Untitled-1

February 18, 2025

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import scipy.io
import numpy as np
import pandas as pd
import scipy.stats as stats
import pyblp
```

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mat_data = scipy.io.loadmat("/home/hspassos/mestrado/industrial/demand_data.
 ↪mat")

prodsMarket = {'market': [1, 2, 3, 4, 5, 6, 7, 8, 9, 10]}
prodsMarket = pd.DataFrame(prodsMarket)
prodsMarket['prodsMarket'] = mat_data['prodsMarket'].flatten()

# Criar tabela com os dados por produto
data = pd.DataFrame({
    'market_ids': np.repeat(np.arange(len(prodsMarket)),␣
 ↪prodsMarket['prodsMarket']),
    'firm_ids': mat_data['f'].flatten(),
    'shares': mat_data['share'].flatten(),
    'prices': mat_data['pr'].flatten(),
    'char1': mat_data['ch'][:, 0],
    'char2': mat_data['ch'][:, 1],
    'char3': mat_data['ch'][:, 2],
    'char4': mat_data['ch'][:, 3],
    'costsh1': mat_data['costShifters'][:, 0],
    'costsh2': mat_data['costShifters'][:, 1],
})


# Tabela com os dados para cada mercado
prodsMarket['activefirms'] = data.groupby('market_ids')['firm_ids'].nunique()

prodsMarket['firm_1'] = data[data['firm_ids'] == 1].
 ↪groupby('market_ids')['firm_ids'].count()
prodsMarket['share_firm_1'] = data[data['firm_ids'] == 1].
 ↪groupby('market_ids')['shares'].sum()
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prodsMarket['firm_2'] = data[data['firm_ids'] == 2].
 ↪groupby('market_ids')['firm_ids'].count()
prodsMarket['share_firm_2'] = data[data['firm_ids'] == 2].
 ↪groupby('market_ids')['shares'].sum()

prodsMarket['firm_3'] = data[data['firm_ids'] == 3].
 ↪groupby('market_ids')['firm_ids'].count()
prodsMarket['share_firm_3'] = data[data['firm_ids'] == 3].
 ↪groupby('market_ids')['shares'].sum()

prodsMarket['firm_4'] = data[data['firm_ids'] == 4].
 ↪groupby('market_ids')['firm_ids'].count()
prodsMarket['share_firm_4'] = data[data['firm_ids'] == 4].
 ↪groupby('market_ids')['shares'].sum()

prodsMarket['firm_5'] = data[data['firm_ids'] == 5].
 ↪groupby('market_ids')['firm_ids'].count()
prodsMarket['share_firm_5'] = data[data['firm_ids'] == 5].
 ↪groupby('market_ids')['shares'].sum()

prodsMarket['firm_6'] = data[data['firm_ids'] == 6].
 ↪groupby('market_ids')['firm_ids'].count()
prodsMarket['share_firm_6'] = data[data['firm_ids'] == 6].
 ↪groupby('market_ids')['shares'].sum()

prodsMarket['firm_7'] = data[data['firm_ids'] == 7].
 ↪groupby('market_ids')['firm_ids'].count()
prodsMarket['share_firm_7'] = data[data['firm_ids'] == 7].
 ↪groupby('market_ids')['shares'].sum()

prodsMarket['firm_8'] = data[data['firm_ids'] == 8].
 ↪groupby('market_ids')['firm_ids'].count()
prodsMarket['share_firm_8'] = data[data['firm_ids'] == 8].
 ↪groupby('market_ids')['shares'].sum()

prodsMarket['firm_9'] = data[data['firm_ids'] == 9].
 ↪groupby('market_ids')['firm_ids'].count()
prodsMarket['share_firm_9'] = data[data['firm_ids'] == 9].
 ↪groupby('market_ids')['shares'].sum()

prodsMarket['firm_10'] = data[data['firm_ids'] == 10].
 ↪groupby('market_ids')['firm_ids'].count()
prodsMarket['share_firm_10'] = data[data['firm_ids'] == 10].
 ↪groupby('market_ids')['shares'].sum()
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prodsMarket['firm_11'] = data[data['firm_ids'] == 11].
  ↪groupby('market_ids')['firm_ids'].count()
prodsMarket['share_firm_11'] = data[data['firm_ids'] == 11].
  ↪groupby('market_ids')['shares'].sum()



statistics = pd.DataFrame({
    'mean': data.iloc[:, 2:].mean(),
    'median': data.iloc[:, 2:].median(),
    'minimum': data.iloc[:, 2:].min(),
    'maximum': data.iloc[:, 2:].max(),
    'standard deviation': data.iloc[:, 2:].std()
}).T
```