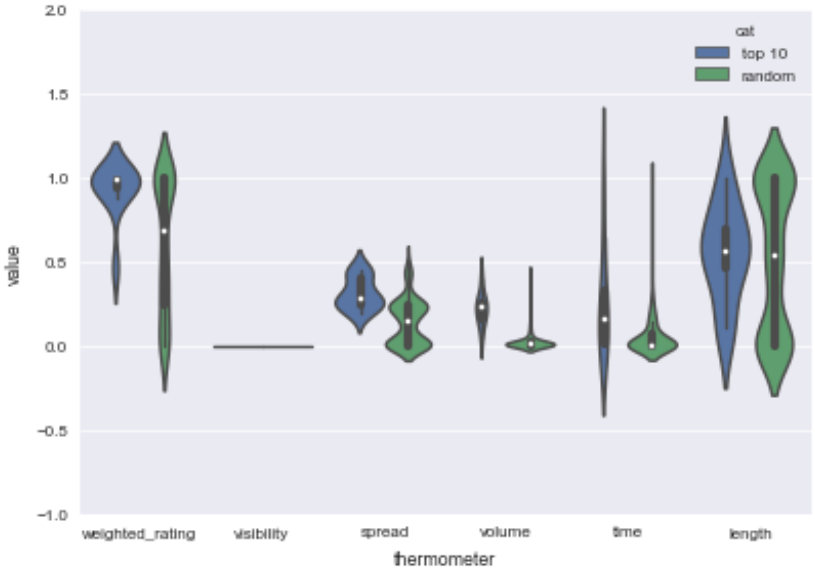
health-care-dentists



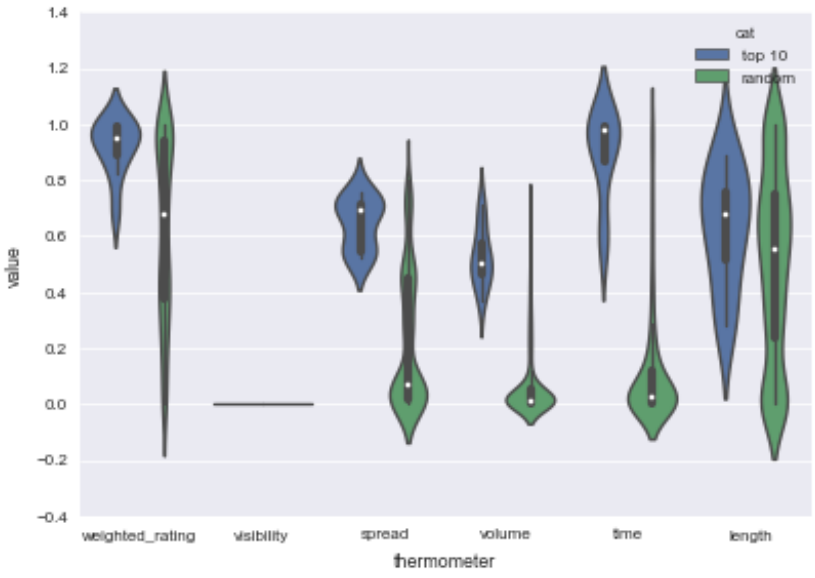
health-care-health-care-other



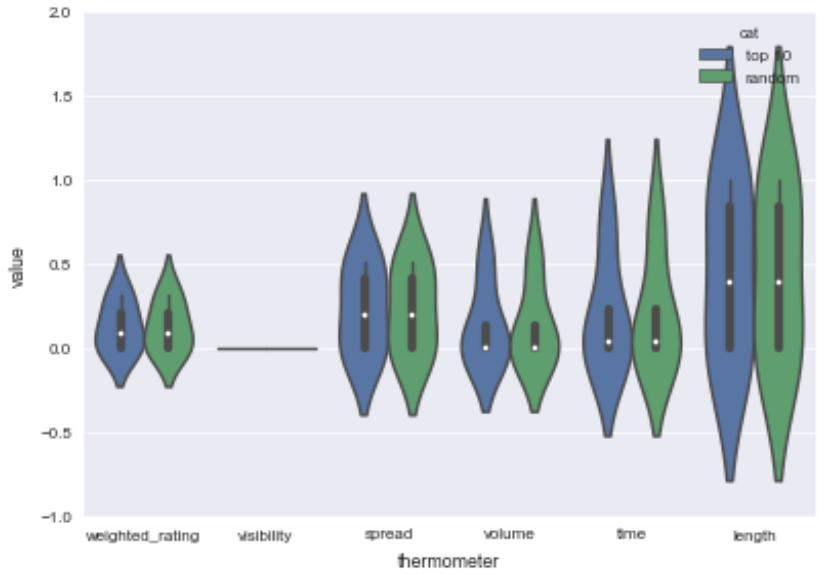
health-care-home-care



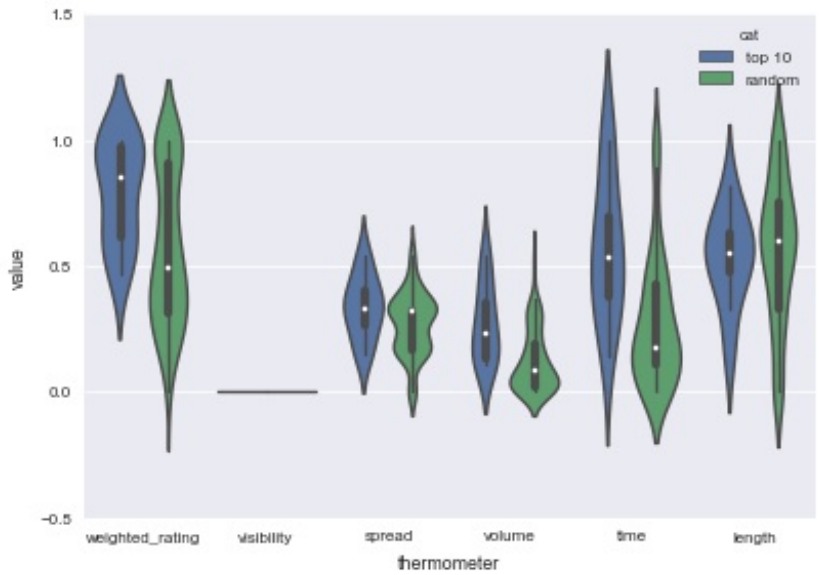
health-care-hospitals-&-facilities



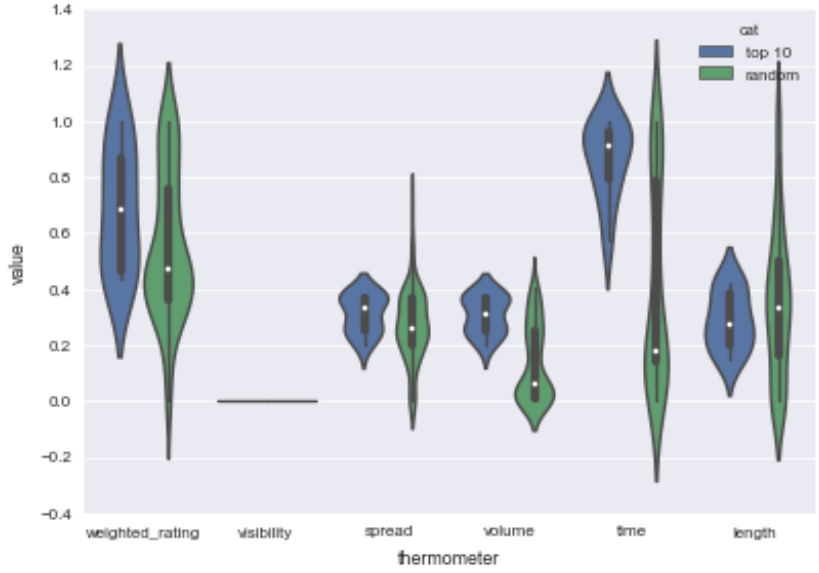
health-care-medical-spa



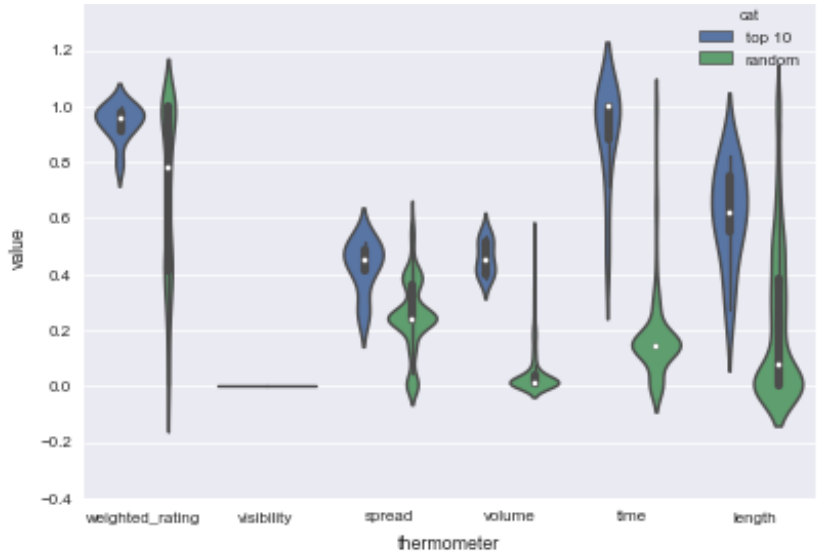
health-care-optometrist-&-opthamologist



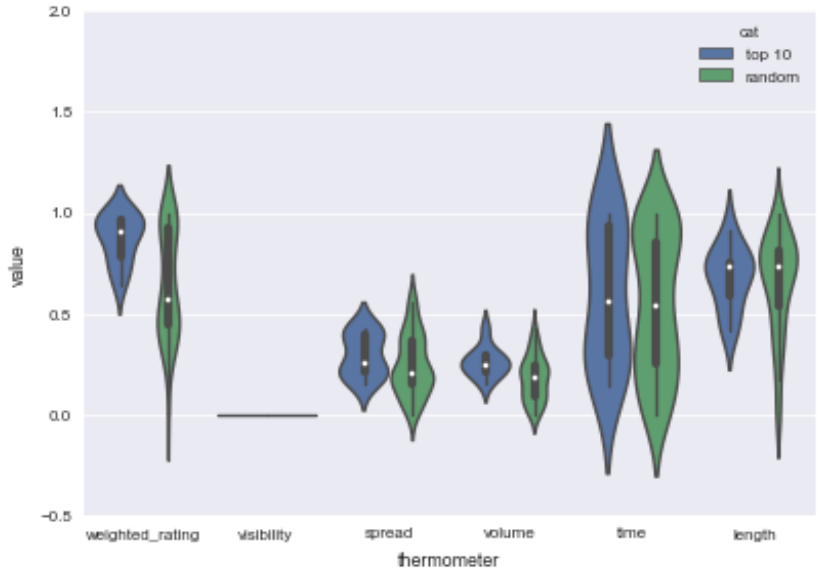
health-care-pediatricians



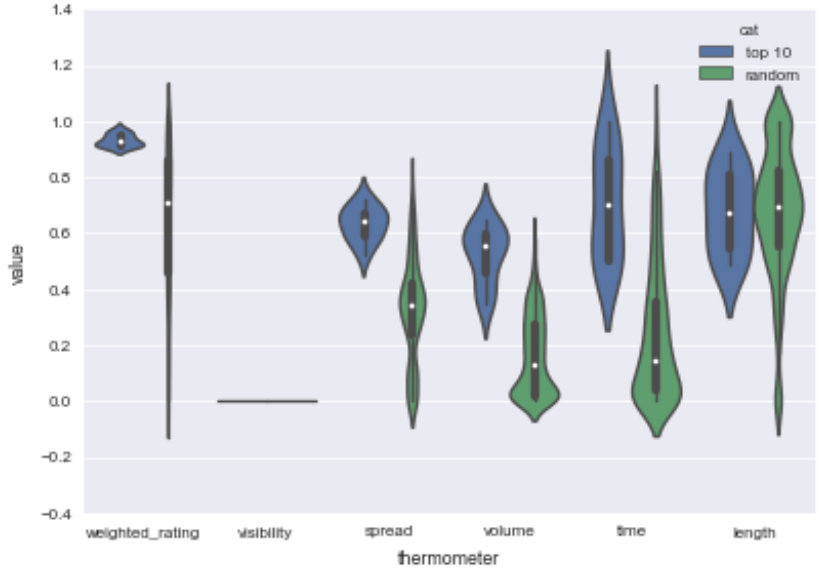
health-care-physicians



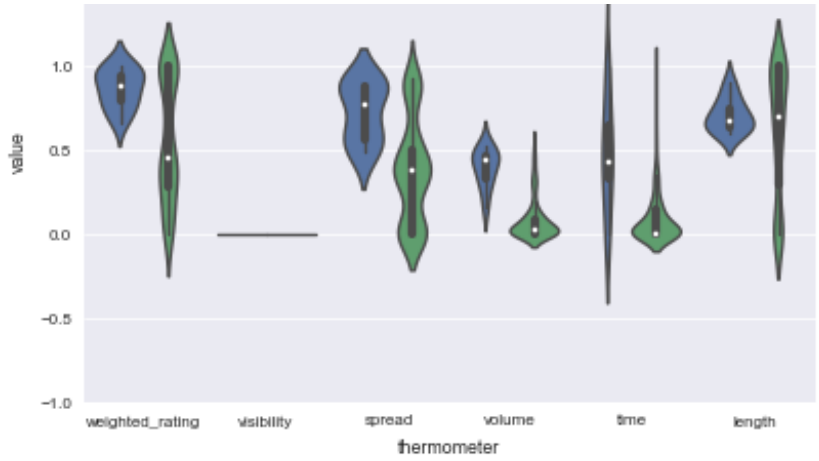
health-care-plastic-&-cosmetic-surgeons



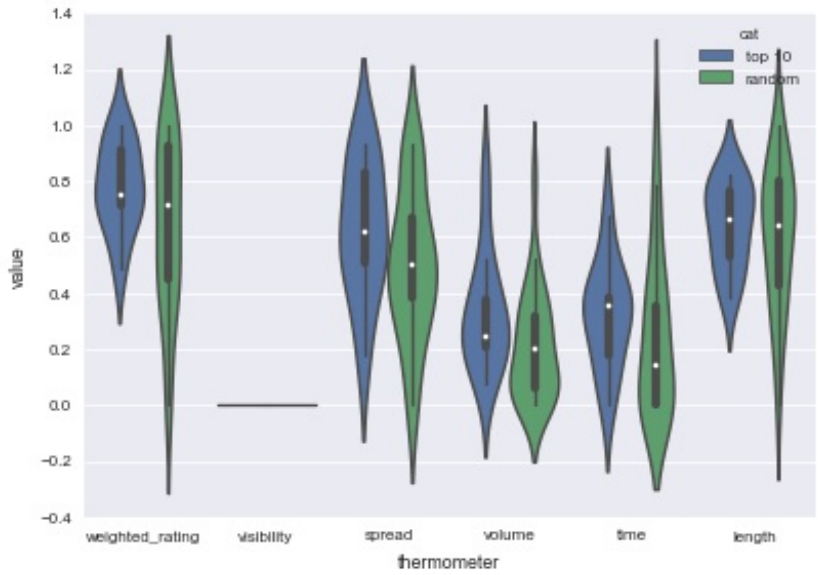
health-care-senior-care



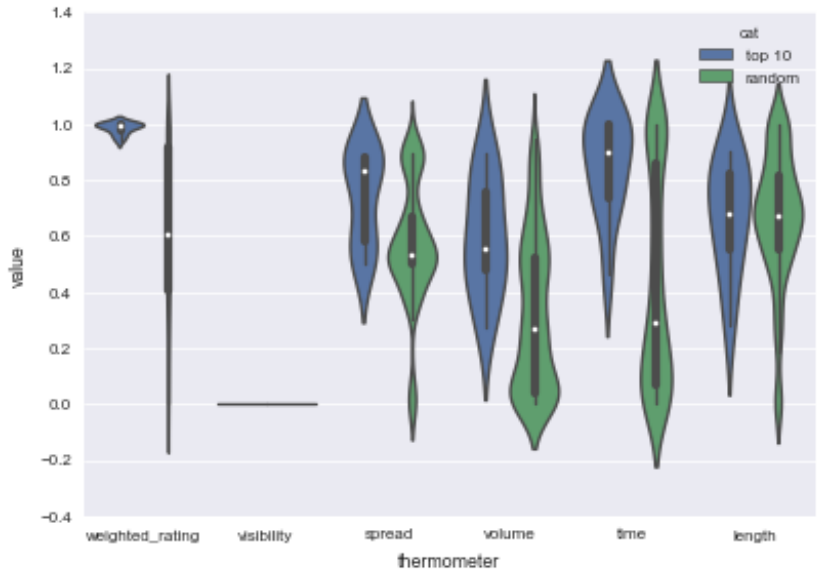
home-services-cleaning



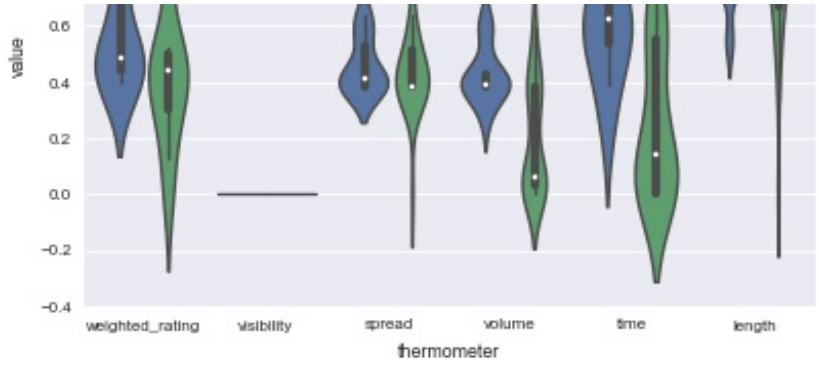
home-services-general-contracting



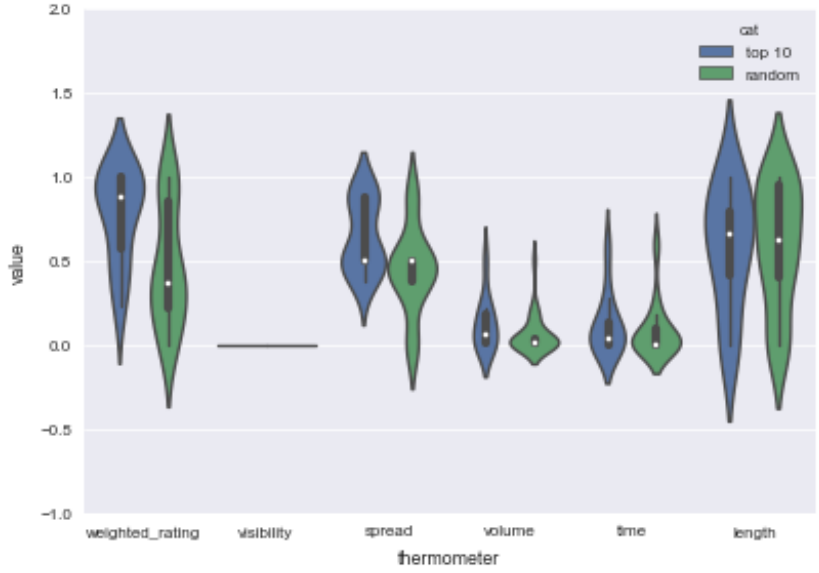
home-services-home-services-other



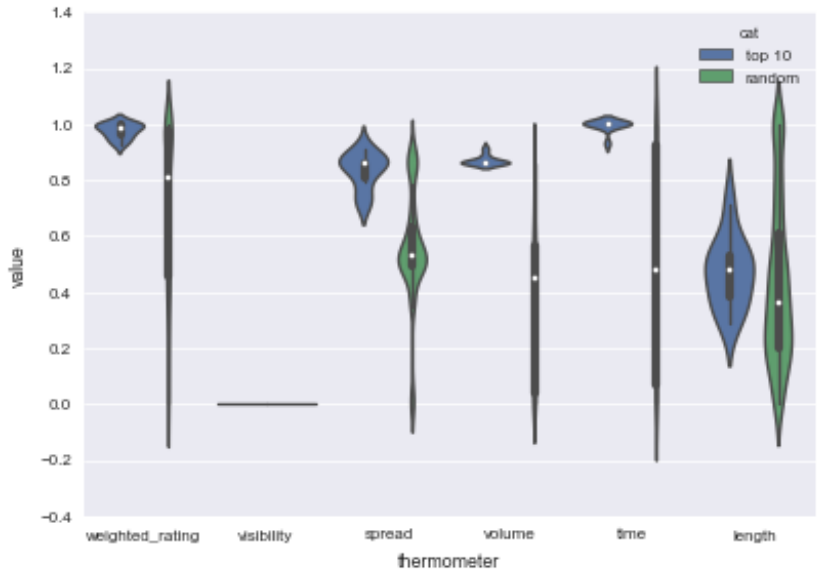
home-services-interior-design



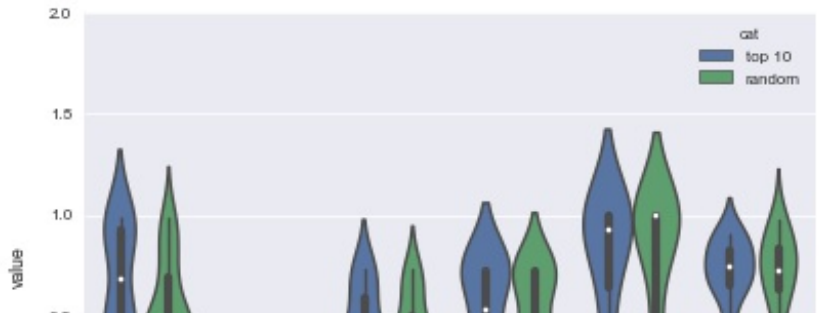
home-services-landscaping

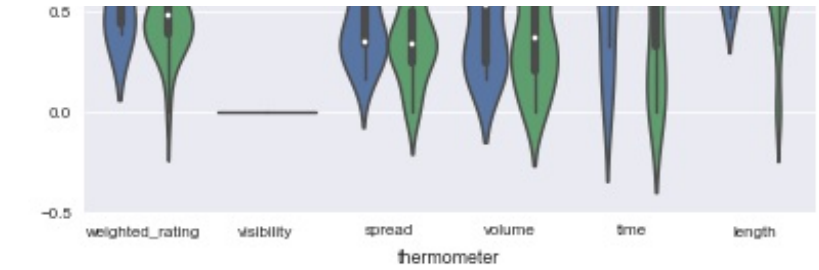


home-services-moving-&-storage

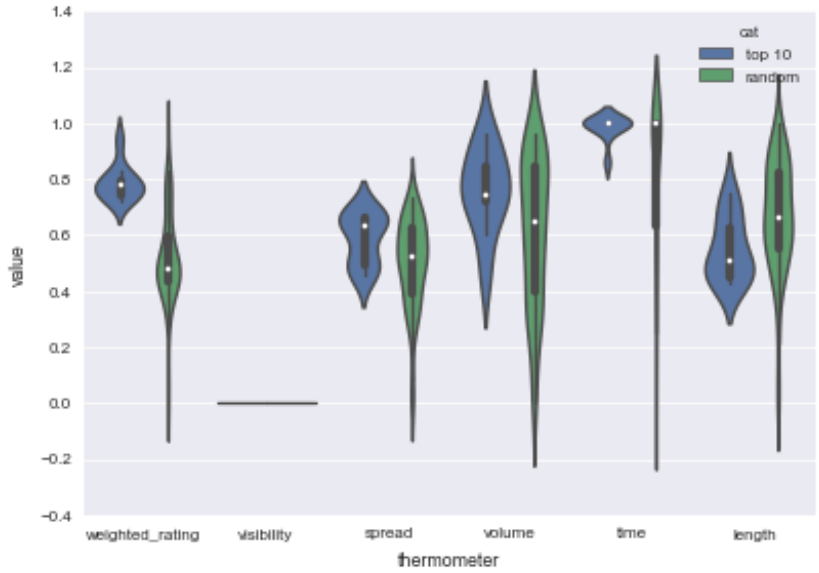


hospitality-&-travel-activities

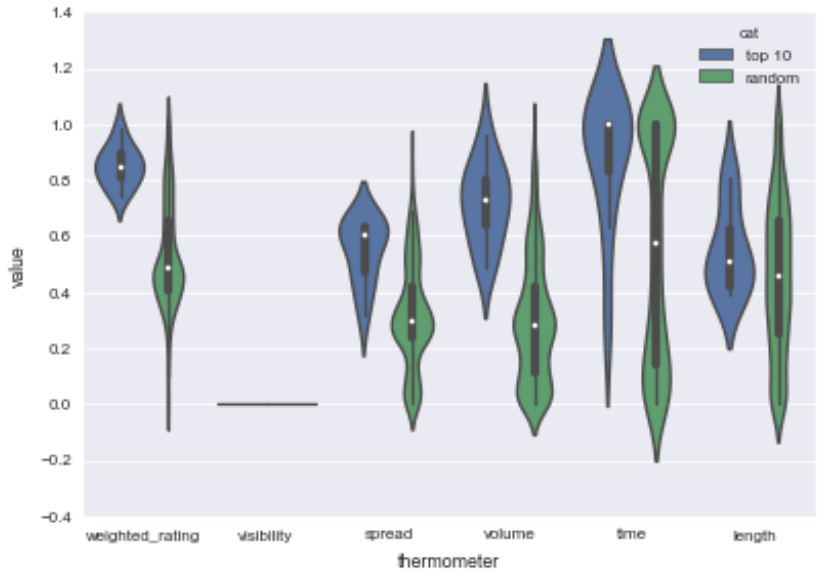




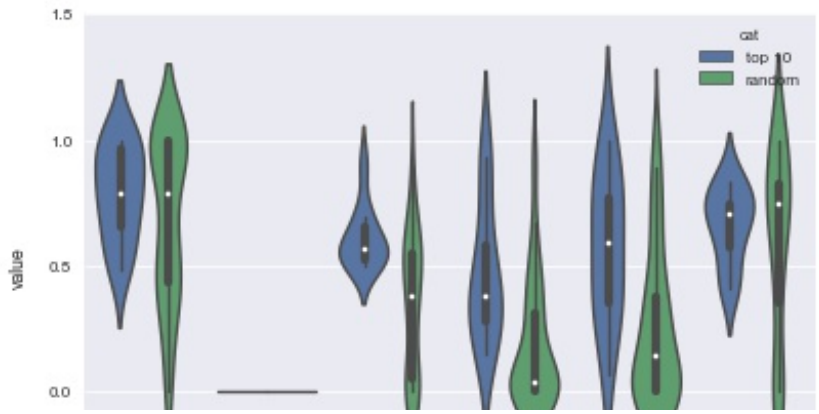
hospitality-&-travel-hospitality-&-travel-other

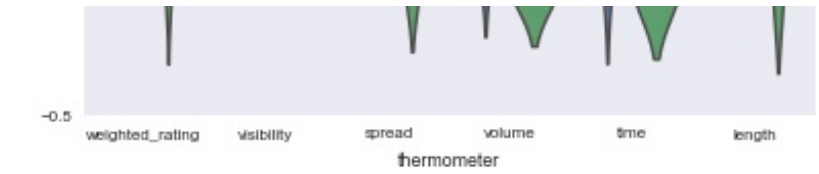


hospitality-&-travel-hotel-&-motel

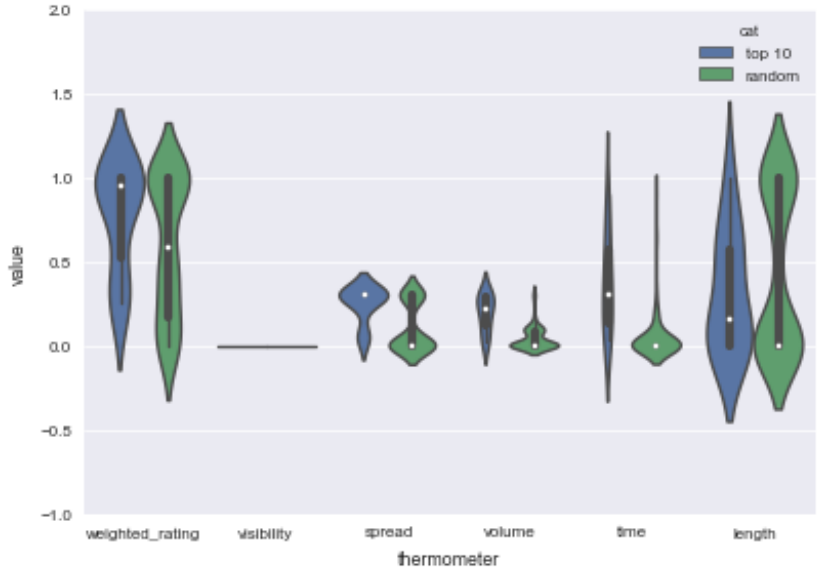


legal-law-firm

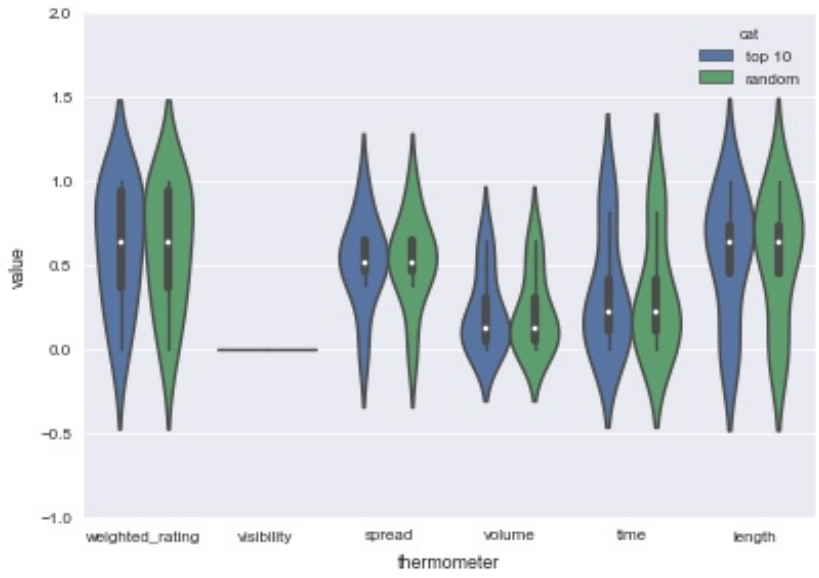




legal-legal-other



pets-pet-services



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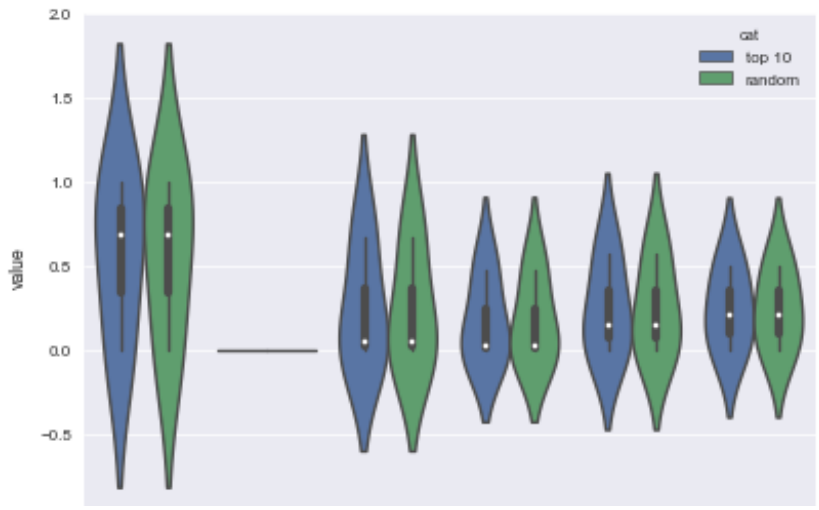

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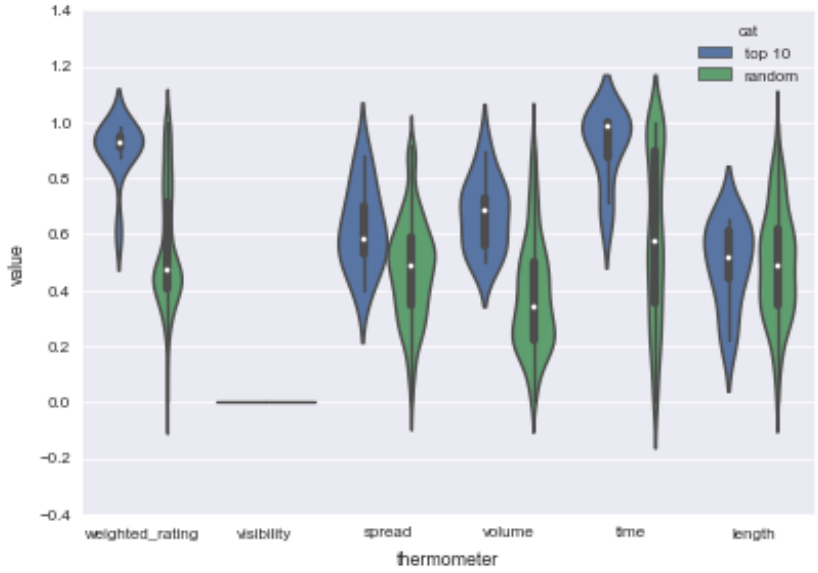
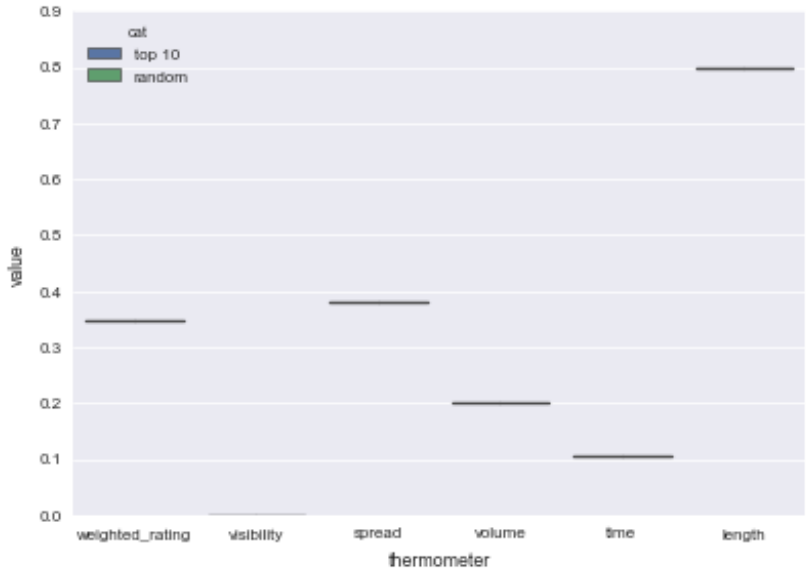
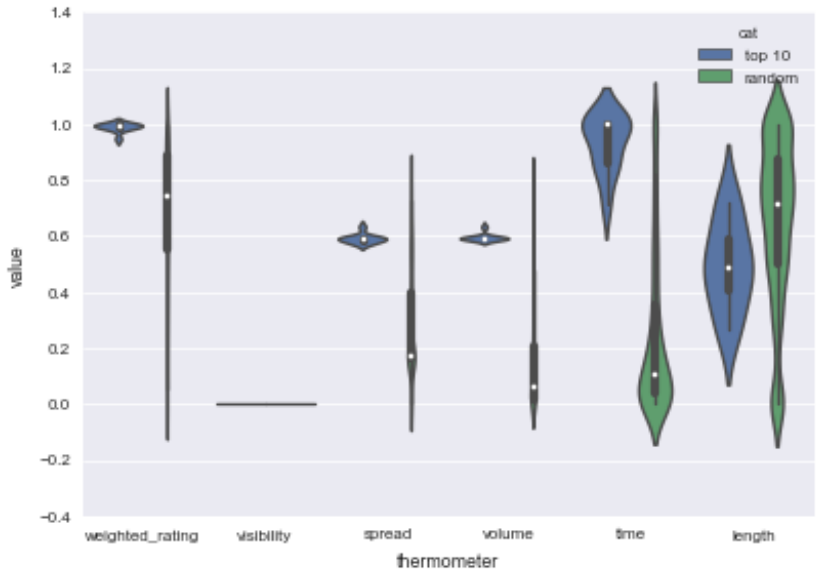


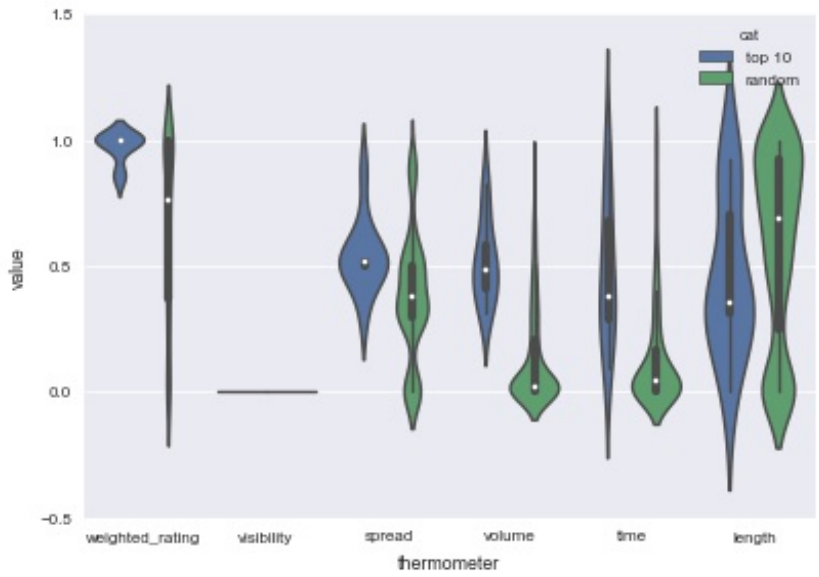
real-estate-mortgage



real-estate-property-management



real-estate-real-estate-agency



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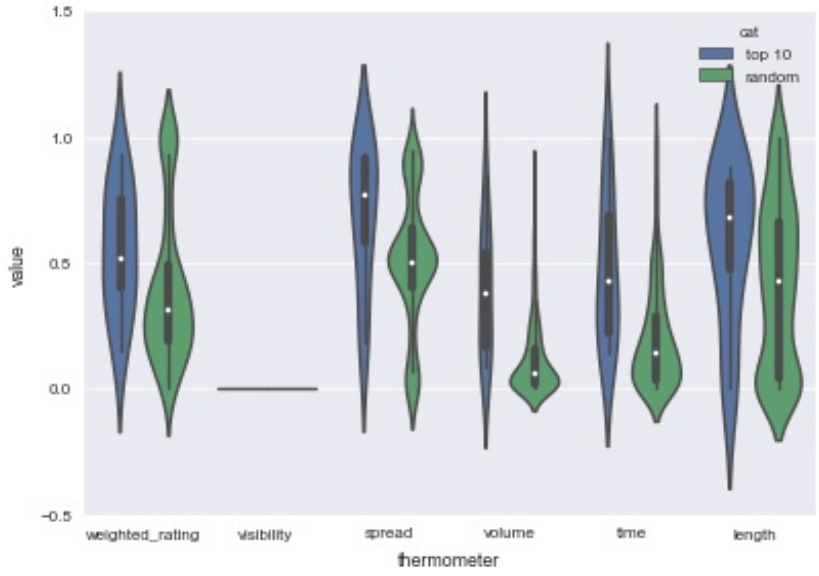
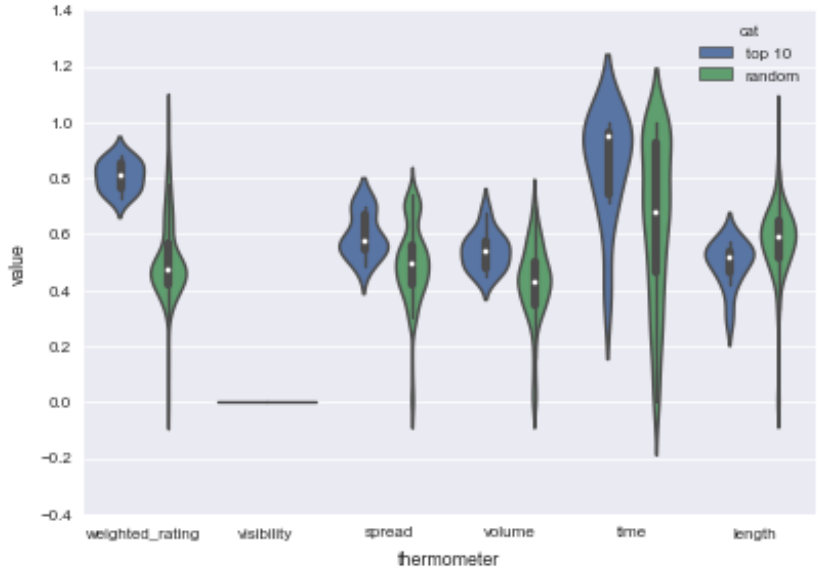
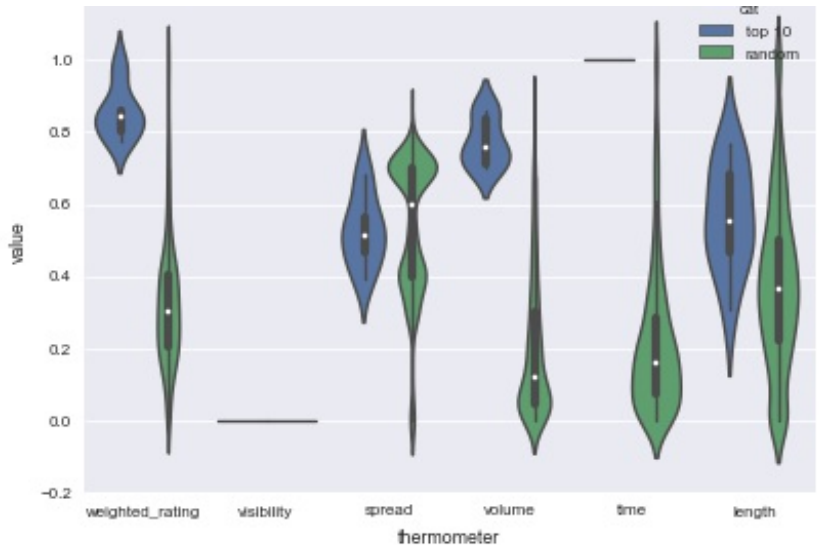


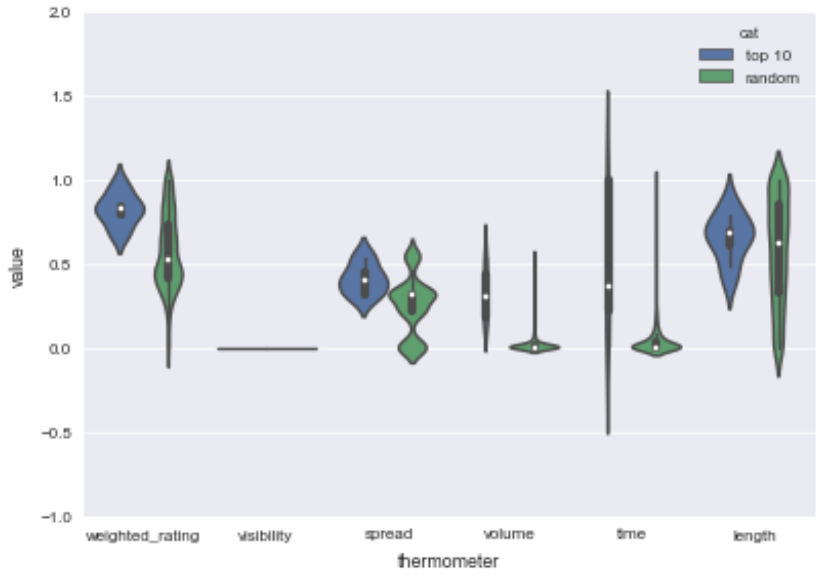
restaurants-carry-out



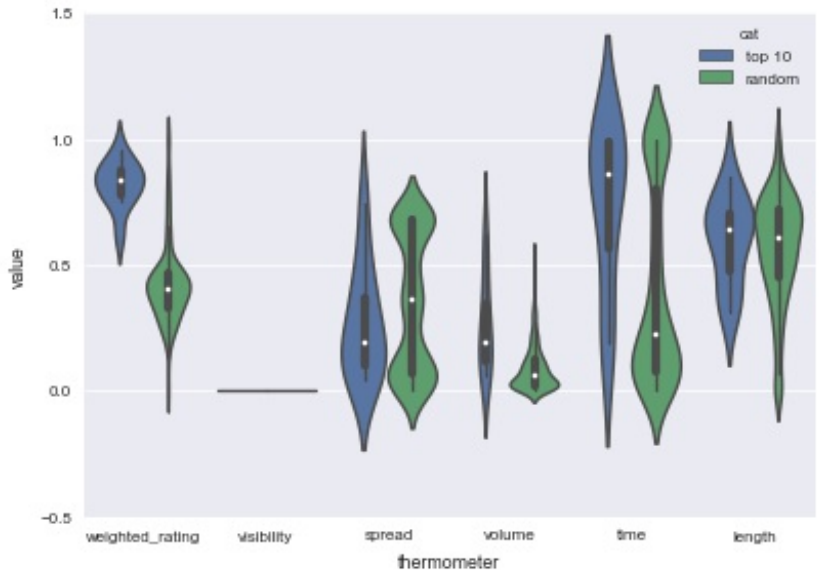
restaurants-fast-food



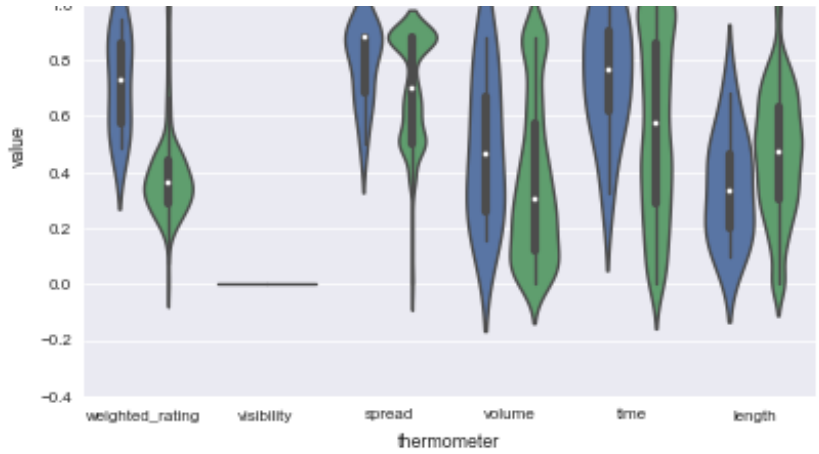
restaurants-fine-dining



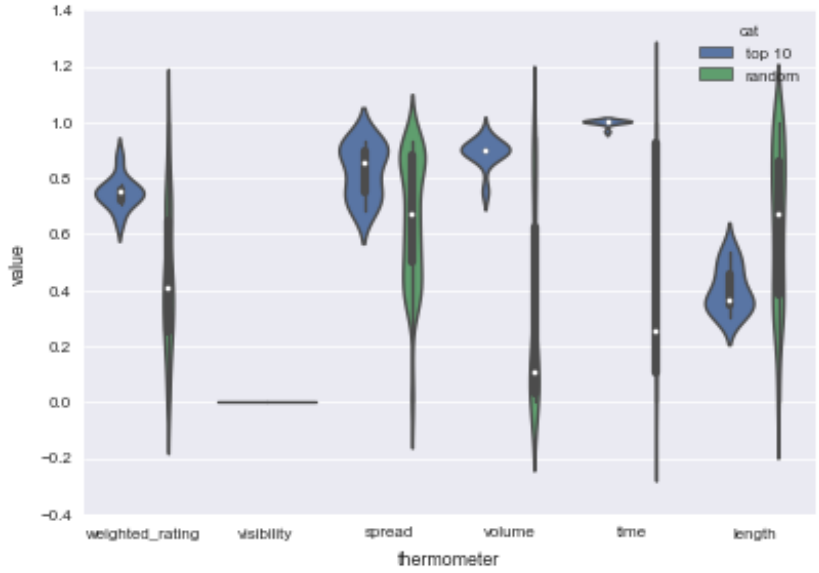
restaurants-restaurants-other



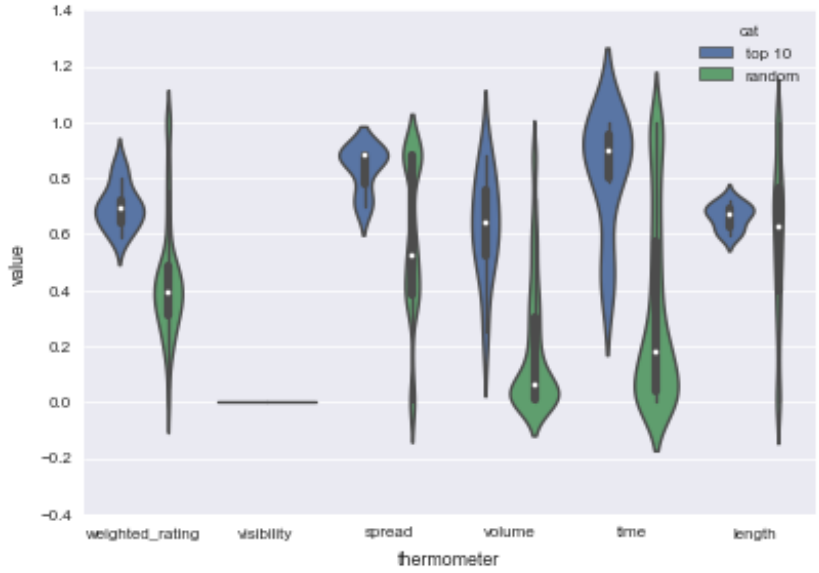
retail-big-box



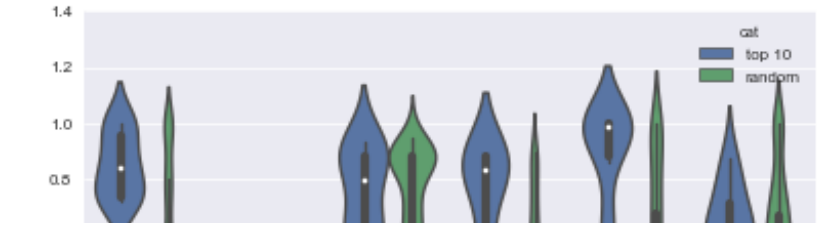
retail-department-stores

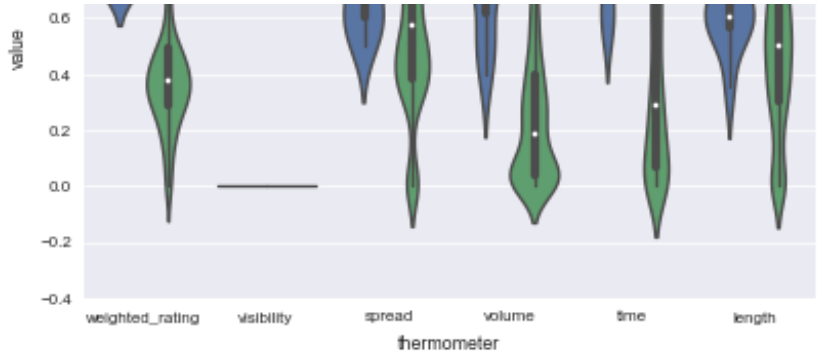


retail-retail-clothing

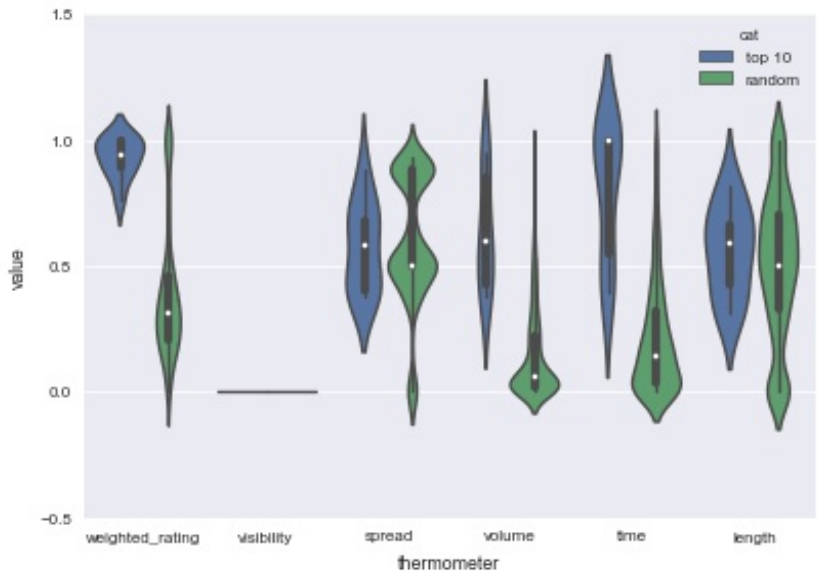


retail-retail-other





retail-special-services



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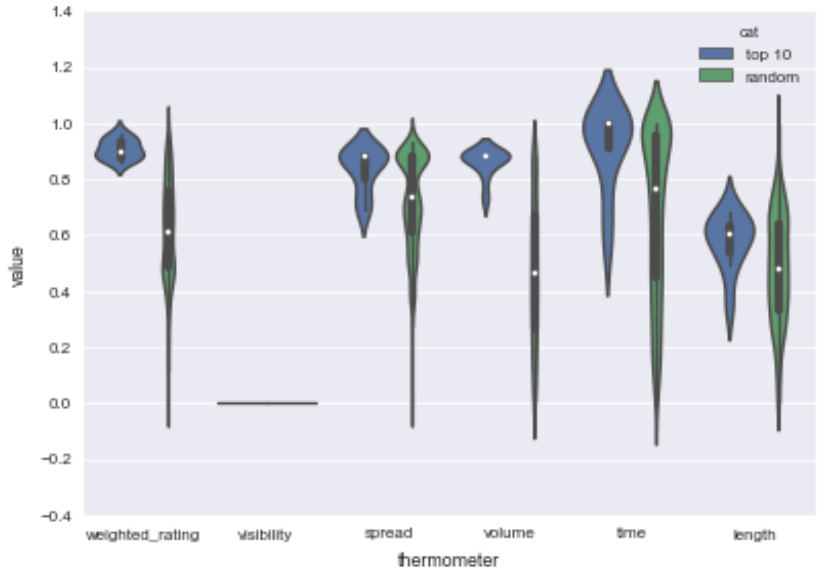
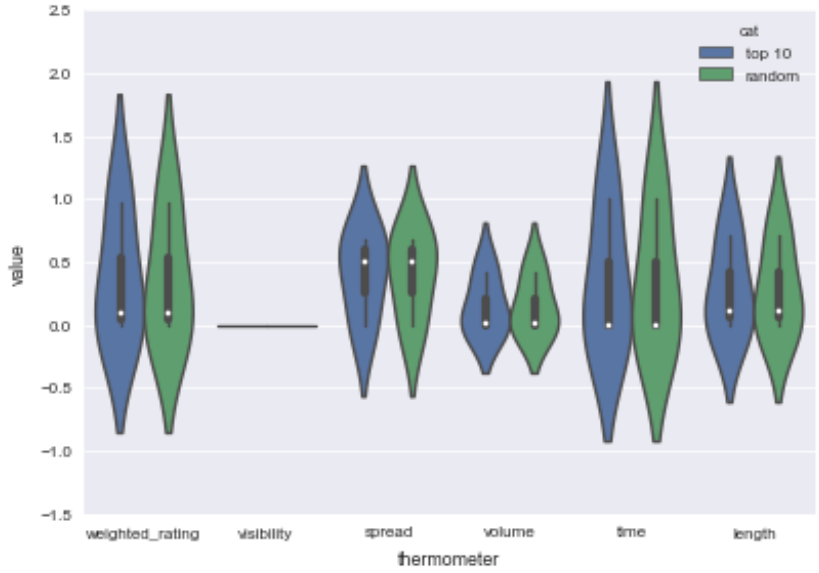
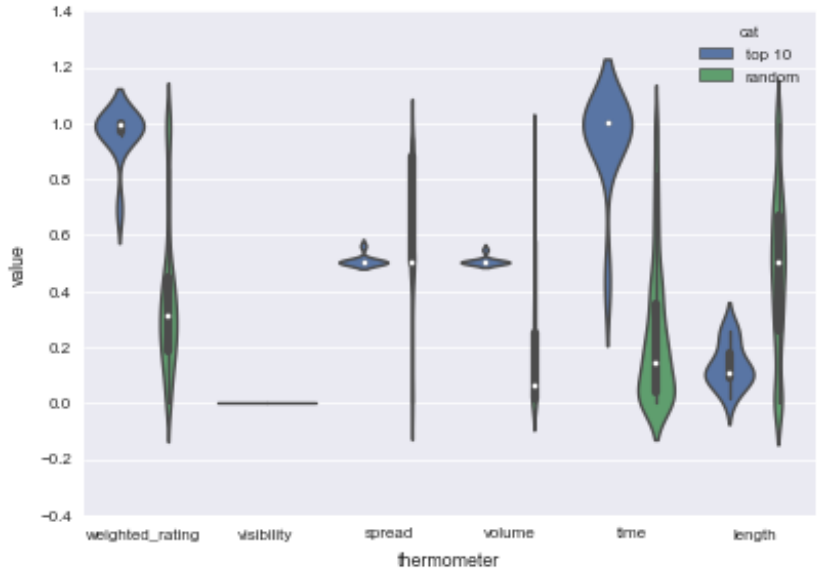


technology-electronics

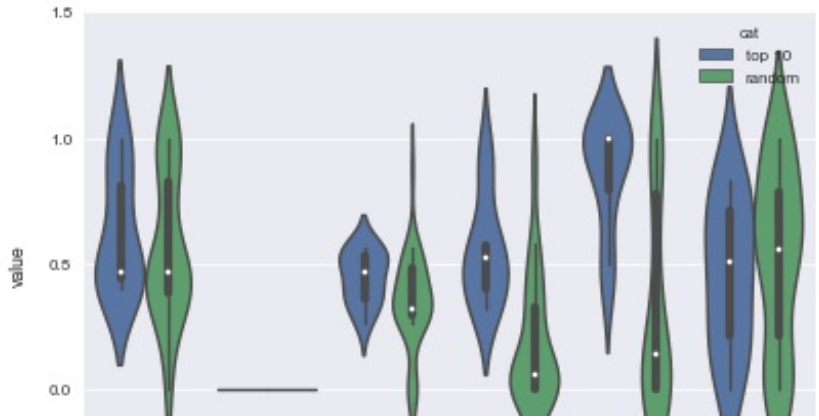
technology-internet-service-provider

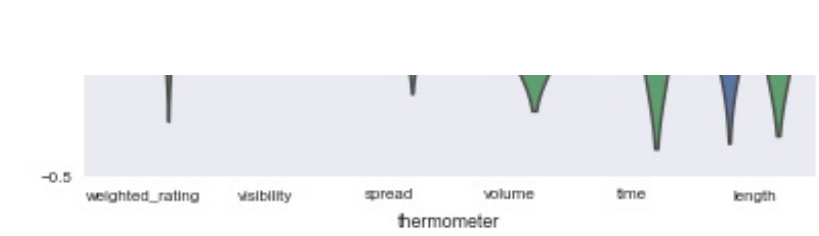


technology-mobile-provider

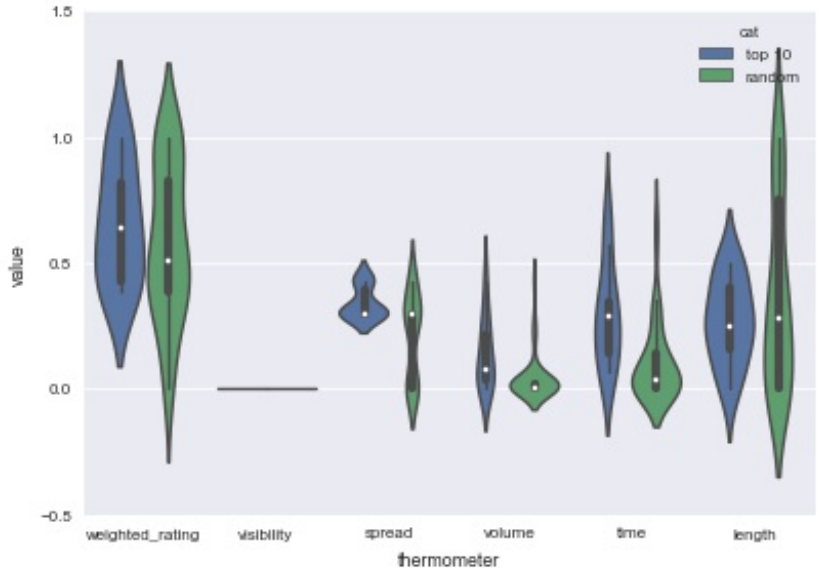


technology-technology-other

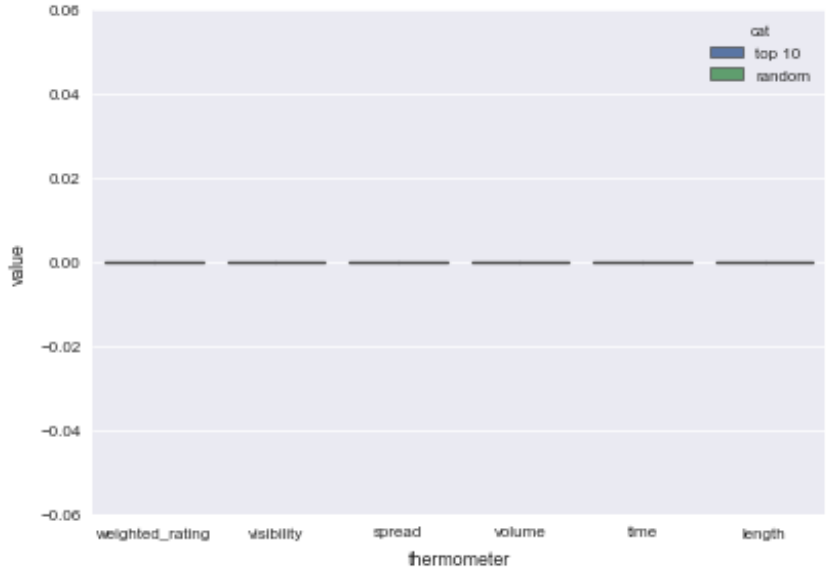




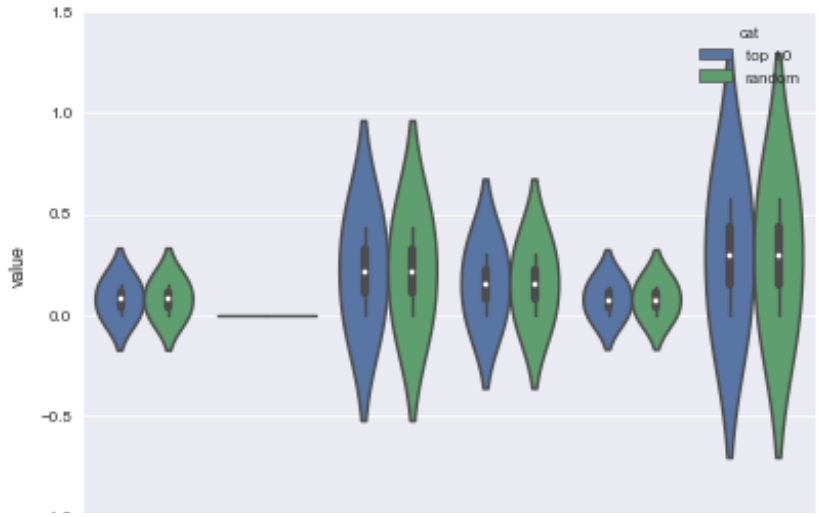
uk-take-away-food-supplier



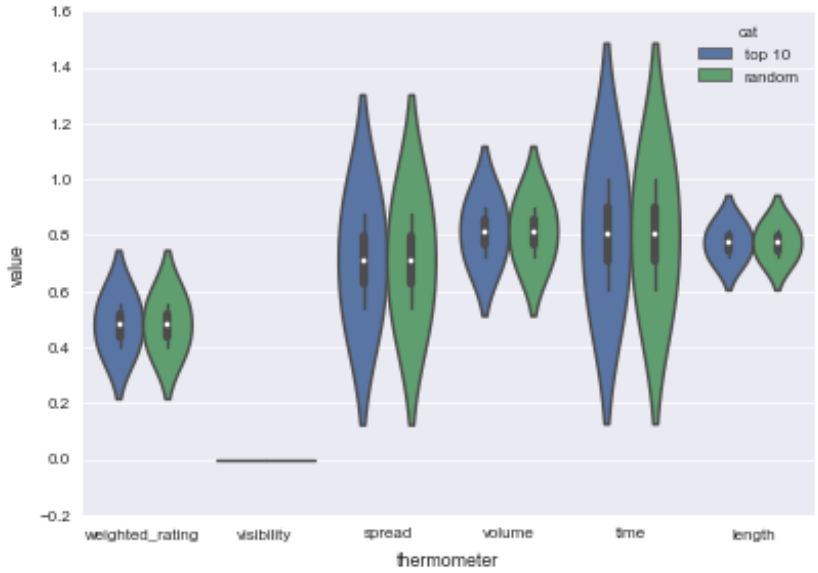
wedding-&-special-events-entainers



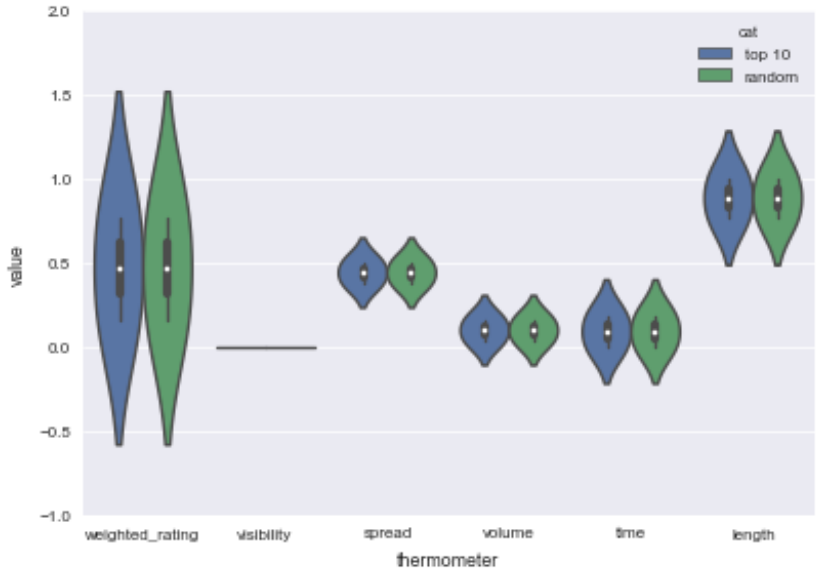
wedding-&-special-events-event-planners



wedding-&-special-events-party-venues



wedding-&-special-events-wedding-&-special-events-other



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