In [1]:
```
# Import the libraries
import numpy as np
import pandas as pd
import seaborn as sns
import matplotlib.pyplot as plt
```

In [2]:
```
# Importing the dataset 2
happiness_report = pd.read_csv("D:/Python/worldwide_happiness_report.csv")
dataset = pd.read_csv("D:/Python/covid19_Confirmed_dataset.csv")
```

In [3]:
```
happiness_report
```

Out[3]:

	Overall rank	Country or region	Score	GDP per capita	Social support	Healthy life expectancy	Freedom to make life choices	Generosity	Perce corr
0	1	Finland	7.769	1.340	1.587	0.986	0.596	0.153	
1	2	Denmark	7.600	1.383	1.573	0.996	0.592	0.252	
2	3	Norway	7.554	1.488	1.582	1.028	0.603	0.271	
3	4	Iceland	7.494	1.380	1.624	1.026	0.591	0.354	
4	5	Netherlands	7.488	1.396	1.522	0.999	0.557	0.322	
...	...	...	...	...	...	...	...	...	
151	152	Rwanda	3.334	0.359	0.711	0.614	0.555	0.217	
152	153	Tanzania	3.231	0.476	0.885	0.499	0.417	0.276	
153	154	Afghanistan	3.203	0.350	0.517	0.361	0.000	0.158	
154	155	Central African Republic	3.083	0.026	0.000	0.105	0.225	0.235	
155	156	South Sudan	2.853	0.306	0.575	0.295	0.010	0.202	

156 rows × 9 columns

In [4]:
```
# Drop Useless Columns
useless_cols = ["Overall rank", "Score", "Generosity", "Perceptions of corruption"]
```

In [5]:
```
happiness_report.drop(useless_cols, axis=1, inplace = True)
happiness_report.head()
```

Out[5]:

	Country or region	GDP per capita	Social support	Healthy life expectancy	Freedom to make life choices
0	Finland	1.340	1.587	0.986	0.596
1	Denmark	1.383	1.573	0.996	0.592
2	Norway	1.488	1.582	1.028	0.603
3	Iceland	1.380	1.624	1.026	0.591
4	Netherlands	1.396	1.522	0.999	0.557

In [6]:
```
happiness_report.set_index("Country or region", inplace = True)
happiness_report.head()
```

Out[6]:

Country or region	GDP per capita	Social support	Healthy life expectancy	Freedom to make life choices
Finland	1.340	1.587	0.986	0.596
Denmark	1.383	1.573	0.996	0.592
Norway	1.488	1.582	1.028	0.603
Iceland	1.380	1.624	1.026	0.591
Netherlands	1.396	1.522	0.999	0.557

In [7]:
```
# aggregate the rows by country
corona_dataset_aggregated = dataset.groupby("Country/Region").sum()
```

In [8]:
```
countries = list(corona_dataset_aggregated.index)
max_infections_rates = []

for c in countries:
    max_infections_rates.append(corona_dataset_aggregated.loc[c].diff().max())
corona_dataset_aggregated["Max_infections_rates"] = max_infections_rates
```

In [9]:
```
# Create a new Data Frame
corona_data = pd.DataFrame(corona_dataset_aggregated["Max_infections_rates"])
```

In [10]:
```
#Join the dataset
corona_data.shape
```

Out[10]: (187, 1)

In [11]:
```
happiness_report.shape
```

Out[11]: (156, 4)

In [12]:
```
data = corona_data.join(happiness_report, how = "inner")
data
```

Out[12]:

	Max_infections_rates	GDP per capita	Social support	Healthy life expectancy	Freedom to make life choices
Afghanistan	232.000000	0.350	0.517	0.361	0.000
Albania	34.000000	0.947	0.848	0.874	0.383
Algeria	199.000000	1.002	1.160	0.785	0.086
Argentina	291.000000	1.092	1.432	0.881	0.471
Armenia	134.000000	0.850	1.055	0.815	0.283
...	...	...	...	...	...
Venezuela	66.589700	0.960	1.427	0.805	0.154
Vietnam	92.000000	0.741	1.346	0.851	0.543
Yemen	32.963661	0.287	1.163	0.463	0.143
Zambia	43.700000	0.578	1.058	0.426	0.431
Zimbabwe	50.000000	0.366	1.114	0.433	0.361

143 rows × 5 columns

In [13]:
```
data.corr()
```

Out[13]:

	Max_infections_rates	GDP per capita	Social support	Healthy life expectancy	Freedom to make life choices
Max_infections_rates	1.000000	0.251203	0.194233	0.291478	0.080998
GDP per capita	0.251203	1.000000	0.759468	0.863062	0.394603
Social support	0.194233	0.759468	1.000000	0.765286	0.456246
Healthy life expectancy	0.291478	0.863062	0.765286	1.000000	0.427892
Freedom to make life choices	0.080998	0.394603	0.456246	0.427892	1.000000

In [14]:
```
data
```

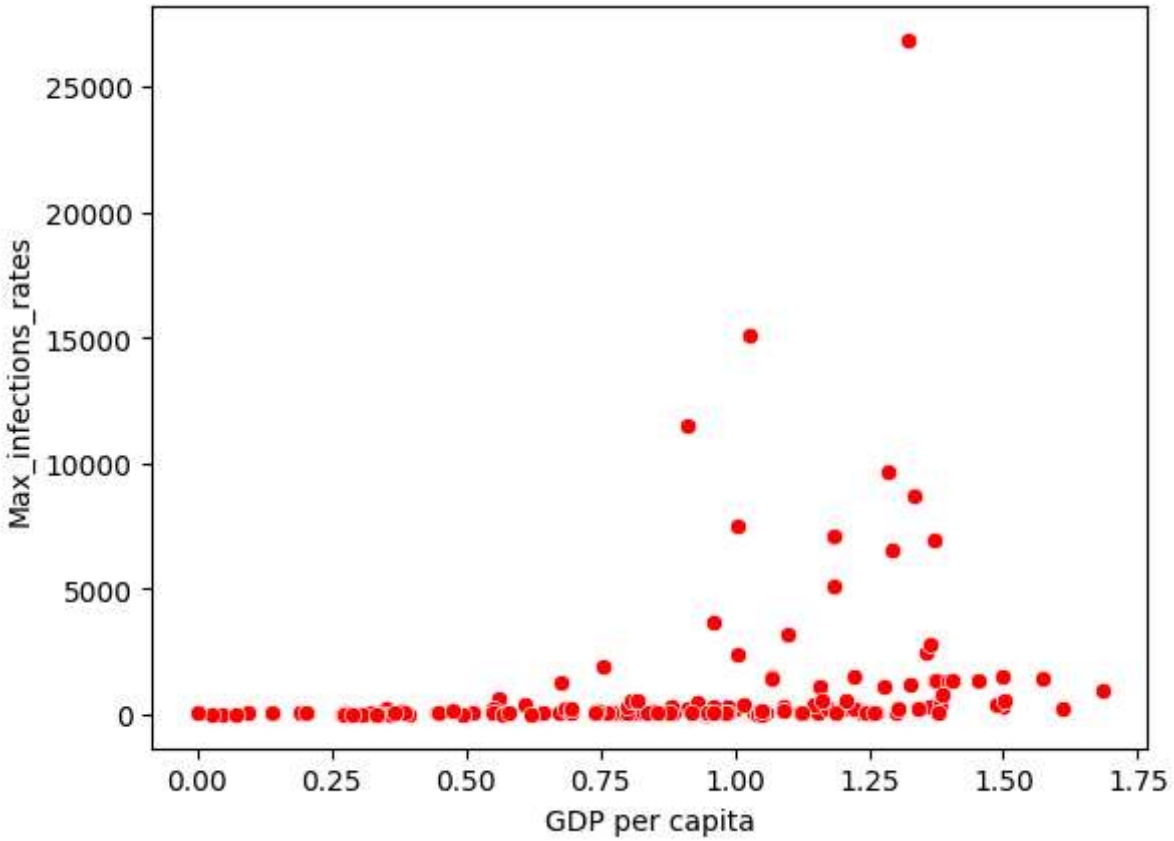
Out[14]:

	Max_infections_rates	GDP per capita	Social support	Healthy life expectancy	Freedom to make life choices
Afghanistan	232.000000	0.350	0.517	0.361	0.000
Albania	34.000000	0.947	0.848	0.874	0.383
Algeria	199.000000	1.002	1.160	0.785	0.086
Argentina	291.000000	1.092	1.432	0.881	0.471
Armenia	134.000000	0.850	1.055	0.815	0.283
...	...	...	...	...	...
Venezuela	66.589700	0.960	1.427	0.805	0.154
Vietnam	92.000000	0.741	1.346	0.851	0.543
Yemen	32.963661	0.287	1.163	0.463	0.143
Zambia	43.700000	0.578	1.058	0.426	0.431
Zimbabwe	50.000000	0.366	1.114	0.433	0.361

143 rows × 5 columns

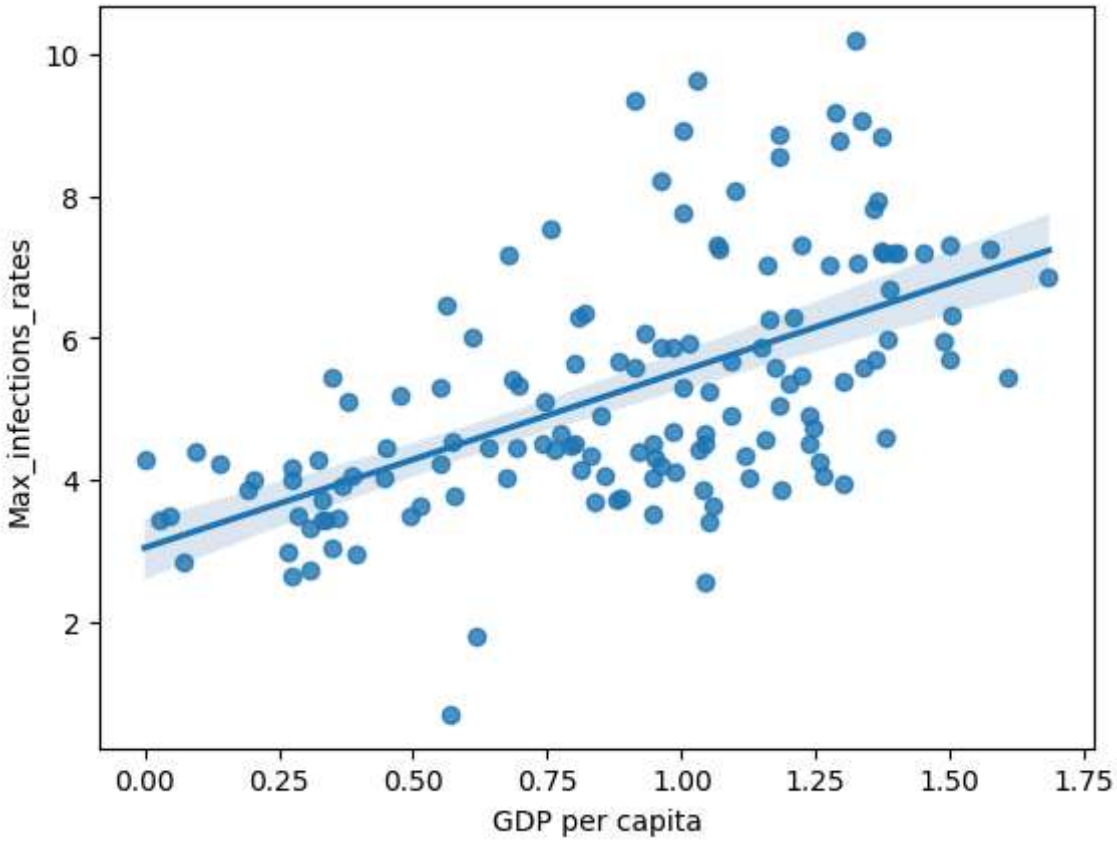
In [15]:
```
# Vizualisation
x = data["GDP per capita"]
y = data["Max_infections_rates"]
sns.scatterplot(x=x, y=y, color='red')
```

Out[15]:
```
<Axes: xlabel='GDP per capita', ylabel='Max_infections_rates'>
```



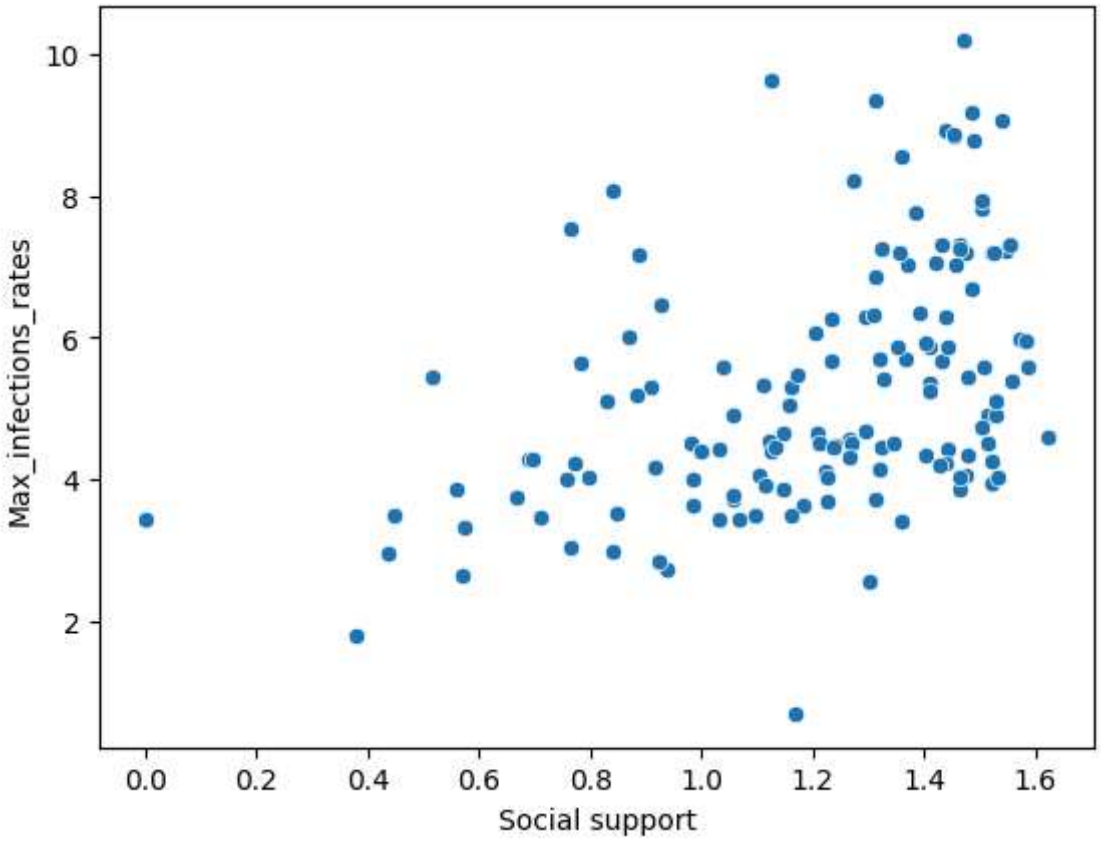
In [16]:
```
sns.regplot(x=x, y=np.log(y))
```

Out[16]:
```
<Axes: xlabel='GDP per capita', ylabel='Max_infections_rates'>
```



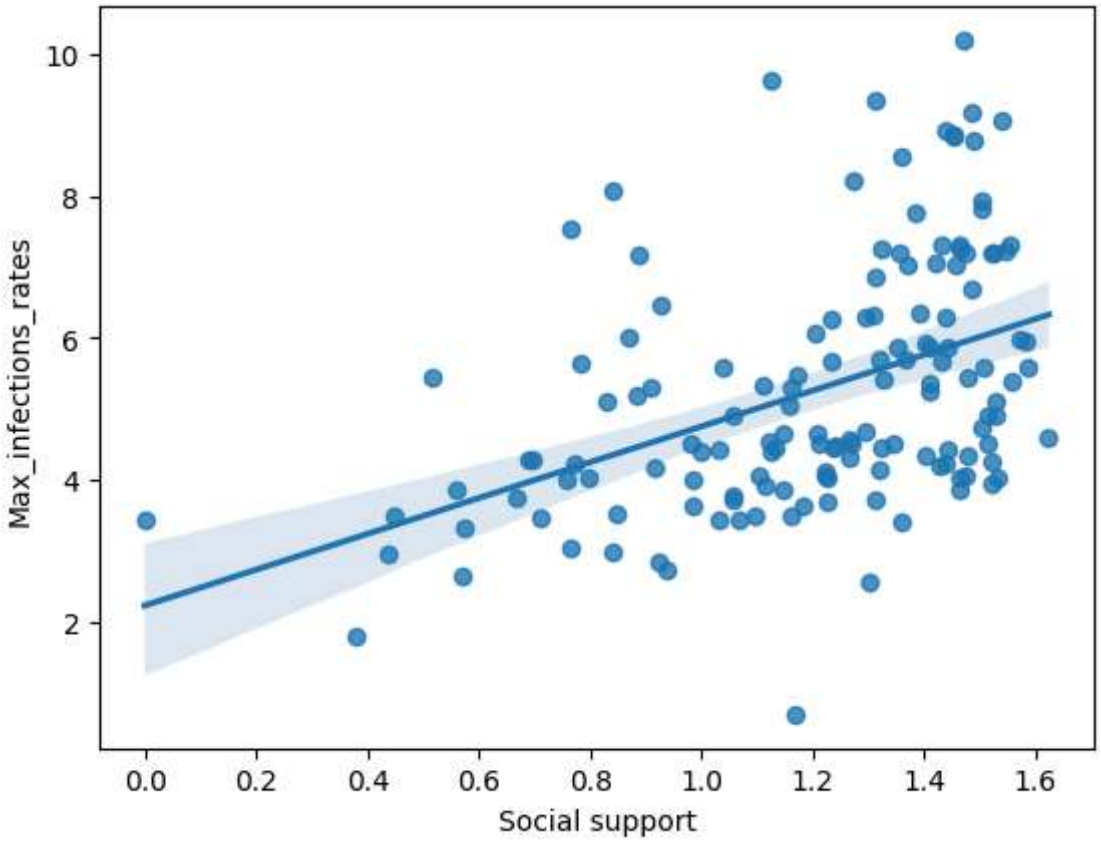
In [17]:
```
x = data["Social support"]
y = data["Max_infections_rates"]
sns.scatterplot(x=x, y=np.log(y))
```

Out[17]: <Axes: xlabel='Social support', ylabel='Max_infections_rates'>



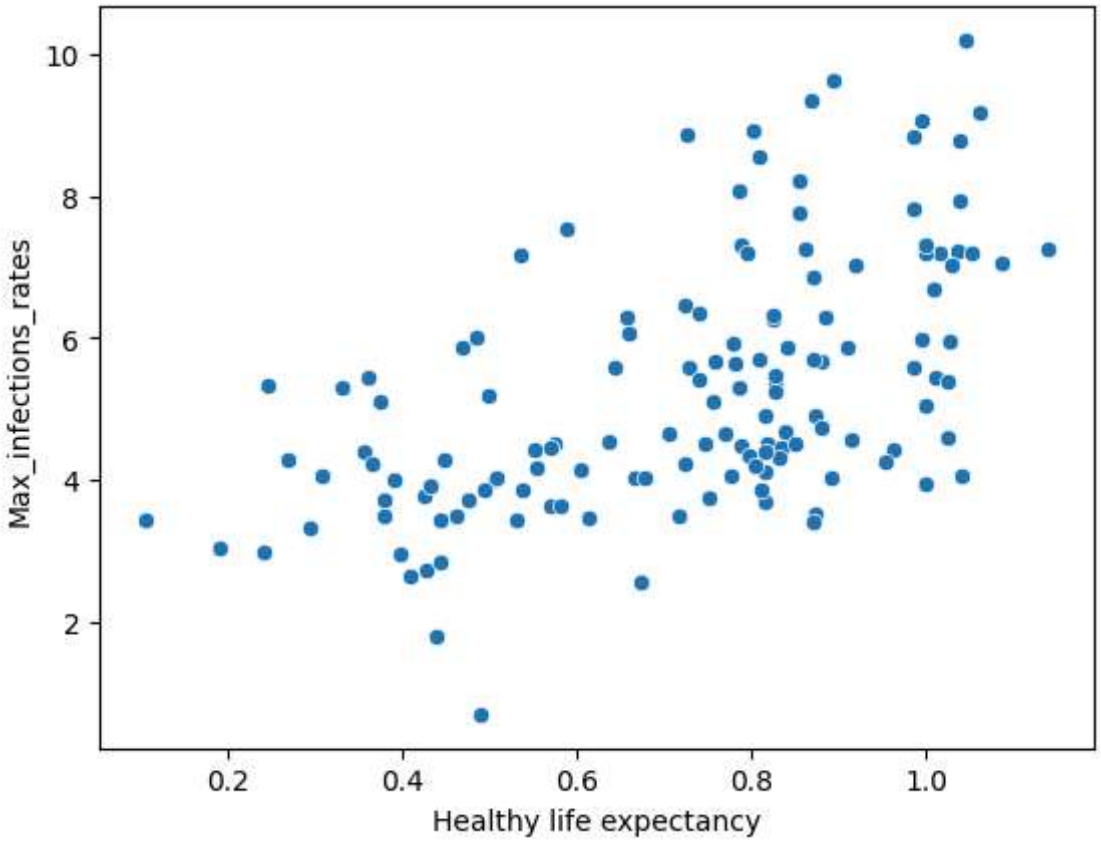
In [18]:
```
sns.regplot(x=x, y=np.log(y))
```

Out[18]: <Axes: xlabel='Social support', ylabel='Max_infections_rates'>



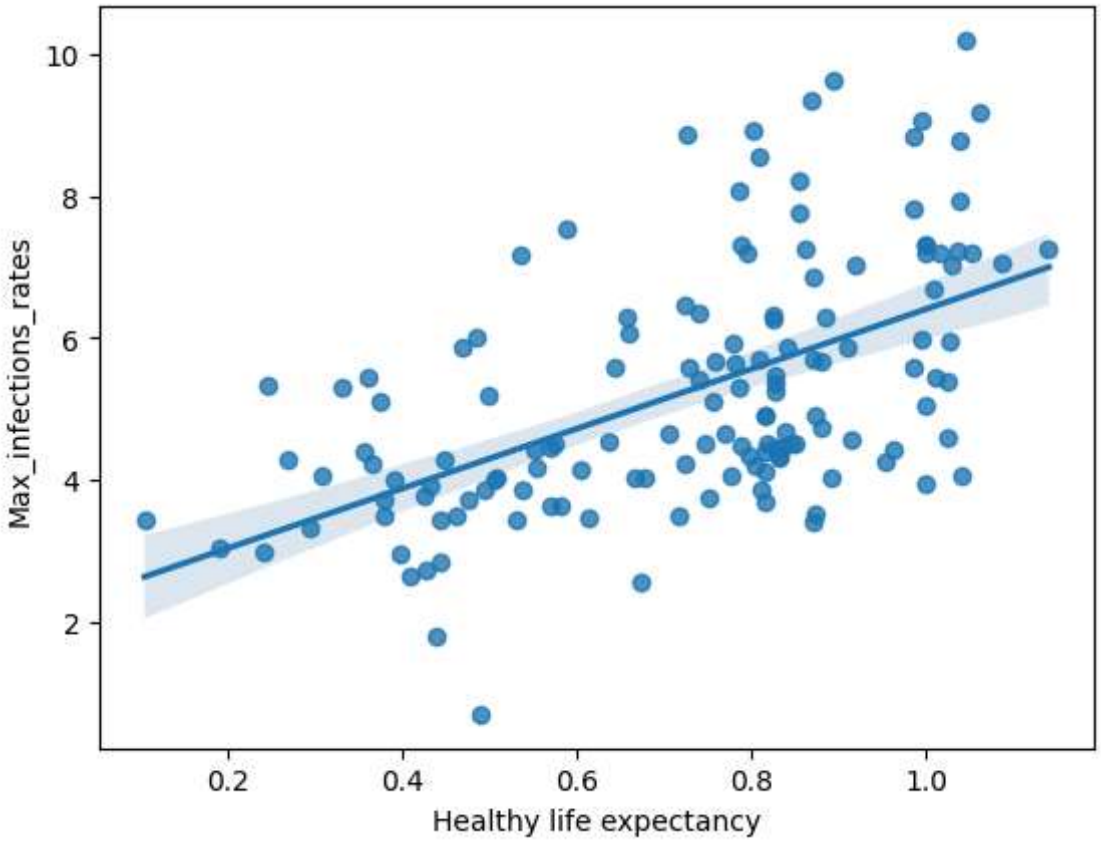
In [19]:
```
x = data["Healthy life expectancy"]
y = data["Max_infections_rates"]
sns.scatterplot(x=x, y=np.log(y))
```

Out[19]: <Axes: xlabel='Healthy life expectancy', ylabel='Max_infections_rates'>



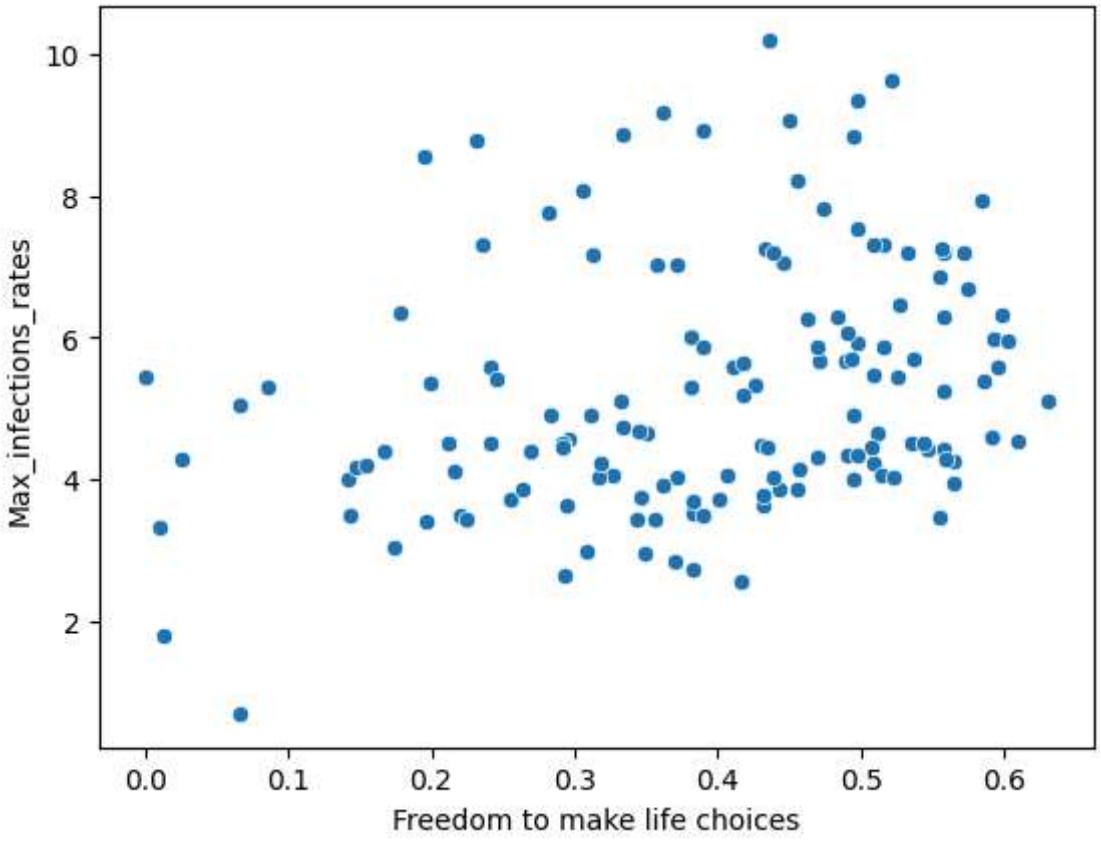
In [20]:
```
sns.regplot(x=x, y=np.log(y))
```

Out[20]: <Axes: xlabel='Healthy life expectancy', ylabel='Max_infections_rates'>



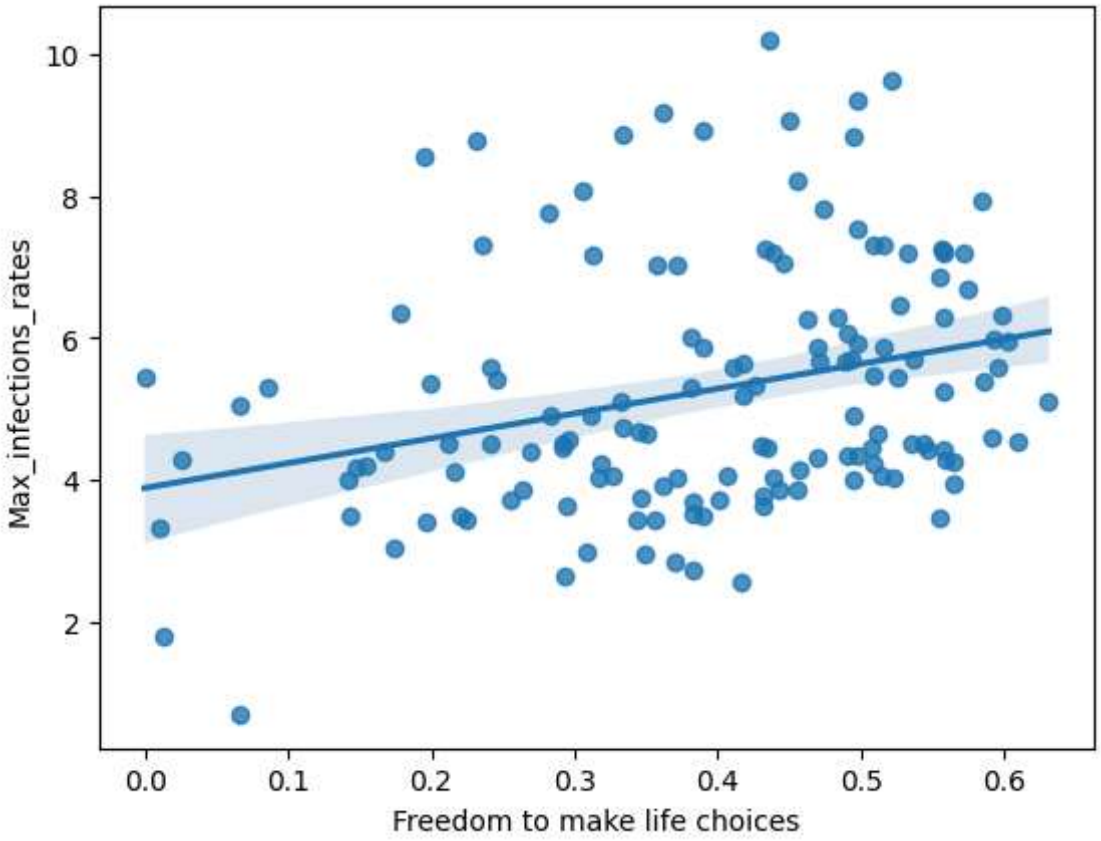
In [21]:
```
x = data["Freedom to make life choices"]
y = data["Max_infections_rates"]
sns.scatterplot(x=x, y=np.log(y))
```

Out[21]: <Axes: xlabel='Freedom to make life choices', ylabel='Max_infections_rates'>



In [22]:
```
sns.regplot(x=x, y=np.log(y))
```

Out[22]: <Axes: xlabel='Freedom to make life choices', ylabel='Max_infections_rates'>


Max_infections_rates
10
8
6
4
2
0.0
0.1
0.2
0.3
0.4
0.5
0.6
Freedom to make life choices