ABSTRACT

Air pollution and closeness of industry to homes have been consistently rated the most severe environmental problems by the affected residents as described in the first environmental justice book called Dumping in Dixie: Race, Class, and Environmental Quality by Robert Bullard (Bullard, 2000). Environmental pollution impacts quality of life. The Economist Intelligence Unit (The EIU), the research and analysis division of The Economist Group, developed a composite quality of life index, which assesses several factors reflecting life satisfaction for 74 countries, including the United States, which ranked above the European Union-15 average on quality of life. However, the country's relatively high average masks a substantial variability among some US states offsetting the effect of high quality of life in the USA, including the historic low unemployment rate for women (4.0% in December 2017) and minorities (6.8% in December 2017, Bureau of Labor Statistics) when compared with the European countries. For example, Tennessee is faced with extant challenges of obesity and drug epidemics, lower-than-nation-wide incomes, big discrepancy in life expectancy between minority and White populations, environmental pollution . The multicomponent quality of life index includes, in order of importance, health, material well-being, political stability, and security followed by family relations and community life, as well as climate, job security, political freedom, and gender equality. These criteria adequately and objectively reflect actual quality of life as people with different cultural backgrounds in different countries report similar factors as vital for life satisfaction (EIU, 2005). Air pollution represents a major environmental risk to the most important component of the given quality of life index—health (WHO, 2018). Farther, according to the Lancet report on pollution and health, pollution is the single largest environmental contributor to global disease and premature death today, causing an estimated 9 million premature deaths in 2015 globally, or three times as many as all the deaths due to AIDS, tuberculosis, and malaria (Landrigan et al., 2017).

DEFINITION:

When air quality is good, the air is clear and contains only small amounts of solid particle and chemical pollutants. Poor air quality, which contains high levels of pollutants, is often hazy and dangerous to health and the environment. Air quality is described according to the Air Quality Index (AQI), which is based on the concentration of pollutants present in the air at a particular location.

CAUSES:

Air pollution is caused by the presence in the atmosphere of toxic substances, mainly produced by human activities, even though sometimes it can result from natural phenomena such as volcanic eruptions, dust storms and wildfires, also depleting the air quality.

1.Combustion of fossil fuels, like coal and oil for electricity and road transport, producing air pollutants like nitrogen and Sulphur dioxide.

2.Emissions from industries and factories, releasing large amount of carbon monoxide, hydrocarbon, chemicals and organic compounds into the air.

3.Agricultural activities, due to the use of pesticides, insecticides, and fertilizers that emit harmful chemicals.

4.Waste production, mostly because of methane generation in landfills.

EFFECTS:

Global warming

On top of that, air pollution is a major contributor to **global warming and climate change**. In fact, the abundance of carbon dioxide in the air is one of the causes of the greenhouse effect. Normally, the presence of greenhouse gases should be beneficial for the planet because they absorb the infra-red radiation produced by the surface of the earth. But the excessive concentration of these gases in the atmosphere is the cause of the recent climate change.

PROGRAM

INPUT:

aqi = pd.read_csv

('../input/data.csv', encoding = "ISO-8859-1", parse_dates=['date'], low_memory=False)

aqi.head()

OUTPUT:

	stn_code	sampling_date	state	location	agency	type	So2	No2	rspm	spm	location_monitoring_station	pm2_5	date
0	150	February - M021990	Andhra Pradesh	Hyderabad	NaN	Residential, Rural and other Areas	4.8	17.4	NaN	NaN	NaN	NaN	1990-02-01
1	151	February - M021990	Andhra Pradesh	Hyderabad	NaN	Industrial Area	3.1	7.0	NaN	NaN	NaN	NaN	1990-02-01
2	152	February - M021990	Andhra Pradesh	Hyderabad	NaN	Residential, Rural and other Areas	6.2	28.5	NaN	NaN	NaN	NaN	1990-02-01
3	150	March- M031990	Andhra Pradesh	Hyderabad	NaN	Residential, Rural and other Areas	6.3	14.7	NaN	NaN	NaN	NaN	1990-03-01
4	151	March- M031990	Andhra Pradesh	Hyderabad	NaN	Industrial Area	4.7	7.5	NaN	NaN	NaN	NaN	1990-03-01

INPUT:

aqi.head()

OUTPUT:

	State	location	type	So2	No2	rspm	spm	pm2_5	Date
0	Andhra Pradesh	Hyderabad	RRO	4.8	17.4	NaN	NaN	NaN	1990-02-01
1	Andhra Pradesh	Hyderabad	I	3.1	7.0	NaN	NaN	NaN	1990-02-01
2	Andhra Pradesh	Hyderabad	RRO	6.2	28.5	NaN	NaN	NaN	1990-02-01
3	Andhra Pradesh	Hyderabad	I	6.3	14.7	NaN	NaN	NaN	1990-03-01
4	Andhra Pradesh	Hyderabad	RRO	4.7	7.5	NaN	NaN	NaN	1990-03-01

DATASET:

#	city	#tmpd	#dptp	Date	#pm10tmean	#o3tmean2	#no2tmean2
0	Chic	31.5	31.5	1986-01-01	38.0	10.0333888	36.76898962
1	Chic	33.0	29.875	1986-01-02	32.09989	11.00999955	65.5673619
2	Chic	33.0	27.375	1986-01-03	71.0	12.99886667	52.2658722
3	Chic	29.0	28.778	1986-01-04	39.33333	13.99887755	26.67893229
4	Chic	32.0	28.625	1986-01-05	47.0	14.00998877	26.37892229
5	Chic	40.0	35.125	1986-01-06	54.0	15.88336628	27.26772892
6	Chic	34.5	45.225	1986-01-07	56.0	17.99887766	27.2678298
7	Chic	31.0	25.356	1986-01-08	54.0	18.55667799	26.7900982
8	Chic	45.4	35.553	1986-01-09	44.88888	19.26677998	76.28276527
9	Chic	42.5	35.554	1986-01-10	34.99999	20.44567799	65.82827729
10	Chic	56.0	35.657	1986-01-11	78.66666	21.99775543	92.2820982
11	Chic	43.4	39.355	1986-01-12	76.66666	22.99652112	28.29876287
12	Chic	56.0	40.657	1986-01-13	88.44444	23.99886644	26.54567823
13	Chic	44.0	42.778	1986-01-14	91.00000	24.00344566	98.56223217
14	Chic	34.0	45.668	1986-01-15	46.33333	67.00774467	56.96345687

15	Chic	24.0	65.968	1986-02-16	34.0	34.00998844	56.98654345
16	Chic	32.0	64.657	1986-02-17	87.0	34.50066445	45.8987654
17	Chic	33.0	64.567	1986-02-18	78.0	35.88775563	48.98765987
18	Chic	42.0	43.738	1986-02-19	65.0	45.99377338	45.09879898
19	Chic	45.5	53.867	1986-02-20	56.33333	45.98	87.98765476
20	Chic	33.2	54.673	1986-02-21	56.99999	55.89	34.45678987
21	Chic	55.3	36.748	1986-02-22	56.99999	98.33	45.34567987
22	Chic	45.0	83.747	1986-02-23	67.55555	24.66778858	59.23456790
23	Chic	66.0	37.993	1986-02-24	54.0	27.74257890	54.54678369
24	Chic	55.0	33.663	1986-02-25	87.0	54.987	57.45224334
25	Chic	45.3	77.987	1986-02-26	56.0	37.4864	37.3456789
26	Chic	34.0	87.087	1986-02-27	56.77777	65.5681	76.345678
27	Chic	33.0	56.897	1986-02-28	45.99999	56.54361	76.89765432
28	Chic	33.0	78.570	1986-02-29	46.0	53.5269	46.98765765
29	Chic	55.0	68.856	1986-02-30	65.33333	53.682982	57.33333333