MODEL REGRESI LINEAR PADA DATA PENCEMARAN UDARA WILAYAH DKI JAKARTA TAHUN 2021

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ABSTRAK

Dalam sektor kendaraan menjadi suatu sumber pencemaran polusi udara tertinggi di Indonesia. Kegiatan angkutan bermotor konsekuensi pembakaran mesin yang tidak komplet mengakibatkan kontaminasi udara yang bersumber dari Karbon Monoksida (co) dan Nitrogen Dioksida (no2). (ISPU) Indeks Standar Pencemaran Udara diukur asal 5 stasiun pemantau yang terdapat pada Provinsi DKI Jakarta Tahun 2021 menyajikan variable asal data yakni::

1. Tanggal
2. Pm10
3. Pm25
4. So2
5. Co
6. O3
7. No2
8. Max
9. Critical
10. Category
11. Location

Hasil project ini menunjukkan pada tahun 2021 tingkat kualitas pencemaran udara Provinsi DKI Jakarta khususnya pada bulan Januari – Mei kualitas udara menjadi lebih baik tentu kejadian ini dipengaruhi dengan adanya (PSBB) Pembatasan Sosial Berskala Besar pada tahun sebelumnya. Akan tetapi terjadi penurunan kualitas udara pada sekitar bulan Juli-Agustus. dengan itu dalam laporan ini disajikan hasil regresi kualitas udara Provinsi DKI Jakarta pada tahun 2021.

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BAB 1
PENDAHULUAN

1.1 Latar Belakang

Atmosfer adalah zat terpenting selepas air sebagai pemberian denyut di parasan bumi ini, selain menyodorkan oksigen atmosfer mampu berkedudukan untuk bunyi-bunyian dan penghantar suara, konflik kontaminasi atmosfer sudah sangat lama menjelma sumber konflik kesegaran asosiasi, terlebih pada negara industri yang mempunyai banyak pabrik, transportasi bermotor dan hubungan aktivitas manusia. Contohnya seperti lalu lintas yang macet sangat menambah beban pencemaran udara, misalnya sepeda motor sebagai penyumbang terbesar kepada konsentrasi karbon monoksida (co) di udara diatas ruas jalan raya khususnya,

Pada daerah perkotaan yang penduduknya lebih padat ketimbang pedesaan memiliki kadar nitrogen dioksida lebih tinggi, hal seperti ini dampak dari aktivitas manusia yang akan menimbun persentase nitro dioksida di atmosfer contohnya tunggangan, penyingkiran sampah, generatory, dan lain-lain. Nitrogen dioksida dan karbon monoksida ialah parameter perubahan kualitas udara jika terjadi peningkatan kadar melebihi baku mutu yang ditetapkan, hal ini mengakibatkan gangguan kesehatan.

1.2 Tujuan

Tujuan laporan ini ialah memaparkan atau menyajikan kondisi kualitas udara DKI Jakarta dengan pemantauan tahun 2021 menggunakan regresi linear dan mendapati perbandingan kadar karbonsida (co) dan nitro dioksida (no2) di Provinsi DKI Jakarta tahun 2021.

Selain itu penelitian uji regresi linear adalah untuk mengetahui kualitas category udara wilayah DKI Jakarta menciptakan antisipasi kepada masyarakat dengan category tersebut apakah bisa dibilang aman atau tidak.

1.3 Manfaat Penelitian

Bertujuan masukan dan pemberian terhadap masyarakat perkara petaka karbonoksida (co) dan nitro dioksida (no2) mengenai kesehatan. Mengeksplorasi ilmu serta wawasan mengenai bahayanya kandungan karbondioksida (co) dan nitro dioksida (no2) terlebih lagi pada weilayah perkotaan.

Secara demografis kependudukan menunjukkan peningkatan per-tahun atau pola laju kependudukan tidak menjamin sama pada waktu yang akan mendatang, hal ini perlu dipertimbangkan untuk mengatur setiap kependudukan dan akan menimbulkan beberapa efek untuk mengurangi karbondioksida (co) dan nitro dioksida (no2).

Seraya menjalin macam aktivitas masyarakat kota biasanya mengandalkan sektor transportasi yang menjadi salah satu sektor paling penting, terhadap lingkungan peranan transportasi ini justru tidak baik hal tersebut dampak dari gas buang, sehingga dengan penelitian ini pemerintah mampu mempertimbangkan kedepan untuk sektor transportasi sehingga mengurangi dampak emisi karbon.

1.4 Batasan Masalah

Pembatasan yang saya ambil pada project kali ini terbatas dalam uji zat karbondioksida (co) dengan nitro dioksida (no2) dengan 2 variabel ini saya mengambil data Indeks Standar Pencemaran Udara (ISPU) tahun 2021 pada bulan Januari hingga Desember.

Pemilihan dua variabel diatas dilakukan berdasarkan beberapa keputusan dan pemikiran konsep. Pertama karbondioksida (co) karena hasil pengabuan tidak komplet dari tunggangan bermotor yang mencemari udara serta penyebab gangguan kesehatan manusia, potensi gas karbon monoksida sangatlah besar pada pencemaran udara.

Kemudian yang kedua ialah nitrogen dioksida (no2) menjadi kontributor utama polusi dan polutan sekunder berbahaya, termasuk ozon dan partikel ini. Sangat reaktif terhadap bahan kimia lain dan juga sebagai oksidator lengkap. Nitrogen dioksida (no2) terbentuk dari segala aktivitas alam contohnya gunung berapi, lautan, sambaran petir, dan lain-lain. Selain itu juga dapat mengganggu kesehatan manusia seperti iritasi paru-paru, kerusakan kardiovaskular, resiko kematian deni, dan lain-lain.

BAB II
TINJAUAN PUSTAKA

2.1 Analisis Kualitas Udara dan Meteorologi Tahun 2021

Parameter konsentrasi parameter udara terdiri sebagai partikulat (pm10 dan pm25), karbon monoksida (co), nitrogen oksida (no2), yang dianalisis berdasarkan fluktuasi harian, rerata nilai minimum dan maksimumnya, juga perbandingan nilai baku mutu udara ambien, kondisi analisis meteorologi dilakukan juga menghadap parameter meteorologi yang tercatat, diantaranya berupa suhu udara, kelembapan, radiasi, arah angina, dan ketepatan curah hujan tinggi. Fluktuasi dari setiap waktunya ditinjau dan di analisis efek fluktuasi konsentrasi pencemar udara di lokasi penelitian.

2.2 Indeks Standar Pencemaran Udara (ISPU)

Penggunaan ISPU untuk analisis ambien udara dapat dilakukan, perhitungan mengarah kepada peraturan terbaru Kementerian Lingkungan Hidup dan Kehutanan Nomor P.14/MENLHK/SETJEN/KUM.1/7/2020 14 Tahun 2020 dibandingkan tiap bulan nilai ISPU nya, bertujuan melihat kualitas udara di waktu ke waktu.

2.3 Status Mutu Udara Ambien tahun 2021

Status mutu udara ambien dilakukan dengan penyesuaian metodologi yang ditetapkan kepada peraturan Menteri Lingkungan Hidup Nomor 12 tahun 2010 Lampiran III yang membahas teknis pedoman mutu status udara daerah. Status mutu ambien udara daerah terhitung menurut data hasil pemantauan kualitas udara wilayah di DKI Jakarta tahun 2021.

2.4 Regresi Linear Berganda

Suatu model regresi linear serupa mengaitkan satu variabel bebas atau predictor, model ini dapat dituliskan sebagai:

$$Y = \alpha + \beta 1\ X2 + \beta 2\ X2 + \beta n\ Xn + e$$

Keterangan:

Y = Variabel terikat atau variabel response.

X = Variabel bebas atau variabel predictor.

α = Konstanta.

β = Slope atau Koefisien estimate.

2.5 Uji Normalitas

Uji normalitas memiliki fungsi menguji apakah hubungan antara variable response dengan variable predictor berdistribusi normal atau tidak. Data dari regresi berdistribusi dengan mendekati atau normal menandakan bahwa model regresi adalah model yang baik. Untuk mengetahui normalitas bisa menggunakan grafik normal probability plot. Sedangkan jika mengetahui hasil dari grafik normal probability plot menggambarkan data tersebut berdistribusi normal adalah dengan melihat apakah garisnya linear atau tidak jika linear maka data tersebut berdistribusi normal bila grafiknya eksponensial maka bisa dimodelkan ulang dengan menghitungnya menggunakan log 10.

2.6 Uji Homoskedastisitas

Suatu prosedur uji yang berguna menguji error atau galat pemodelan statistic menengok apakah varians atau error kesepakatan dipengaruhi oleh factor asing atau tidak.

$$Var(\in_i) = \sigma^2 \qquad , \quad i = 1, 2, \ldots, n$$

2.7 Uji Autokorelasi

Autokorelasi bisa dimaksudkan sebagai nilai antar pengamatan yang berurutan berdasarkan masa (time series) sebagai urutan berdasarkan dimensi, autokorelasi dalam regresi linear dapat diartikan sebagai komponen error yang berkorelasi menurut urutan waktu atau dimensi.

2.8 Uji Korelasi

Korelasi adalah teknik analisis mengukur suatu hubungan. Pengukuran asosiasi istilah umum yang terdapat dalam statistic bivariate yang dipergunakan sebagai alat ukur kekuatan sebuah hubungan atau variable, didapatkan dua teknik pengukuran asosiasi yaitu pearson moment dan spearman rank. Dua variabel dinyatakan berhubungan apabila perilaku salah satu variabel berpengaruh kepada variable lainya. Jika tidak berpengaruh maka kedua variabel tersebut independen, manfaat dari korelasi adalah mengukur kekuatan hubungan antar variabel menggunakan skala tertentu.

BAB III
METODOLOGI

3.1 Metode Penelitian

Suatu model regresi linear serupa mengaitkan satu variabel bebas atau predictor, model ini dapat dituliskan sebagai:

$$Y = \alpha + \beta 1\ X2 + \beta 2\ X2 + \beta n\ Xn + e$$

Keterangan:

Y = Variabel terikat atau variabel response.

X = Variabel bebas atau variabel predictor.

α = Konstanta.

β = Slope atau Koefisien estimate.

3.2 Sumber Data

Data yang digunakan	: Data yang digunakan : Indeks Standar Pencemaran Udara (ISPU) Tahun 2021 dataset ini diukur dari 5 stasiun pemantau kualitas udara (SPKU) provinsi DKI Jakarta Tahun 2021
Sumber Data	: Jakarta opendata
Link	: *https://data.jakarta.go.id/dataset/indeks-standar-pencemaran-udara-ispu-tahun-2021*

3.3 Dimensi Data

Dataset ini memiliki 12 data yang terdiri dari bulan :

- Januari
- Februari
- Maret
- April
- Mei
- Juni
- Juli
- Agustus
- September
- Oktober

- November
- Desember

Dengan rentan tahun 2021, dengan masing-masing data memiliki 11 variable yaitu:

- Tanggal
- Pm10
- Pm25
- So2
- Co
- O3
- No2
- Max
- Critical
- Category
- Location

3.4 Tipe Variable

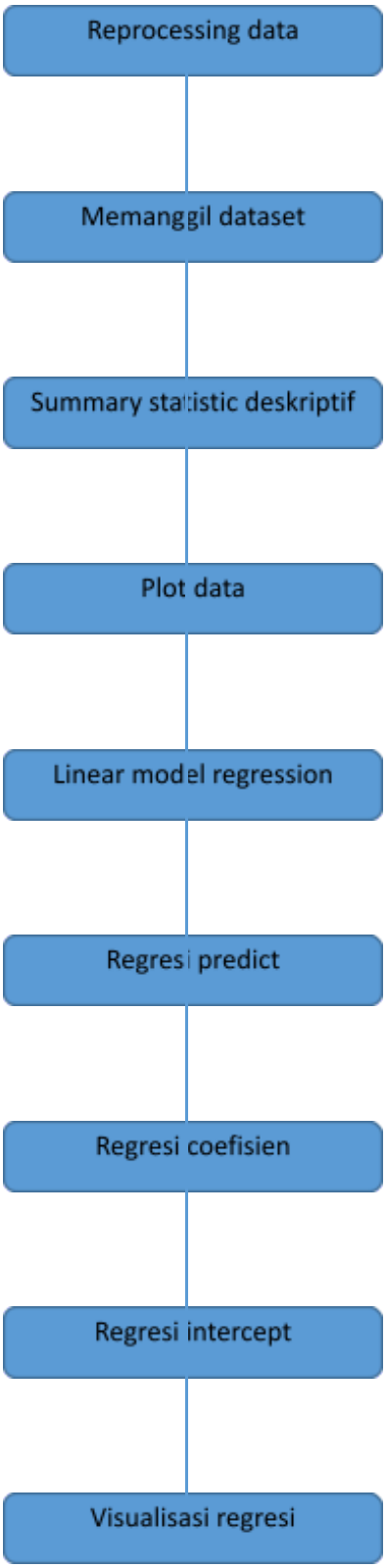
- Tanggal (kategorik)
- Pm10 (kategorik)
- Pm25 (kategorik)
- So2 (kategorik)
- Co (kategorik)
- O3 (kategorik)
- No2 (kategorik)
- Max (kategorik)
- Critical (kategorik)
- Category (kategorik)
- Location (kategorik)

3.5 Penetapan Variabel

Variable Response : Indeks Standar Pencemaran Udara

Variable Predictor : • karbondioksida (co) dan nitro dioksida (no2)

3.6 Langkah-Langkah



BAB IV

HASIL DAN ANALISIS

Model Regresi Linear Pada Data Pencemaran Udara Wilayah DKI Jakarta Tahun 2021

In [5]:
```
import pandas as pd
import seaborn as sns
import matplotlib.pyplot as plt
import numpy as np
import seaborn as sns
import pandas as pd
from sklearn import linear_model

#memanggil dataset
df=pd.read_csv('C:/Users/ekyfe/Documents/Semester 1/project stat smstr 1/stat
df
```

Out[5]:

	Source.Name	tanggal	pm10	so2	co	o3	no2	max	critical	categori	location
0	a.csv	1/1/2021	43	58	29	35	65.0	65	O3	SEDANG	DKI2
1	a.csv	1/2/2021	58	86	38	64	80.0	86	PM25	SEDANG	DKI3
2	a.csv	1/3/2021	64	93	25	62	86.0	93	PM25	SEDANG	DKI3
3	a.csv	1/4/2021	50	67	24	31	77.0	77	O3	SEDANG	DKI2
4	a.csv	1/5/2021	59	89	24	35	77.0	89	PM25	SEDANG	DKI3
...	...	...	...	...	...	...	...	...	...	...	...
360	l.csv	12/27/2021	75	61	23	40	47.0	121	PM25	TIDAK SEHAT	NaN
361	l.csv	12/28/2021	59	53	16	34	33.0	89	PM25	SEDANG	NaN
362	l.csv	12/29/2021	61	54	15	37	29.0	98	PM25	SEDANG	NaN
363	l.csv	12/30/2021	60	53	17	38	44.0	102	PM25	TIDAK SEHAT	NaN
364	l.csv	12/31/2021	64	52	44	37	53.0	90	PM25	SEDANG	NaN

365 rows × 11 columns

Analisis : mengimport beberapa library yang dibutuhkan dalam uji regresi linear ini kemudian memanggil dataset menampilkan keseluruhan sebanyak 365 rows dengan 11 variable

Reprocessing Data

In [6]:
```
#mengetahui jumlah dataset
print("#jumlah dataset saya : "+str(len(df.index)))
```

```
#jumlah dataset saya : 365
```

In [7]:
```
#analisis summary statistik deskriptif terhadap dataset yang dipilih
df.describe()
```

Out[7]:

	pm10	so2	co	o3	no2	max
count	365.000000	365.000000	365.000000	365.000000	334.000000	365.000000
mean	60.506849	52.753425	15.391781	49.805479	34.098802	94.030137
std	15.155896	11.193823	5.857975	12.234790	16.623705	24.408647
min	19.000000	37.000000	7.000000	20.000000	9.000000	45.000000
25%	53.000000	45.000000	11.000000	41.000000	23.000000	77.000000
50%	62.000000	52.000000	14.000000	49.000000	31.000000	93.000000
75%	68.000000	55.000000	18.000000	57.000000	39.750000	108.000000
max	179.000000	126.000000	47.000000	151.000000	134.000000	179.000000

In [8]:
```
#menampilkan 5 row data_csv
df.head()
```

Out[8]:

	Source.Name	tanggal	pm10	so2	co	o3	no2	max	critical	categori	location
0	a.csv	1/1/2021	43	58	29	35	65.0	65	O3	SEDANG	DKI2
1	a.csv	1/2/2021	58	86	38	64	80.0	86	PM25	SEDANG	DKI3
2	a.csv	1/3/2021	64	93	25	62	86.0	93	PM25	SEDANG	DKI3
3	a.csv	1/4/2021	50	67	24	31	77.0	77	O3	SEDANG	DKI2
4	a.csv	1/5/2021	59	89	24	35	77.0	89	PM25	SEDANG	DKI3

In [9]:
```
#menampilkan 15 row data_csv
df.head(15)
```

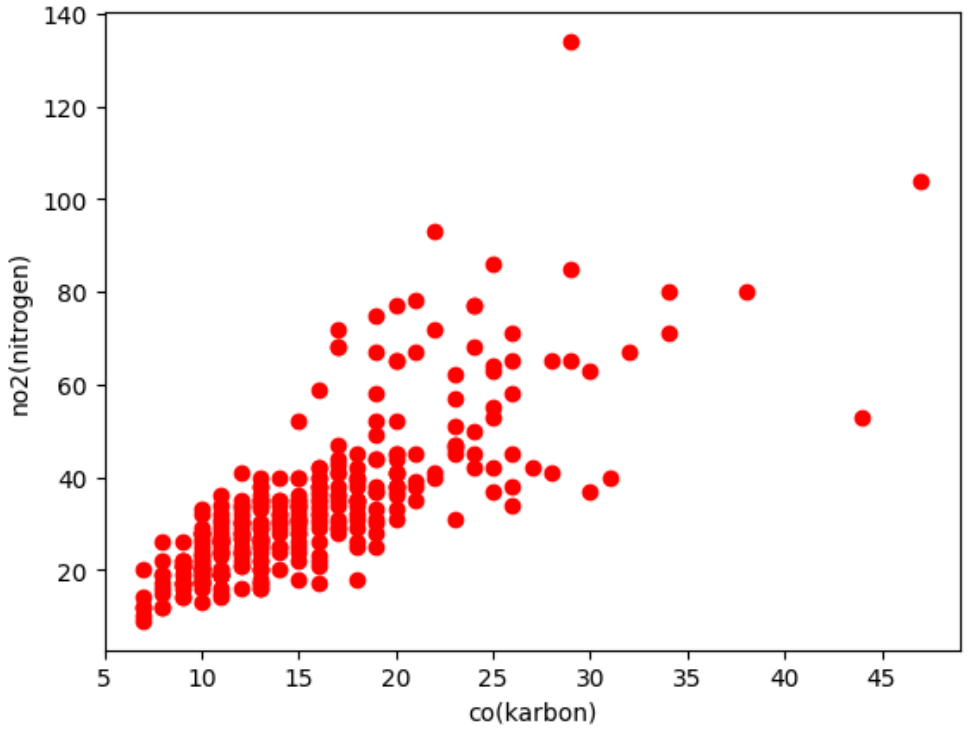
Out[9]:

	Source.Name	tanggal	pm10	so2	co	o3	no2	max	critical	categori	location
0	a.csv	1/1/2021	43	58	29	35	65.0	65	O3	SEDANG	DKI2
1	a.csv	1/2/2021	58	86	38	64	80.0	86	PM25	SEDANG	DKI3
2	a.csv	1/3/2021	64	93	25	62	86.0	93	PM25	SEDANG	DKI3
3	a.csv	1/4/2021	50	67	24	31	77.0	77	O3	SEDANG	DKI2
4	a.csv	1/5/2021	59	89	24	35	77.0	89	PM25	SEDANG	DKI3
5	a.csv	1/6/2021	73	81	29	66	85.0	85	O3	SEDANG	DKI2
6	a.csv	1/7/2021	36	52	22	55	72.0	72	O3	SEDANG	DKI2
7	a.csv	1/8/2021	38	68	26	51	71.0	71	O3	SEDANG	DKI2
8	a.csv	1/9/2021	60	77	34	42	80.0	80	O3	SEDANG	DKI2
9	a.csv	1/10/2021	24	39	16	38	59.0	59	O3	SEDANG	DKI2
10	a.csv	1/11/2021	51	72	17	57	68.0	72	PM25	SEDANG	DKI3
11	a.csv	1/12/2021	29	58	20	44	77.0	77	O3	SEDANG	DKI2
12	a.csv	1/13/2021	36	47	17	32	68.0	68	O3	SEDANG	DKI2
13	a.csv	1/14/2021	36	78	20	38	65.0	78	PM25	SEDANG	DKI3
14	a.csv	1/15/2021	52	82	20	56	65.0	82	PM25	SEDANG	DKI3

Analisis : menampilkan jumlah dataset berjumlah 365 rows hal ini dikaitkan dengan jumlah hari pada Tahun 2021, menampilkan summary deskriptif statistic dari dataset tersebut dengan variable integer, kemudian menampilkan 5 dan 15 rows data tersebut

Pemodelan Data

```
Out[87]: <matplotlib.collections.PathCollection at 0x19ccdb95390>
```



Analisis : menyajikan visualisasi data dari variabel karbon monoksida (co) dan nitrogen dioksida (no2) sebelum di regresi

```
In [88]: reg = linear_model.LinearRegression()
         reg.fit(df[['co']],df.co)

Out[88]: LinearRegression
         LinearRegression()
```

Analisis : memasukkan formula regresi kemudian linear model yang sebelumnya di import dari sklearn kemudian fit variabel yang ingin diprediksi dalam rumus memasukkan variabel X variabel yang diregresi sudah include kemudian buat prediksi nya

```
In [89]: reg.predict([[20]])
```

```
C:\Users\ekyfe\AppData\Local\Programs\Python\Python310\lib\site-packages\sklearn\base.py:450: UserWarning: X does not have valid feature names, but LinearRegression was fitted with feature names
  warnings.warn(
```

```
Out[89]: array([20.])
```

```
In [80]: reg.coef_
```

```
Out[80]: array([1.])
```

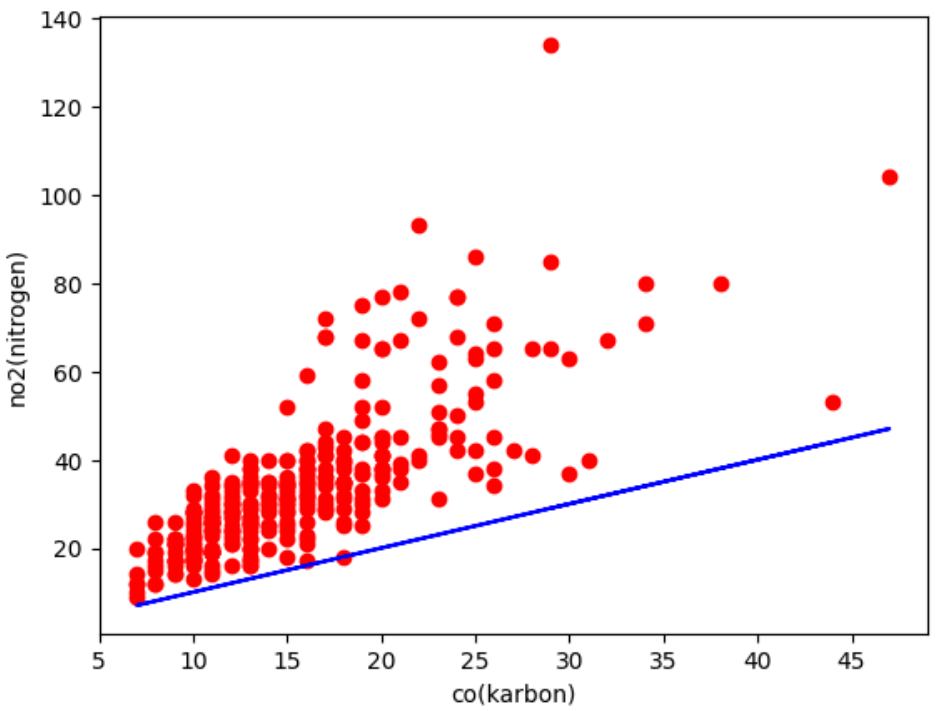
```
In [90]: reg.intercept_
```

```
Out[90]: 0.0
```

Analisis : buat prediksi kemudian masukkan nilai X kemudian memunculkan prediksi 20, sekian. Kemudian regresi koefisien menunjukkan di angka 1 semakin besar koefisien nilai regresi maka perubahan semakin besar variabel bebas X ditentukan kontribusi positif. Kemudian nilai intercept = 0

```
In [91]: %matplotlib inline
plt.xlabel('co(karbon)')
plt.ylabel('no2(nitrogen)')
plt.scatter(df.co,df.no2, color='red')
plt.plot(df.co,reg.predict(df[['co']]), color='blue')
```

```
Out[91]: [<matplotlib.lines.Line2D at 0x19ccd95c0d0>]
```



Analisis : selanjutnya menyajikan visualisasi data, grafik menunjukkan peningkatan, yang dimana pada Tahun 2021 ini emisi gas semakin bertambah, terlebih terlepasnya masyarakat dari PSBB dan mulainya aktivitas new normal.

KESIMPULAN

Didapatkan kesimpulan konsentrasi fluktuasi indeks pencemaran udara cenderung naik hal ini dikarenakan masyarakat provinsi DKI Jakarta terlepas dari PSBB atau pembatasan social berskala besar dan masyarakat memulai aktivitas normal serta disusul oleh angka covid yang kian menurun

Hasil project ini menunjukkan pada tahun 2021 tingkat kualitas pencemaran udara Provinsi DKI Jakarta khususnya pada bulan Januari – Mei kualitas udara menjadi lebih baik tentu kejadian ini dipengaruhi dengan adanya (PSBB) Pembatasan Sosial Berskala Besar pada tahun sebelumnya. Akan tetapi terjadi penurunan kualitas udara pada sekitar bulan Juli-Agustus. dengan itu dalam laporan ini disajikan hasil regresi kualitas udara Provinsi DKI Jakarta pada tahun 2021.

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3. Departemen Geofisika Meteorologi.pemantauan kualitas udara.Tahun 2021.IPB.Bogor
4. Muhammad Reza Akbar.Indeks Kualitas Udara.unipa sby.Tahun 2021.Surabaya
5. Yenni Yulfida.Perbandingan kadar karbon monoksida dengan nitrogen dioksida.Tahun 2021.Universitas Sumatera Utara.Medan
6. dictio.id/t/apa-yang-dimaksud-dengan-uji-homoskedastisitas/8902
7. ronny susetyoko (2021) modul praktikum korelasi dan model regresi menggunakan python jupyter

LAMPIRAN

Data ISPU.csv

	A	B	C	D	E	F	G	H	I
1	Source.Name,"tanggal","pm10","so2","co","o3","no2","max","critical","categori","location"								
2	a.csv,"1/1/2021","43","58","29","35","65","65","O3","SEDANG","DKI2"								
3	a.csv,"1/2/2021","58","86","38","64","80","86","PM25","SEDANG","DKI3"								
4	a.csv,"1/3/2021","64","93","25","62","86","93","PM25","SEDANG","DKI3"								
5	a.csv,"1/4/2021","50","67","24","31","77","77","O3","SEDANG","DKI2"								
6	a.csv,"1/5/2021","59","89","24","35","77","89","PM25","SEDANG","DKI3"								
7	a.csv,"1/6/2021","73","81","29","66","85","85","O3","SEDANG","DKI2"								
8	a.csv,"1/7/2021","36","52","22","55","72","72","O3","SEDANG","DKI2"								
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221	h.csv,"8/8/2021","60","53","9","57","17","92","PM25","SEDANG",""
222	h.csv,"8/9/2021","56","52","8","57","16","82","PM25","SEDANG",""
223	h.csv,"8/10/2021","36","48","8","55","19","68","PM25","SEDANG",""
224	h.csv,"8/11/2021","61","50","12","59","25","102","PM25","TIDAK SEHAT",""
225	h.csv,"8/12/2021","65","52","10","47","20","104","PM25","TIDAK SEHAT",""
226	h.csv,"8/13/2021","61","51","11","49","32","101","PM25","TIDAK SEHAT",""
227	h.csv,"8/14/2021","73","53","15","53","40","116","PM25","TIDAK SEHAT",""
228	h.csv,"8/15/2021","63","53","12","46","30","114","PM25","TIDAK SEHAT",""
229	h.csv,"8/16/2021","60","54","9","42","21","100","PM25","SEDANG",""
230	h.csv,"8/17/2021","62","51","13","40","22","103","PM25","TIDAK SEHAT",""
231	h.csv,"8/18/2021","62","51","11","42","26","97","PM25","SEDANG",""
232	h.csv,"8/19/2021","72","55","15","28","36","119","PM25","TIDAK SEHAT",""
233	h.csv,"8/20/2021","73","55","12","34","34","106","PM25","TIDAK SEHAT",""
234	h.csv,"8/21/2021","60","51","13","33","35","89","PM25","SEDANG",""
235	h.csv,"8/22/2021","74","52","14","29","29","134","PM25","TIDAK SEHAT",""
236	h.csv,"8/23/2021","66","52","13","33","27","106","PM25","TIDAK SEHAT",""
237	h.csv,"8/24/2021","69","52","12","41","30","110","PM25","TIDAK SEHAT",""
238	h.csv,"8/25/2021","69","51","12","38","34","106","PM25","TIDAK SEHAT",""
239	h.csv,"8/26/2021","64","51","10","31","33","96","PM25","SEDANG",""
240	h.csv,"8/27/2021","63","52","11","32","31","105","PM25","TIDAK SEHAT",""
241	h.csv,"8/28/2021","76","51","11","44","27","123","PM25","TIDAK SEHAT",""
242	h.csv,"8/29/2021","68","52","12","36","29","122","PM25","TIDAK SEHAT",""
243	h.csv,"8/30/2021","87","52","17","39","41","140","PM25","TIDAK SEHAT",""
244	h.csv,"8/31/2021","74","51","19","48","33","109","PM25","TIDAK SEHAT",""
245	i.csv,"9/1/2021","79","55","16","32","38","118","PM25","TIDAK SEHAT",""

245	i.csv,"9/1/2021","79","55","16","32","38","118","PM25","TIDAK SEHAT",""
246	i.csv,"9/2/2021","66","52","15","39","28","115","PM25","TIDAK SEHAT",""
247	i.csv,"9/3/2021","66","51","11","45","30","111","PM25","TIDAK SEHAT",""
248	i.csv,"9/4/2021","62","50","10","37","28","93","PM25","SEDANG",""
249	i.csv,"9/5/2021","74","52","12","36","28","120","PM25","TIDAK SEHAT",""
250	i.csv,"9/6/2021","73","51","13","34","24","109","PM25","TIDAK SEHAT",""
251	i.csv,"9/7/2021","60","51","11","27","24","86","PM25","SEDANG",""
252	i.csv,"9/8/2021","64","52","16","29","34","106","PM25","TIDAK SEHAT",""
253	i.csv,"9/9/2021","68","54","12","35","31","88","PM25","SEDANG",""
254	i.csv,"9/10/2021","58","53","10","39","32","80","PM25","SEDANG",""
255	i.csv,"9/11/2021","70","53","12","46","41","109","PM25","TIDAK SEHAT",""
256	i.csv,"9/12/2021","66","51","10","36","27","111","PM25","TIDAK SEHAT",""
257	i.csv,"9/13/2021","56","52","9","27","21","88","PM25","SEDANG",""
258	i.csv,"9/14/2021","36","50","8","47","19","61","PM25","SEDANG",""
259	i.csv,"9/15/2021","69","54","20","45","45","110","PM25","TIDAK SEHAT",""
260	i.csv,"9/16/2021","53","52","10","52","24","89","PM25","SEDANG",""
261	i.csv,"9/17/2021","50","51","7","53","20","85","PM25","SEDANG",""
262	i.csv,"9/18/2021","57","53","9","51","22","101","PM25","TIDAK SEHAT",""
263	i.csv,"9/19/2021","56","50","10","68","19","83","PM25","SEDANG",""
264	i.csv,"9/20/2021","58","52","11","54","34","81","PM25","SEDANG",""
265	i.csv,"9/21/2021","61","52","11","58","36","99","PM25","SEDANG",""
266	i.csv,"9/22/2021","64","54","14","48","32","119","PM25","TIDAK SEHAT",""
267	i.csv,"9/23/2021","61","53","10","53","22","116","PM25","TIDAK SEHAT",""
268	i.csv,"9/24/2021","57","53","8","47","26","109","PM25","TIDAK SEHAT",""
269	i.csv,"9/25/2021","55","52","11","50","20","102","PM25","TIDAK SEHAT",""
270	i.csv,"9/26/2021","56","50","10","54","19","98","PM25","SEDANG",""
271	i.csv,"9/27/2021","53","49","12","47","33","89","PM25","SEDANG",""
272	i.csv,"9/28/2021","49","49","10","49","28","71","PM25","SEDANG",""

272	i.csv,"9/28/2021","49","49","10","49","28","71","PM25","SEDANG",""
273	i.csv,"9/29/2021","61","57","13","63","38","102","PM25","TIDAK SEHAT",""
274	i.csv,"9/30/2021","71","63","16","63","37","117","PM25","TIDAK SEHAT",""
275	j.csv,"10/1/2021","58","59","11","65","","91","PM25","SEDANG",""
276	j.csv,"10/2/2021","70","61","12","58","","127","PM25","TIDAK SEHAT",""
277	j.csv,"10/3/2021","70","62","11","53","","96","PM25","SEDANG",""
278	j.csv,"10/4/2021","62","60","11","64","","110","PM25","TIDAK SEHAT",""
279	j.csv,"10/5/2021","65","67","11","54","","90","PM25","SEDANG",""
280	j.csv,"10/6/2021","66","66","10","58","","103","PM25","TIDAK SEHAT",""
281	j.csv,"10/7/2021","52","60","9","50","","77","PM25","SEDANG",""
282	j.csv,"10/8/2021","60","64","11","54","","98","PM25","SEDANG",""
283	j.csv,"10/9/2021","55","62","9","60","","83","PM25","SEDANG",""
284	j.csv,"10/10/2021","61","61","9","72","","97","PM25","SEDANG",""
285	j.csv,"10/11/2021","68","64","12","66","","100","PM25","SEDANG",""
286	j.csv,"10/12/2021","77","76","12","49","","111","PM25","TIDAK SEHAT",""
287	j.csv,"10/13/2021","57","63","9","58","","91","PM25","SEDANG",""
288	j.csv,"10/14/2021","73","65","12","70","","131","PM25","TIDAK SEHAT",""
289	j.csv,"10/15/2021","100","64","15","64","","157","PM25","TIDAK SEHAT",""
290	j.csv,"10/16/2021","68","63","15","63","","122","PM25","TIDAK SEHAT",""
291	j.csv,"10/17/2021","71","63","15","65","","126","PM25","TIDAK SEHAT",""
292	j.csv,"10/18/2021","57","58","11","45","","88","PM25","SEDANG",""
293	j.csv,"10/19/2021","52","60","18","42","","81","PM25","SEDANG",""
294	j.csv,"10/20/2021","50","73","11","50","","96","PM25","SEDANG",""
295	j.csv,"10/21/2021","53","61","11","57","","74","PM25","SEDANG",""
296	j.csv,"10/22/2021","73","82","18","46","","120","PM25","TIDAK SEHAT",""
297	j.csv,"10/23/2021","67","81","13","53","","109","PM25","TIDAK SEHAT",""
298	j.csv,"10/24/2021","68","60","17","62","","113","PM25","TIDAK SEHAT",""
299	j.csv,"10/25/2021","65","62","14","70","","104","PM25","TIDAK SEHAT",""

300	j.csv,"10/26/2021","75","67","16","50","","130","PM25","TIDAK SEHAT",""
301	j.csv,"10/27/2021","62","64","15","50","","90","PM25","SEDANG",""
302	j.csv,"10/28/2021","54","67","16","56","","78","PM25","SEDANG",""
303	j.csv,"10/29/2021","54","80","19","49","","80","SO2","SEDANG",""
304	j.csv,"10/30/2021","64","81","15","58","","103","PM25","TIDAK SEHAT",""
305	j.csv,"10/31/2021","56","63","28","56","","79","PM25","SEDANG",""
306	k.csv,"11/1/2021","64","77","17","48","41","91","PM25","SEDANG",""
307	k.csv,"11/2/2021","54","51","18","49","35","77","PM25","SEDANG",""
308	k.csv,"11/3/2021","52","51","13","73","38","83","PM25","SEDANG",""
309	k.csv,"11/4/2021","63","52","17","63","47","95","PM25","SEDANG",""
310	k.csv,"11/5/2021","64","52","23","46","46","95","PM25","SEDANG",""
311	k.csv,"11/6/2021","57","52","13","52","40","86","PM25","SEDANG",""
312	k.csv,"11/7/2021","52","51","10","55","25","81","PM25","SEDANG",""
313	k.csv,"11/8/2021","53","52","20","39","41","73","PM25","SEDANG",""
314	k.csv,"11/9/2021","67","51","21","47","38","106","PM25","TIDAK SEHAT",""
315	k.csv,"11/10/2021","61","51","11","36","25","100","PM25","SEDANG",""
316	k.csv,"11/11/2021","47","51","12","36","32","71","PM25","SEDANG",""
317	k.csv,"11/12/2021","44","47","10","38","19","63","PM25","SEDANG",""
318	k.csv,"11/13/2021","52","47","16","52","40","82","PM25","SEDANG",""
319	k.csv,"11/14/2021","50","47","13","46","34","68","PM25","SEDANG",""
320	k.csv,"11/15/2021","36","47","9","36","17","58","PM25","SEDANG",""
321	k.csv,"11/16/2021","53","47","11","41","14","82","PM25","SEDANG",""
322	k.csv,"11/17/2021","60","50","13","45","35","99","PM25","SEDANG",""
323	k.csv,"11/18/2021","63","43","18","56","35","106","PM25","TIDAK SEHAT",""
324	k.csv,"11/19/2021","32","41","7","42","12","45","PM25","BAIK",""
325	k.csv,"11/20/2021","37","43","8","41","17","58","PM25","SEDANG",""
326	k.csv,"11/21/2021","52","41","19","45","44","76","PM25","SEDANG",""

326	k.csv,"11/21/2021","52","41","19","45","44","76","PM25","SEDANG",""
327	k.csv,"11/22/2021","29","42","7","41","12","45","PM25","BAIK",""
328	k.csv,"11/23/2021","25","41","7","41","9","55","PM25","SEDANG",""
329	k.csv,"11/24/2021","35","42","8","37","12","59","PM25","SEDANG",""
330	k.csv,"11/25/2021","63","42","12","40","21","83","PM25","SEDANG",""
331	k.csv,"11/26/2021","58","41","17","39","31","78","PM25","SEDANG",""
332	k.csv,"11/27/2021","37","41","10","45","22","56","PM25","SEDANG",""
333	k.csv,"11/28/2021","19","41","7","47","10","47","O3","BAIK",""
334	k.csv,"11/29/2021","29","42","8","42","12","55","PM25","SEDANG",""
335	k.csv,"11/30/2021","46","43","10","44","17","66","PM25","SEDANG",""
336	l.csv,"12/1/2021","63","43","13","41","30","100","PM25","SEDANG",""
337	l.csv,"12/2/2021","35","42","7","40","14","56","PM25","SEDANG",""
338	l.csv,"12/3/2021","54","43","9","48","17","71","PM25","SEDANG",""
339	l.csv,"12/4/2021","50","45","13","43","16","65","PM25","SEDANG",""
340	l.csv,"12/5/2021","53","44","17","39","29","80","PM25","SEDANG",""
341	l.csv,"12/6/2021","62","55","23","45","57","91","PM25","SEDANG",""
342	l.csv,"12/7/2021","179","44","12","43","21","179","PM10","TIDAK SEHAT",""
343	l.csv,"12/8/2021","49","45","17","51","30","76","PM25","SEDANG",""
344	l.csv,"12/9/2021","46","46","11","51","20","63","PM25","SEDANG",""
345	l.csv,"12/10/2021","51","47","14","41","30","73","PM25","SEDANG",""
346	l.csv,"12/11/2021","38","45","8","51","22","60","PM25","SEDANG",""
347	l.csv,"12/12/2021","49","43","17","42","34","63","PM25","SEDANG",""
348	l.csv,"12/13/2021","53","44","11","34","23","68","PM25","SEDANG",""
349	l.csv,"12/14/2021","51","46","15","37","26","76","PM25","SEDANG",""
350	l.csv,"12/15/2021","69","44","19","50","30","124","PM25","TIDAK SEHAT",""
351	l.csv,"12/16/2021","78","43","20","34","36","136","PM25","TIDAK SEHAT",""
352	l.csv,"12/17/2021","58","43","18","57","35","81","PM25","SEDANG",""
353	l.csv,"12/18/2021","51","42","18","54","32","69","PM25","SEDANG",""
354	l.csv,"12/19/2021","65","41","24","78","45","102","PM25","TIDAK SEHAT",""
355	l.csv,"12/20/2021","57","42","13","58","20","86","PM25","SEDANG",""
356	l.csv,"12/21/2021","62","42","19","39","49","74","PM25","SEDANG",""
357	l.csv,"12/22/2021","65","56","28","54","65","98","PM25","SEDANG",""
358	l.csv,"12/23/2021","70","57","19","44","44","99","PM25","SEDANG",""
359	l.csv,"12/24/2021","36","53","15","36","52","65","PM25","SEDANG",""
360	l.csv,"12/25/2021","56","56","23","35","62","85","PM25","SEDANG",""
361	l.csv,"12/26/2021","44","51","15","37","34","71","PM25","SEDANG",""
362	l.csv,"12/27/2021","75","61","23","40","47","121","PM25","TIDAK SEHAT",""
363	l.csv,"12/28/2021","59","53","16","34","33","89","PM25","SEDANG",""
364	l.csv,"12/29/2021","61","54","15","37","29","98","PM25","SEDANG",""
365	l.csv,"12/30/2021","60","53","17","38","44","102","PM25","TIDAK SEHAT",""
366	l.csv,"12/31/2021","64","52","44","37","53","90","PM25","SEDANG",""

Permodelan Data

Model Regresi Linear Pada Data Pencemaran Udara Wilayah DKI Jakarta Tahun 2021

In [5]:
```
import pandas as pd
import seaborn as sns
import matplotlib.pyplot as plt
import numpy as np
import seaborn as sns
import pandas as pd
from sklearn import linear_model

#memanggil dataset
df=pd.read_csv('C:/Users/ekyfe/Documents/Semester 1/project stat smstr 1/stat
df
```

Out[5]:

	Source.Name	tanggal	pm10	so2	co	o3	no2	max	critical	categori	location
0	a.csv	1/1/2021	43	58	29	35	65.0	65	O3	SEDANG	DKI2
1	a.csv	1/2/2021	58	86	38	64	80.0	86	PM25	SEDANG	DKI3
2	a.csv	1/3/2021	64	93	25	62	86.0	93	PM25	SEDANG	DKI3
3	a.csv	1/4/2021	50	67	24	31	77.0	77	O3	SEDANG	DKI2
4	a.csv	1/5/2021	59	89	24	35	77.0	89	PM25	SEDANG	DKI3
...	...	...	...	...	...	...	...	...	...	...	...
360	l.csv	12/27/2021	75	61	23	40	47.0	121	PM25	TIDAK SEHAT	NaN
361	l.csv	12/28/2021	59	53	16	34	33.0	89	PM25	SEDANG	NaN
362	l.csv	12/29/2021	61	54	15	37	29.0	98	PM25	SEDANG	NaN
363	l.csv	12/30/2021	60	53	17	38	44.0	102	PM25	TIDAK SEHAT	NaN
364	l.csv	12/31/2021	64	52	44	37	53.0	90	PM25	SEDANG	NaN

365 rows × 11 columns

In [6]:
```
#mengetahui jumlah dataset
print("#jumlah dataset saya : "+str(len(df.index)))
```

```
#jumlah dataset saya : 365
```

In [7]:
```
#analisis summary statistik deskriptif terhadap dataset yang dipilih
df.describe()
```

Out[7]:

	pm10	so2	co	o3	no2	max
count	365.000000	365.000000	365.000000	365.000000	334.000000	365.000000
mean	60.506849	52.753425	15.391781	49.805479	34.098802	94.030137
std	15.155896	11.193823	5.857975	12.234790	16.623705	24.408647
min	19.000000	37.000000	7.000000	20.000000	9.000000	45.000000
25%	53.000000	45.000000	11.000000	41.000000	23.000000	77.000000
50%	62.000000	52.000000	14.000000	49.000000	31.000000	93.000000
75%	68.000000	55.000000	18.000000	57.000000	39.750000	108.000000
max	179.000000	126.000000	47.000000	151.000000	134.000000	179.000000

In [8]:
```
#menampilkan 5 row data_csv
df.head()
```

Out[8]:

	Source.Name	tanggal	pm10	so2	co	o3	no2	max	critical	categori	location
0	a.csv	1/1/2021	43	58	29	35	65.0	65	O3	SEDANG	DKI2
1	a.csv	1/2/2021	58	86	38	64	80.0	86	PM25	SEDANG	DKI3
2	a.csv	1/3/2021	64	93	25	62	86.0	93	PM25	SEDANG	DKI3
3	a.csv	1/4/2021	50	67	24	31	77.0	77	O3	SEDANG	DKI2
4	a.csv	1/5/2021	59	89	24	35	77.0	89	PM25	SEDANG	DKI3

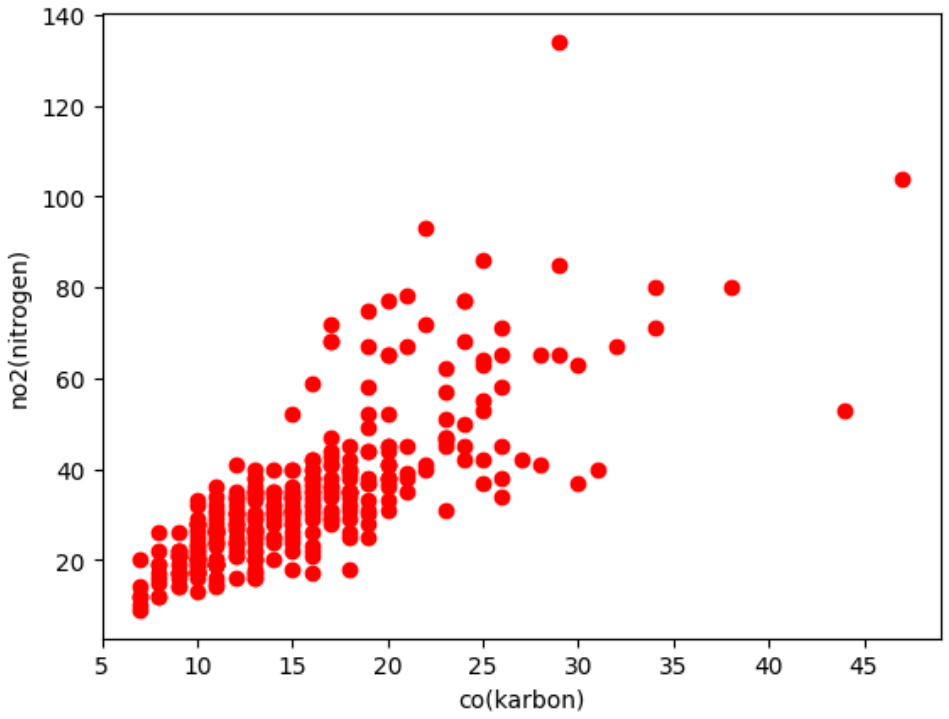
In [9]:
```
#menampilkan 15 row data_csv
df.head(15)
```

Out[9]:

	Source.Name	tanggal	pm10	so2	co	o3	no2	max	critical	categori	location
0	a.csv	1/1/2021	43	58	29	35	65.0	65	O3	SEDANG	DKI2
1	a.csv	1/2/2021	58	86	38	64	80.0	86	PM25	SEDANG	DKI3
2	a.csv	1/3/2021	64	93	25	62	86.0	93	PM25	SEDANG	DKI3
3	a.csv	1/4/2021	50	67	24	31	77.0	77	O3	SEDANG	DKI2
4	a.csv	1/5/2021	59	89	24	35	77.0	89	PM25	SEDANG	DKI3
5	a.csv	1/6/2021	73	81	29	66	85.0	85	O3	SEDANG	DKI2
6	a.csv	1/7/2021	36	52	22	55	72.0	72	O3	SEDANG	DKI2
7	a.csv	1/8/2021	38	68	26	51	71.0	71	O3	SEDANG	DKI2
8	a.csv	1/9/2021	60	77	34	42	80.0	80	O3	SEDANG	DKI2
9	a.csv	1/10/2021	24	39	16	38	59.0	59	O3	SEDANG	DKI2
10	a.csv	1/11/2021	51	72	17	57	68.0	72	PM25	SEDANG	DKI3
11	a.csv	1/12/2021	29	58	20	44	77.0	77	O3	SEDANG	DKI2
12	a.csv	1/13/2021	36	47	17	32	68.0	68	O3	SEDANG	DKI2
13	a.csv	1/14/2021	36	78	20	38	65.0	78	PM25	SEDANG	DKI3
14	a.csv	1/15/2021	52	82	20	56	65.0	82	PM25	SEDANG	DKI3

In [87]:
```
%matplotlib inline
plt.xlabel('co(karbon)')
plt.ylabel('no2(nitrogen)')
plt.scatter(df.co,df.no2, color='red')
```

Out[87]:
```
<matplotlib.collections.PathCollection at 0x19ccdb95390>
```



In [88]:
```
reg = linear_model.LinearRegression()
reg.fit(df[['co']],df.co)
```

Out[88]:
```
LinearRegression
LinearRegression()
```

In [89]:
```
reg.predict([[20]])
```

```
C:\Users\ekyfe\AppData\Local\Programs\Python\Python310\lib\site-packages\sklearn\base.py:450: UserWarning: X does not have valid feature names, but LinearRegression was fitted with feature names
  warnings.warn(
```

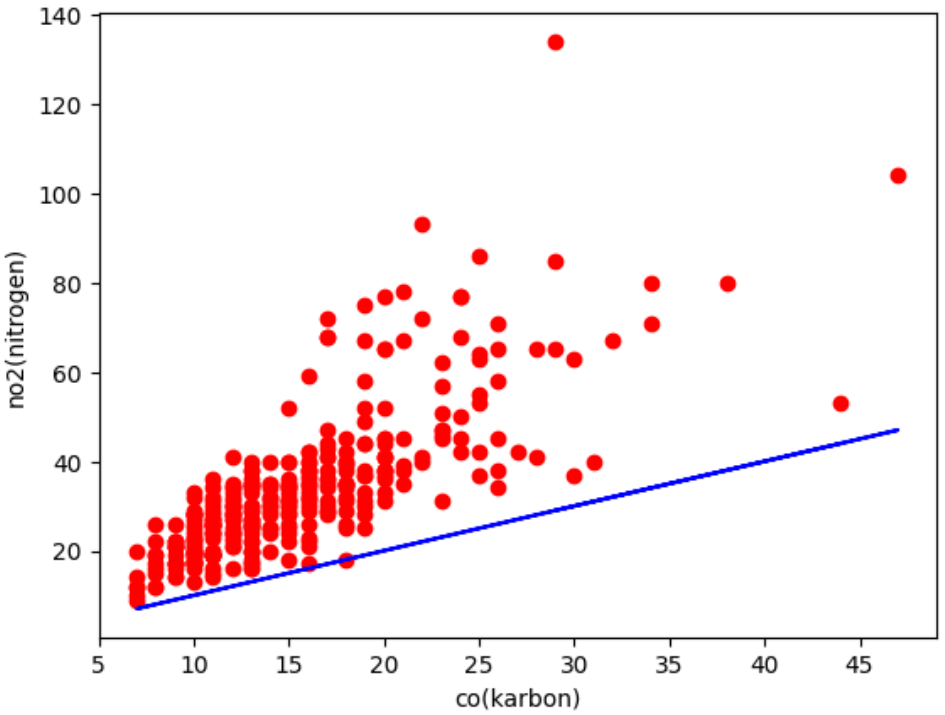
Out[89]:
```
array([20.])
```

click to expand output; double click to hide output

Out[80]:
```
array([1.])
```

In [90]:
```
reg.intercept_
```

Out[90]:
```
0.0
```

In [91]:
```
%matplotlib inline
plt.xlabel('co(karbon)')
plt.ylabel('no2(nitrogen)')
plt.scatter(df.co,df.no2, color='red')
plt.plot(df.co,reg.predict(df[['co']]), color='blue')
```

Out[91]:
```
[<matplotlib.lines.Line2D at 0x19ccd95c0d0>]
```