FOOD BUSINESS RECOMMENDER

Ironhack Final Project

By Ross

OBJECTIVE

To recommend a food business restaurant by location and to show where the main competitors are.

How it works

- The recommender uses offer, demand, satisfaction and trends to calculate a score.

Score =
Demand + Trend – Offer – Satisfaction

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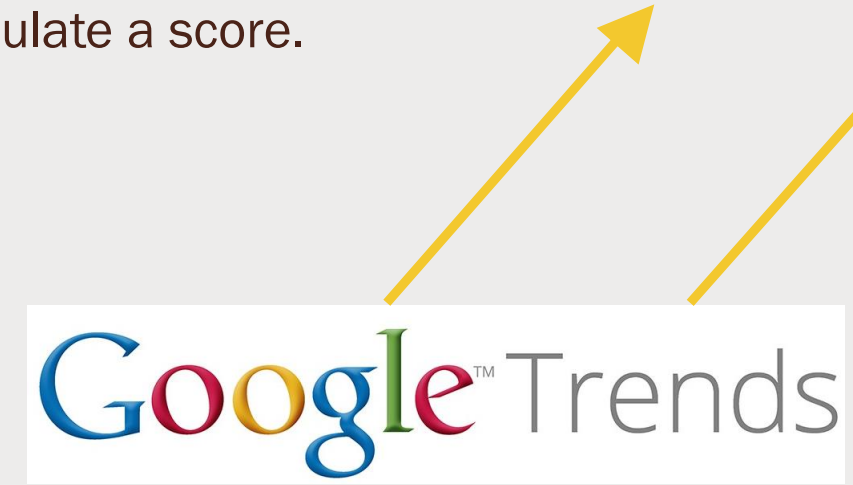

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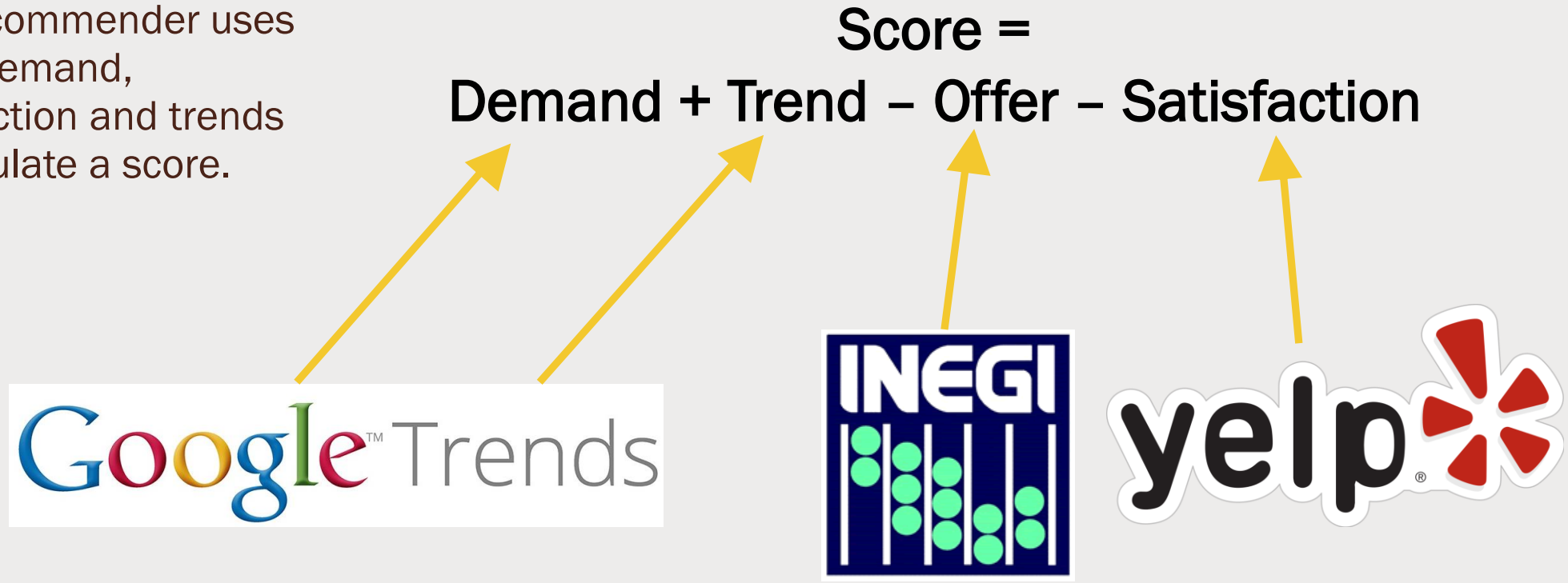

Offer: Inegi

	nom_estab	nombre_act	per_ocu	entidad	municipio	localidad	www	tipoUniEco	latitud	longitud	fecha_alta
0	ANTOJITOS VICKY	Restaurantes con servicio de preparación de an...	0 a 5 personas	QUERÉTARO	San Juan del Río	San Juan del Río	NaN	Fijo	20.375935	-99.960659	2019-11

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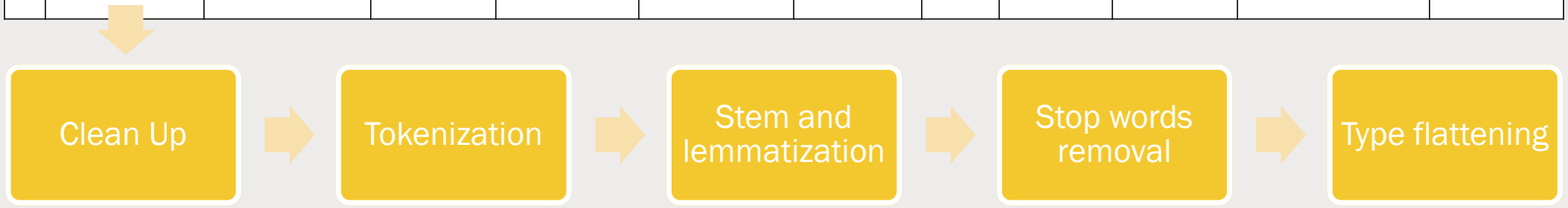

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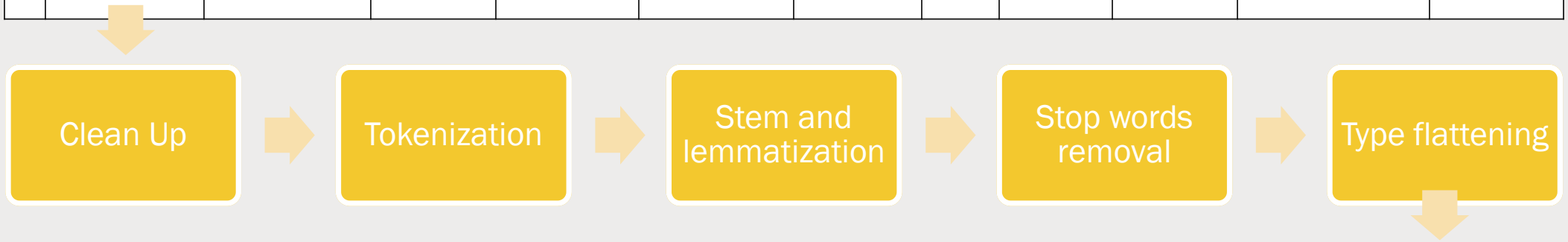
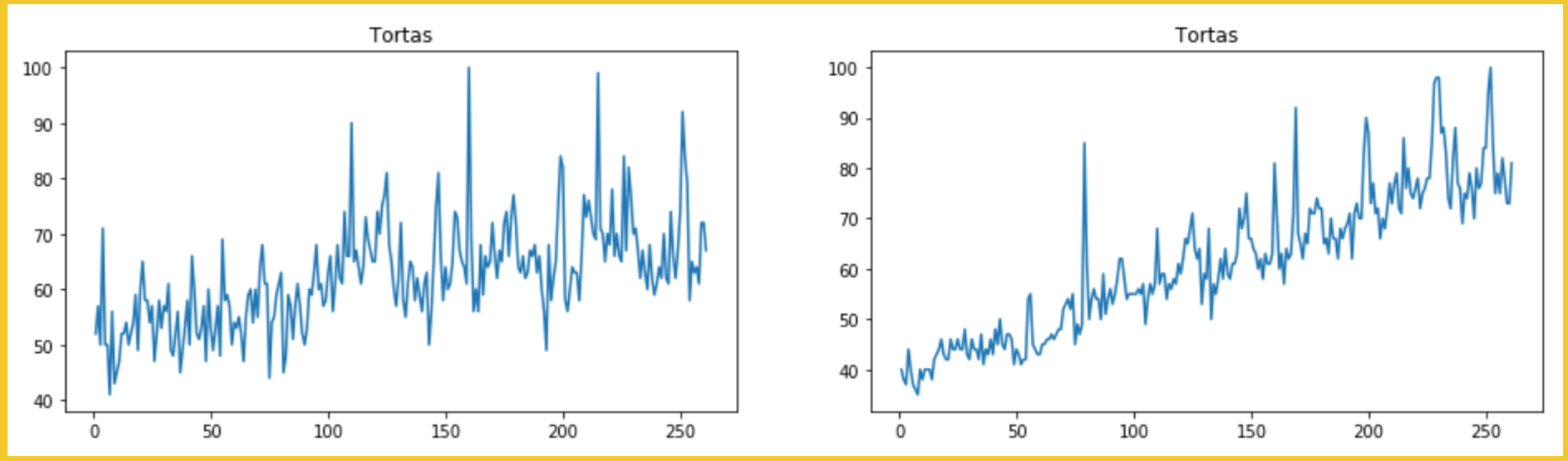


	entidad	municipio	latitud	longitud	tipo	Cocina Económica	Antojitos	Pizza	Hamburguesas	Hot Dogs	...
79856	TAMAULIPAS	Matamoros	25.869956	-97.514709	['burg', 'burgu', 'hamburgues']	0	0	0	1	0	...

Demand: Google Trends

- We are using the Google Trends endpoint https://trends.google.com/trends by means of the Pytrends API https://pypi.org/project/pytrends/
- We check the trending of each food type in Mexico. Google trends gives information by state.

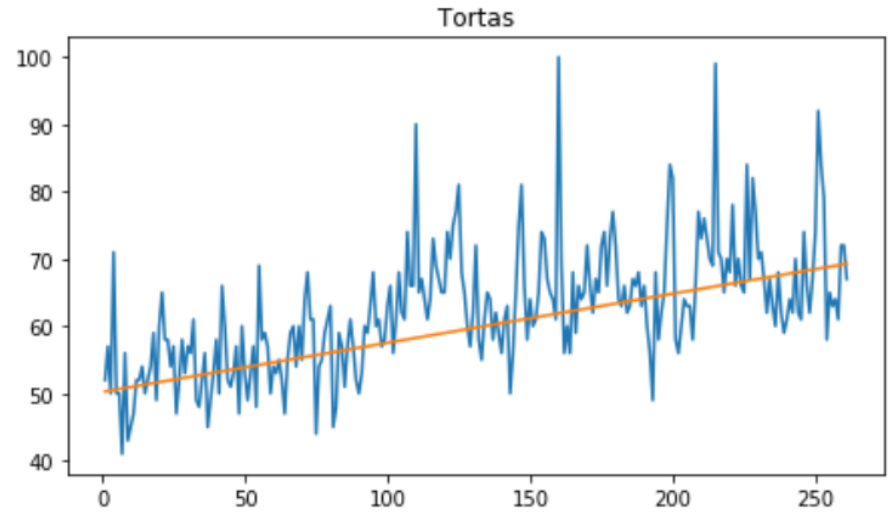
Región	pizza: (5/3/19 - 5/3/20)
Yucatán	100
Quintana Roo	95
Aguascalientes	95
Baja California	91
Sonora	86
Nayarit	84
Sinaloa	83
Colima	80
San Luis Potosí	79
Baja California Sur	77
Jalisco	77
Chiapas	74
Nuevo León	74
Querétaro	72
Campeche	70
Durango	69
Morelos	67
Guanajuato	67
Ciudad de México	66
Tabasco	66
Chihuahua	66
Michoacán	65
Puebla	64
Veracruz	62
Coahuila de Zaragoza	61
Zacatecas	61
Oaxaca	60
Estado de México	58
Tamaulipas	58
Guerrero	56
Hidalgo	45
Tlaxcala	43

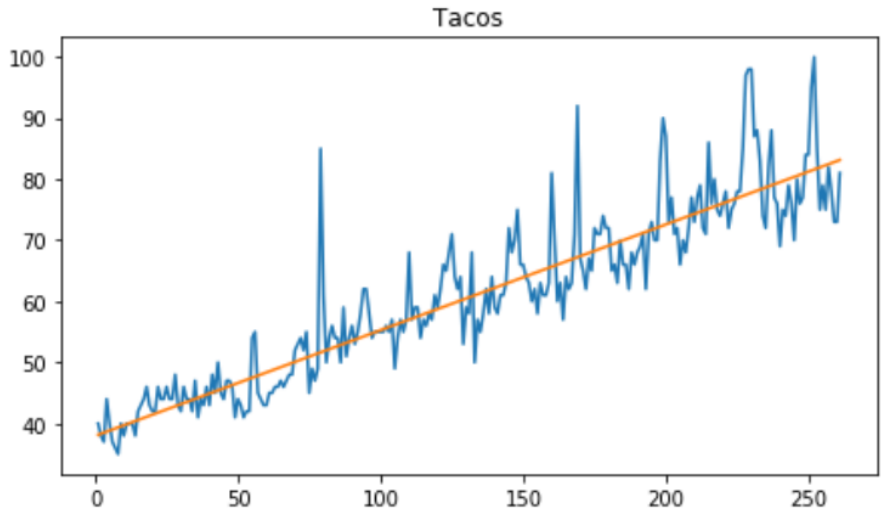


TREND: GOOGLE INTEREST OVER TIME

```
Tortas slope: 0.07300774157841808
Tacos slope: 0.17304891300679667
```

Slopes obtained applying linear regression





TREND: GOOGLE INTEREST OVER TIME

SATISFACTION: YELP

```
def searchYelp(foods, location):
    api_key = os.getenv("YELP_API_KEY")
    endpoint = 'https://api.yelp.com/v3/businesses/search?'

    yelp_search = []
    for comida in foods:
        term = 'term={}&'.format(comida)
        print(term)

        latitude = 'latitude='+str(location.latitude)+'&'
        longitude = 'longitude='+str(location.longitude)+'&'
        locale = 'locale=es_MX&'
        radius = 'radius=3000&'
        limit = 'limit=50'

        res = requests.get(endpoint+term+latitude+longitude+locale+radius+limit, headers={'Authorizatio
n':'Bearer '+api_key})

        soup = bs(res.content)
        yelp_json = json.loads(soup.findAll('p')[0].text)

        ydf = pd.DataFrame(yelp_json['businesses'])
        ydf['tipo'] = comida
        yelp_search.append(ydf)

    return yelp_search
```

We extract food type with BeautifulSoup

Score = Demand + Trend – Offer – Satisfaction

	InegiCount	GoogleTrend	slope	YelpRating
Index				
Cocina Económica	185	0	0.055525	NaN
Antojitos	156	27	0.075280	NaN
Pizza	31	62	0.102192	4.0
Hamburguesas	31	58	0.050531	3.0
Hot Dogs	23	40	0.093948	NaN

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Change Names

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Normalize

	Offer	Demand	Trending	Satisfaction
Index				
Cocina Económica	0.537791	0.00	0.268272	NaN
Antojitos	0.453488	0.27	0.363718	NaN
Pizza	0.090116	0.62	0.493749	0.888889
Hamburguesas	0.090116	0.58	0.244143	0.666667
Hot Dogs	0.066860	0.40	0.453915	NaN

Score = Demand + Trend – Offer – Satisfaction

- Sort by score

	Offer	Demand	Trending	Satisfaction	score
Index					
Carne	0.000000	0.80	0.447129	0.750000	0.497129
Pizza	0.090116	0.62	0.493749	0.888889	0.134743
Hamburguesas	0.090116	0.58	0.244143	0.666667	0.067360

Score = Demand + Trend – Offer – Satisfaction

- Sort by score

Recommendation

	Offer	Demand	Trending	Satisfaction	score
Index					
Carne	0.000000	0.80	0.447129	0.750000	0.497129
Pizza	0.090116	0.62	0.493749	0.888889	0.134743
Hamburguesas	0.090116	0.58	0.244143	0.666667	0.067360