# Corona Virus (CV) Worldometer Data Analysis Part 1*.

Limited Regions of Countries Experience Corona Virus Deaths at High Death Rate

Predominant Factors Consistently Include Significant Pollution Emissions Concentrated during Annual Periods of Meteorological Temperature Inversions

Analysis evolution from (a) European country death data during spring 2020 in Torino Valley of Alps Mountains to (b) East of Appalachian Mountains USA to (c) Sao Paulo Brazil Valley to (d) Northern India of Himalayan Mountains to (e) countries on both sides of the Andes Mountains

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May-November 2020

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Plot A. Germany Daily Deaths

$y = 0.0058x^3 - 0.7502x^2 + 25.264x - 38.583$

$R^2 = 0.6941$
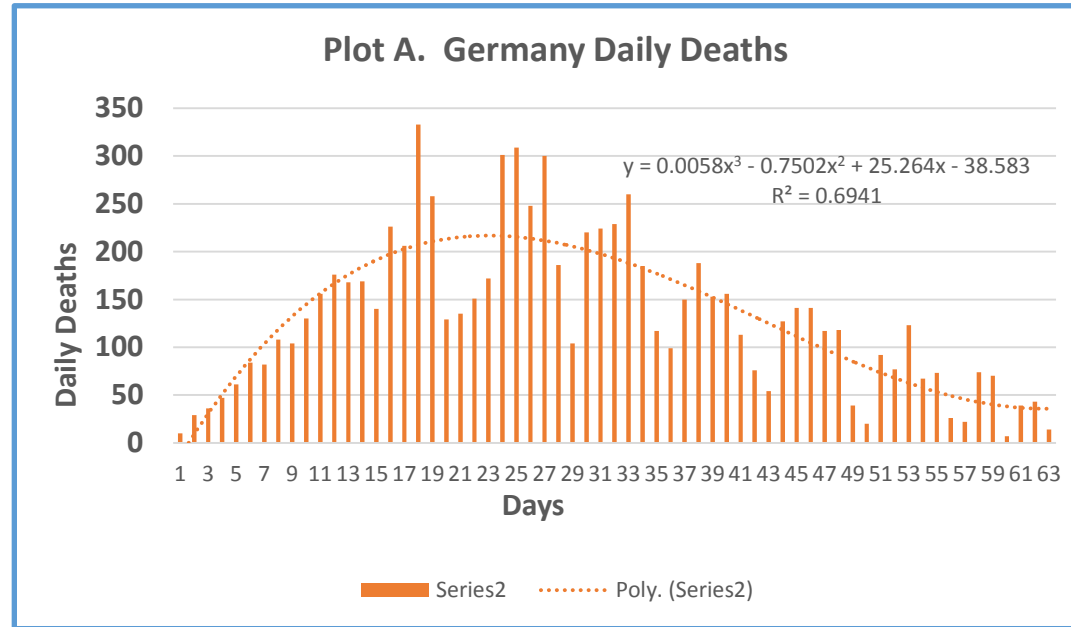
Spreadsheet with a worksheet for every country in this evaluation created. As shown in Plot A a column chart of the Daily Death Profiles was built in Microsoft Excel from the Worldometer data, and then its trend line determined. For ease of comparing countries, these column charts were converted to line charts using the trend lines.

Plot 1. Comparison of European Country Daily Death Performance (Unadjusted for Population)
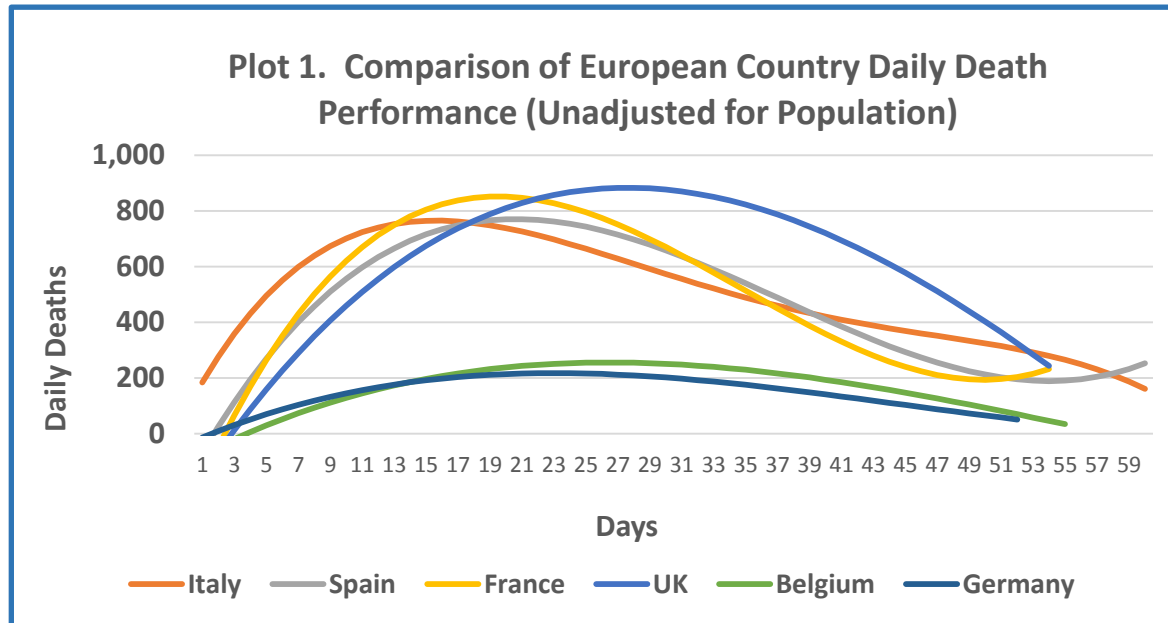
	pop MM	ratio vs Germany
Italy	60	1.40
UK	68	1.24
France	65	1.29
Spain	47	1.79
Belgium	11	7.64
Sweden	10	8.40
Netherlands	17	4.94
Switzerland	8.7	9.66
Ireland	5	16.80
Germany	84	1.00

Used to create Plot 2.

Plot shows death rate performance of Germany and Belgium as superior and equal. Can't be as death rate in Belgium is 781 and in Germany 96 as of May 17, 2020.

Decided to be fair in appraising countries need to normalize data to population of largest country being evaluated.

Plot 2. Comparison of European Countries Daily Death Performance Normalized to Population of Germany
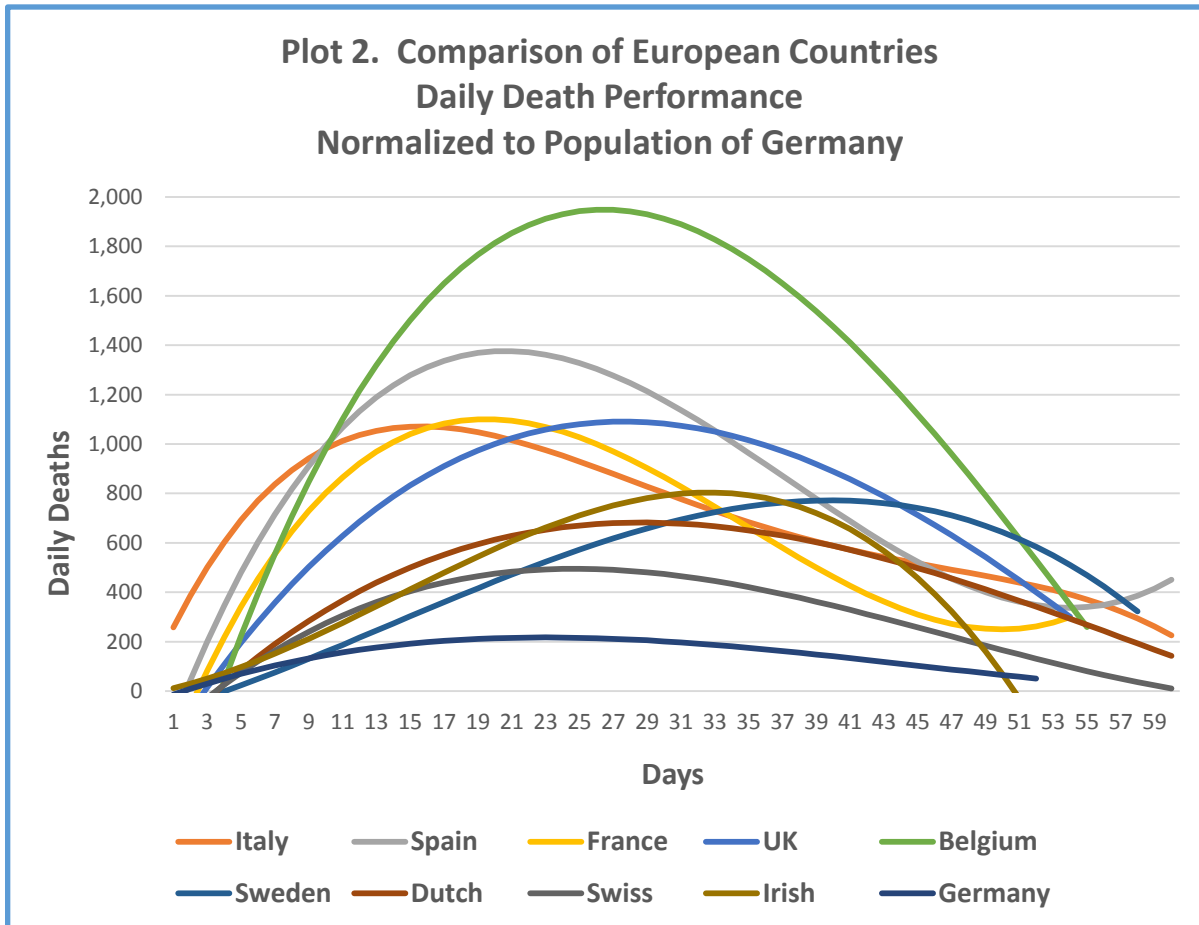
Deadliness Performance – Worst to Best		
Belgium		
Spain		
Italy	**France**	**UK**
Ireland	**Sweden**	**Dutch**
Swiss		
Germany		

Switzerland's performance in daily deaths second to Germany's.

Raised question whether a geographic region phenomenon was at play.
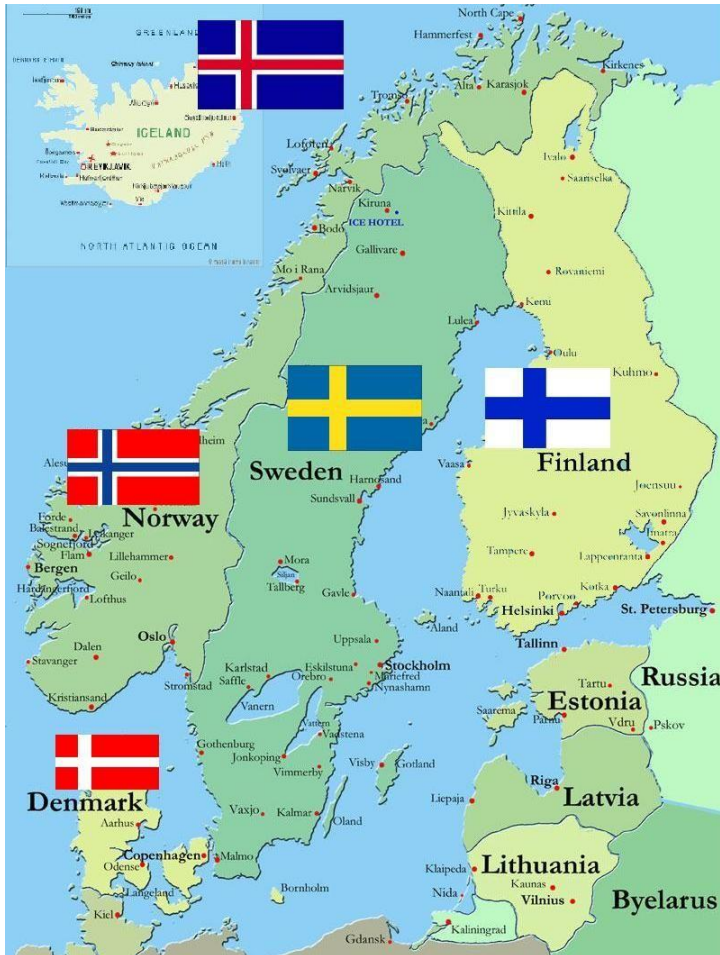
Example of geographic region phenomenon – Poor Sweden daily death performance vs good performance in 7 surrounding countries.

	5/9/2020 12:30PM	
Country	CV Deaths	Death rates
Sweden	3,220	319
Norway	218	40
Denmark	526	91
Finland	265	48
Iceland	10	29
Estonia	60	41
Latvia	18	10
Lithuania	49	18
	4,366	
Sweden	74%	

Sweden's death rate was been touted by some as "good" vs other "poor" performing European countries.

Table illustrates that Sweden was "poorest" performing country in geographic region that had very low CV deaths.

On June 26, 2020 at 3:00 pm, Sweden's death rate was 523, 5th highest in the world.

To evaluate if geographic region phenomenon at play, explored map of Alps Mountains and surrounding countries.

The Alps Mountains outlined in red.

Death Rate by Countries May 19, 2020							
Italy	532	Luxembourg	174	Germany	98	Poland	25
France	433	Switzerland	219	Austria	70	Slovakia	5
Belgium	786			Slovenia	50	Czechia	28
Netherlands	334			Croatia	23	Hungary	48
UK	521			Bosnia	41	Romania	59
Ireland	317			Montenegro	14	Serbia	27
Spain	593	Portugal	122	Albania	11	Bulgaria	16

Death rates for countries to East and North of Alps range 5-98 – green type

Death rates for countries to South and West range 334-786 – red type

Note that Belgium, the country with highest death rate of 786, has direct border with Germany having death rate of only 98 (May 17 data).

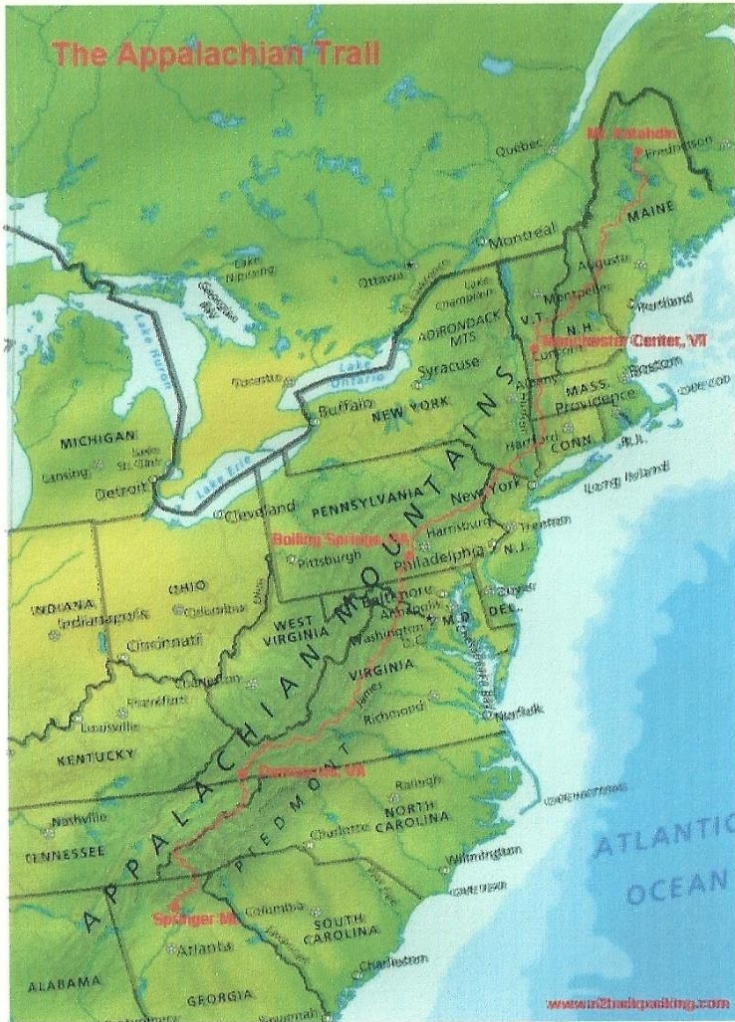*How could this possibly be?*

The blue line separates the geographic regions with low CV deaths from those of high CV deaths. The regions north & east of the blue line have death rates of 10-20% of those to the south & west of the blue line.

Had to be a high obstruction between Belgium and Germany and there is. Elevation of the Ardennes ranges from 1150 to 2277 feet. Very few inhabitants. The High Fens National Park abuts and overlaps the Ardennes at its northern end.

Ardennes, also spelled **Ardenne**, wooded plateau covering part of the ancient Forest of Ardennes, occupying most of the Belgian provinces of Luxembourg, Namur, and Liège; part of the Grand Duchy of Luxembourg; and the French *département* of Ardennes. It is an old plateau comprising the western extension of the Middle Rhine Highlands, stretching in a northeast-southwest direction and covering more than 3,860 sq mi (10,000 sq km). Its geological history is complex; as a result of intense folding, faulting, uplifts, and denudations, some older strata of rock have been thrust over younger strata.

THE HIGH FENS
The High Fens (German: Hohes Venn; French: Hautes Fagnes; Dutch: Hoge Venen), which were declared a nature reserve in 1957, are an upland area, a plateau region in the province of Liège, in the east of Belgium and adjoining parts of Germany, between the Ardennes and the Eifel highlands. The High Fens are the largest nature reserve or park in Belgium, with an area of 4,501.2 hectares (11,123 acres); it lies within the German-Belgian natural park Hohes Venn-Eifel (700 square kilometres (270 sq mi)), in the Ardennes. The reserve is a rich ecological endowment of Belgium covered with alpine sphagnum raised bogs (not "fens" as the name would imply) both on the plateau and in the valley basin; the bogs, which are over 10,000 years old, with their unique subalpine flora, fauna and microclimate, are key to the conservation work of the park.

| State	Death Rate
Maine	52
New Hampshire	126
Massachusetts	828
Rhode Island	471
Connecticut	956
New York	1446
New Jersey	1155
Pennsylvania	351
Delaware	298
Maryland	329
Dist of Columbia	543
Virginia	118
No Carolina	65

Data table indicates that Appalachian Mountains are providing separation similar to Alps in Europe between regions of high CV deaths and low CV deaths.

The death rates in four states are much higher than Belgium, the worst in Europe.

Note the death rates in West Virginia & Kentucky are <100 and western PA and NY are similar, but I don't have precise data.

Plot 3. Comparison of World Countries Death Profiles to Normalized USA Population
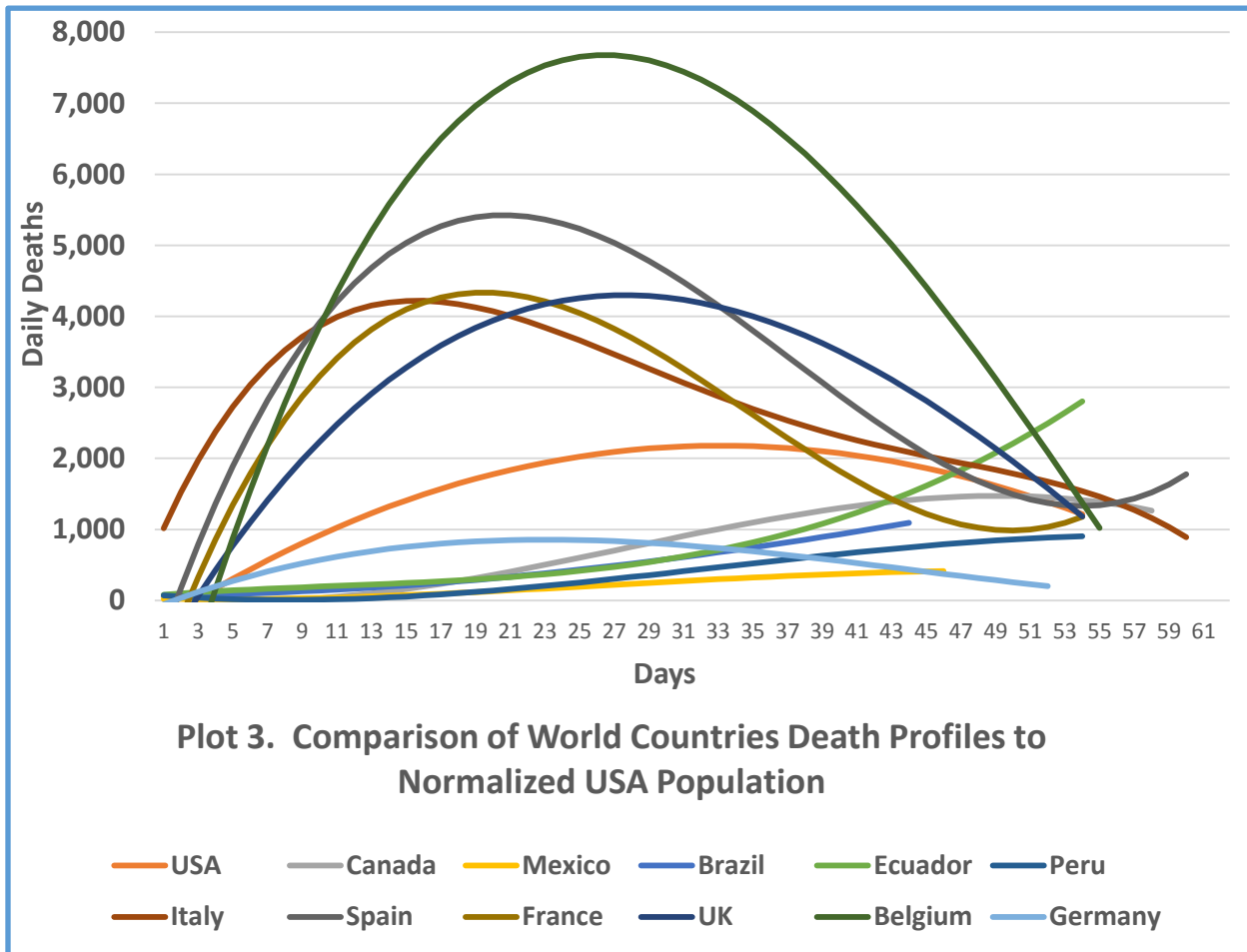
	pop MM	ratio vs USA
USA	331	1.00
Brazil	210	1.58
Mexico	131	2.53
Canada	38	8.71
Peru	33	10.03
Ecuador	17	19.47
Italy	60	5.52
UK	68	4.87
France	65	5.09
Spain	47	7.04
Belgium	11	30.09
Germany	84	3.94

USA 4-5x population of major European Countries. Treating it as one country for comparison probably is misleading.
Death rates in Europe were very high; but not nearly as high as USA East Coast States.

May 22, 2020 Summary and Questions It Raises

1. Geographic regions with high and low CV death rates have been identified.

2. The Alps and the Appalachians have been shown to separate such regions.

3. The geographic region including the seven countries bounding Sweden have been identified as a low CV death region, but not likely related to mountains.

4. Are separations caused by geographic barriers aided by ice or sub-freezing atmospheres as found in waters in Sweden region and mountain icecaps?

5. Russia had 2nd most CV cases globally (346,000 noon May 22), but death rate only 22, one of lowest globally. It is a geographic region of low CV deaths and is consistent with hypothesis of having a less deadly form of the corona virus.

6. Mary Kekatos@dailymail.com published 4/20/20 an article citing Chinese study concluding 19 mutations of corona virus with significantly different death potential.

Stimulation Thoughts

"When the corona virus passes over a large mass of sub-freezing atmosphere does it alters to a less deadly form?"

Examples of such masses could be mountains with frost lines (Alps, Appalachians) or icy sea bodies (such as contacting Scandanavian and surrounding countries.
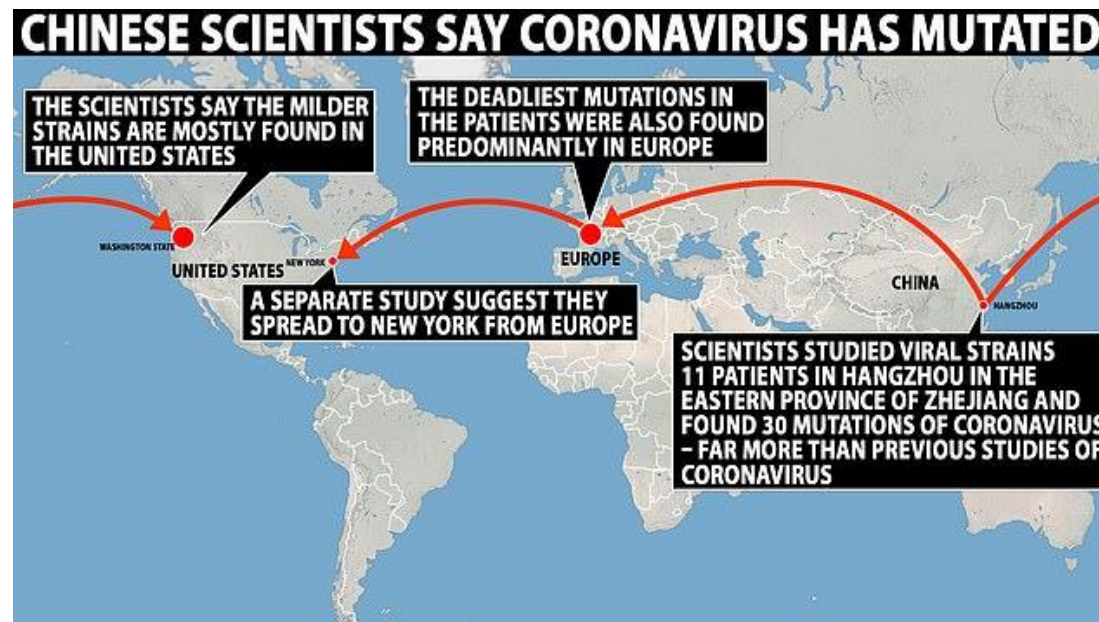
The concept that such regional zones of lower death potential has not been postulated by anyone, but does this data not support that hypothesis?
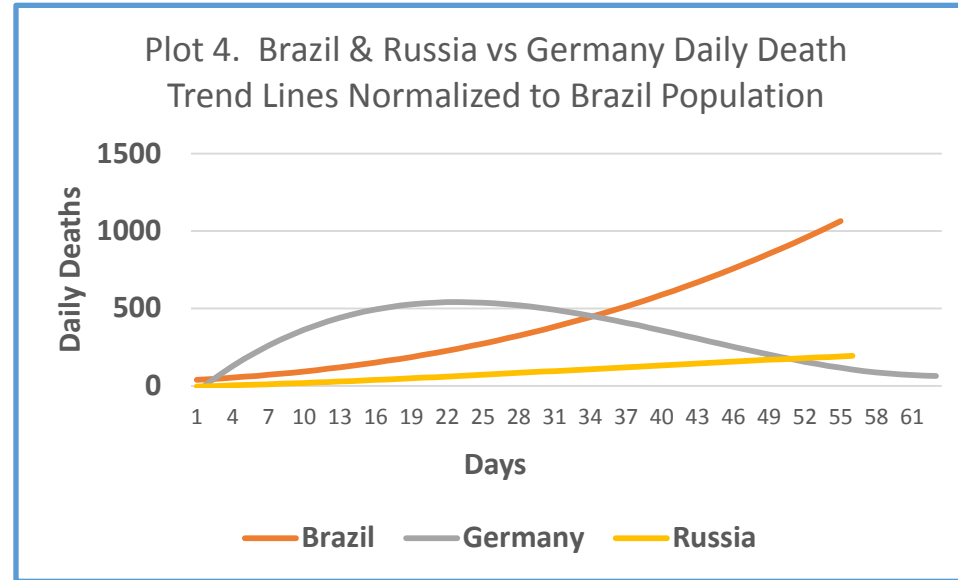
The concept that there is a corona virus "presence" affecting transmission of the virus to people has not been postulated by anyone, but how else can this data be explained?

Is the effectiveness of hospital ventilator treatment of CV patients related to temperature of the oxygen as well as oxygen?

Coronavirus has mutated to become far deadlier in Europe than the milder strain that made its way to the US west coast, Chinese study claims

- **Researchers in China have found at least 30 strains of the SARS-CoV-2 virus**
- **Some of the deadliest mutations were found in Zhejiang, as well as in Europe**
- **The most severe strains could generate up to 270 times as much viral load**
- **Milder mutations were mostly found in the US, such as in Washington state**

Plot 4. Brazil & Russia vs Germany Daily Death Trend Lines Normalized to Brazil Population

Trend lines for Brazil, Russia, and Germany compared normalized to population of Brazil in Plot 4. These countries had 180,000-350,000 cases of CV, but death rates of 100 or less as of May 22, 2020.

Russia temp approaching Germany temp 1.5-2 months ago; Brazilian early fall temp much higher than winter German temp. Does this not support CV viral loads worsen with increasing temperature?

On June 26, 2020 Russia death rate at 60 and climbing; Brazil death rate at 260 and climbing.

Late May to mid-June 2020, continued to explore why/how areas of high corona virus death rates existed and spread to other countries. Concept of icy, cold regions seemed difficult to defend at this time in 2020.

Considered personal experience on DuPont Chambers Works during periods with "temperature inversions". These conditions prevented dissipation of toxic plumes from plant stacks into atmosphere, and resulted in plumes actually descending to ground level. Manufacturing operations had to be stopped to protect workers. State of technology 1940s to 1970s.

EPA has promulgated air quality standards discussing accumulation of toxic particulate matter in 2.5 and 10 micron range as a result of "temperature inversions". Smog one term used to describe type of air quality that occurs. PM2.5, PM10 used in the nomenclature on air quality standards. Air Quality Index (AQI) is monitored in all major areas of the world.

Searching Google for "temperature inversions" in Torino Valley of Northern Italy, found they typically occur in January-February. This was timing of beginning of corona virus deaths in northern Italy – Milan, Turin – the Torino Valley of the Alps. Searched Google for primary air flow between Italy and France, which led to existence of traffic tunnels through the Alps from Italy to France.

Searching Google for interactions with polluted air with corona virus provided information that corona virus attached to PM2.5 aerosols remaining airborne and at this micron size readily goes to lungs. Further half-life of corona virus shown to be 86 hours at high humidity conditions. Also evidence that corona virus remains airborne in air conditioning systems in hospitals. Churches, ships, all closed buildings potentially subject to this.

TEMPERATURE INVERSION

Normal Condition | Temperature Inversion
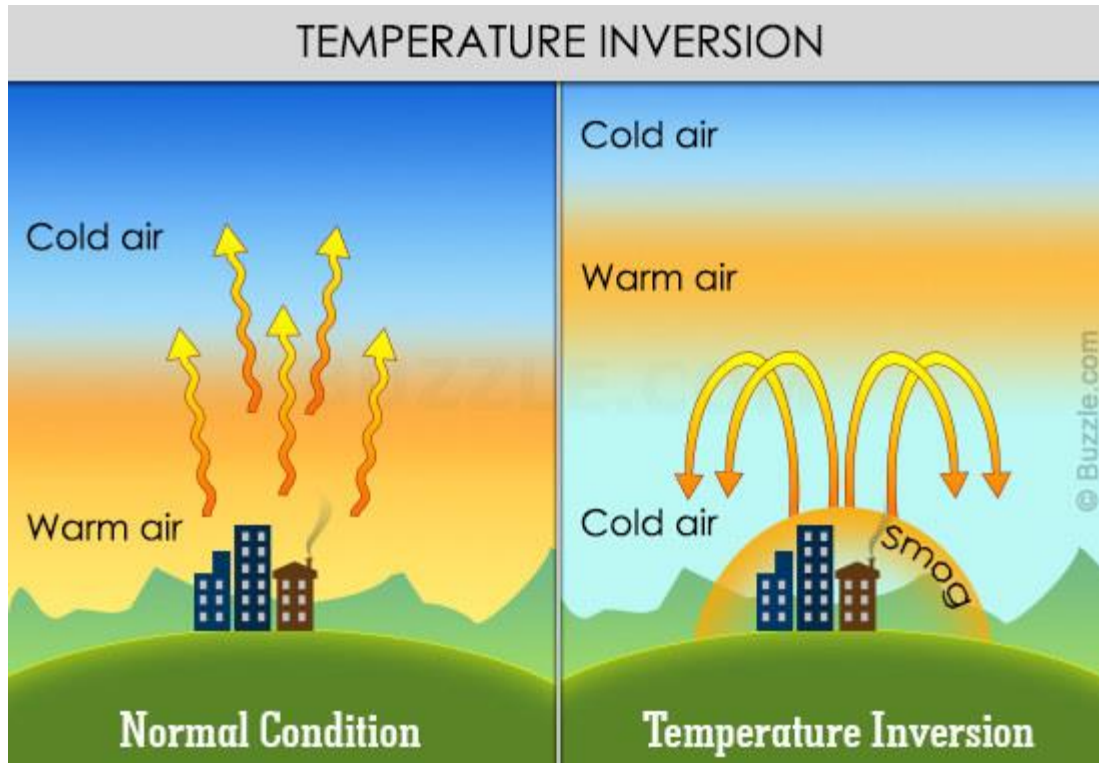
TEMPERATURE INVERSION AND ITS AFFECT ON WEATHER?

Normally, temperature continues to fall as altitude increases. It roughly drops by 9.8° Celsius every 1 000 meters (5.4° Fahrenheit every 1 000 feet). Most of us experienced this scientific occurrence at some point during our lives, when walking outside on a tall building or hiking up a mountain.

A phenomenon that turns this norm on its head by causing an increase in temperature with height, called Temperature Inversion.

Temperature Inversion

Temperature inversion can be defined as a phenomenon through which a rise in temperature takes place as altitude increases in a layer of air. This is in contrast to the normal behavior of air throughout the atmosphere where temperature typically decreases as altitude increases.

This phenomenon can take place in a fixed position like the stratosphere, where the temperature naturally rises with height.

Major Question from this Analysis in May: Why did corona virus high death rates *move over Alps Mountains west* to France, Spain, Belgium, UK, Netherlands and *not north* over Alps Mountains to Germany, Austria, Poland, Ukraine?
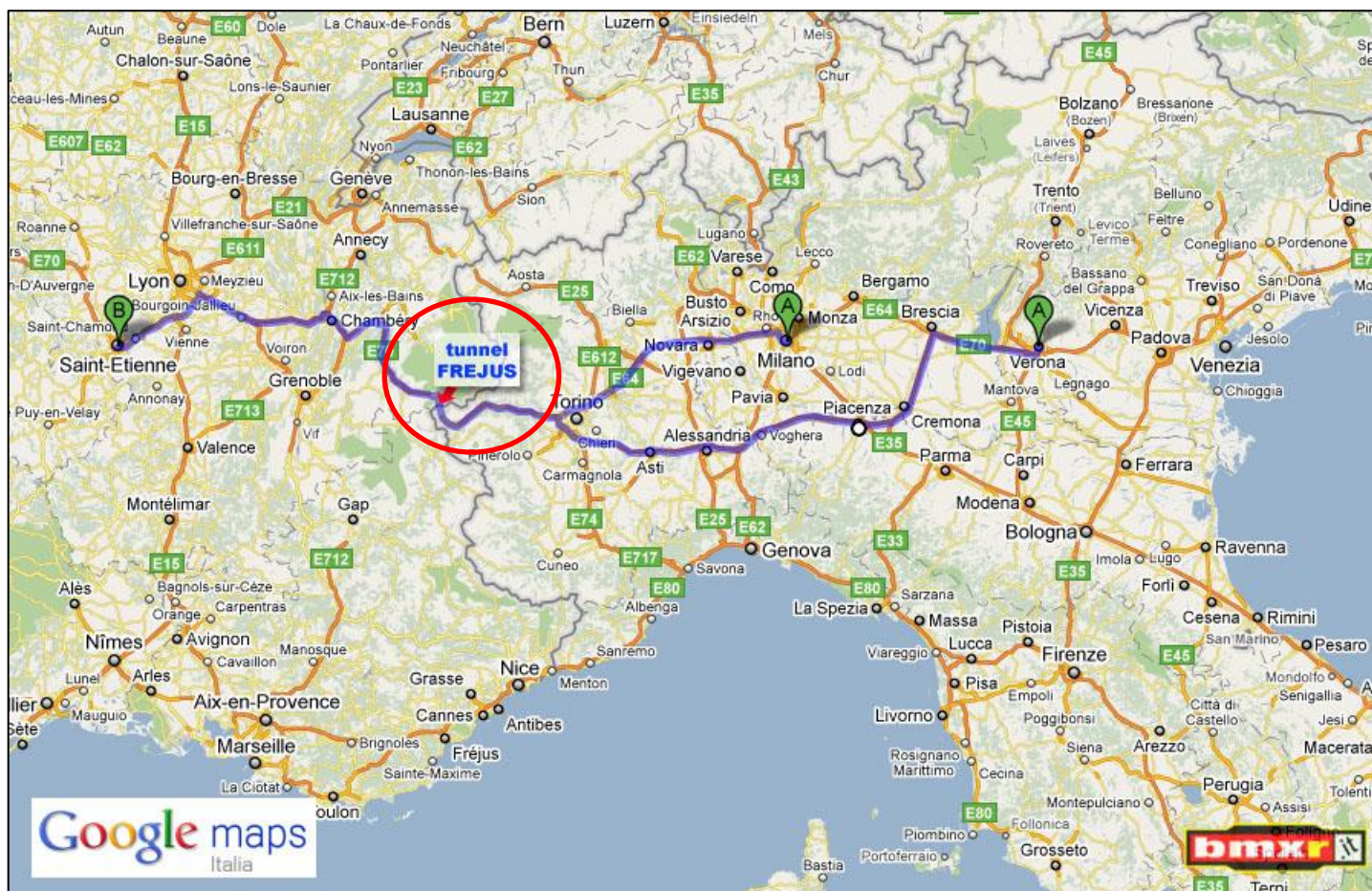
Milano/Torino region shown with traffic route used by 80% of commercial vehicles between Italy and France through Freyus Tunnel, 8 miles long cut through the Alps.
Primary airflow from Italy to France.

Implication is that commercial cargo vehicles and personnel were carriers of corona virus from Italy into France and from there west into Spain, Northwest to UK and North to Belgium and Netherlands.

Do Findings from Torino Valley and East of Appalachian Mountains Hold-up in Other World Regions?

Searched Google for "temperature inversions" in Sao Paulo, capital of Brazil. June 26, 2020 Brazil had 55,000 corona virus deaths, second most in world behind USA.

Found temperature inversion weather conditions occur during winter, May in Brazil. Sao Paulo is the most polluted metropolitan area in South America.

Map shows Sao Paul along coast of Atlantic Ocean surrounded on three sides by mountains. These temperature inversion conditions are the same as situation in Italy's Torino Valley.

Sao Paulo is a major port for exchange of goods with the rest of the world – a transportation hub to rest of world.

10 Most Polluted Cities o

PM2.5:
Particulate Matter (<2.5 micron size)

Srinagar 113
Delhi 143
Faridabad 172
Agra 131
Lucknow 138
Kanpur 173
Muzaffarpur 120
Varanasi 151
Patna 144
Gaya 149
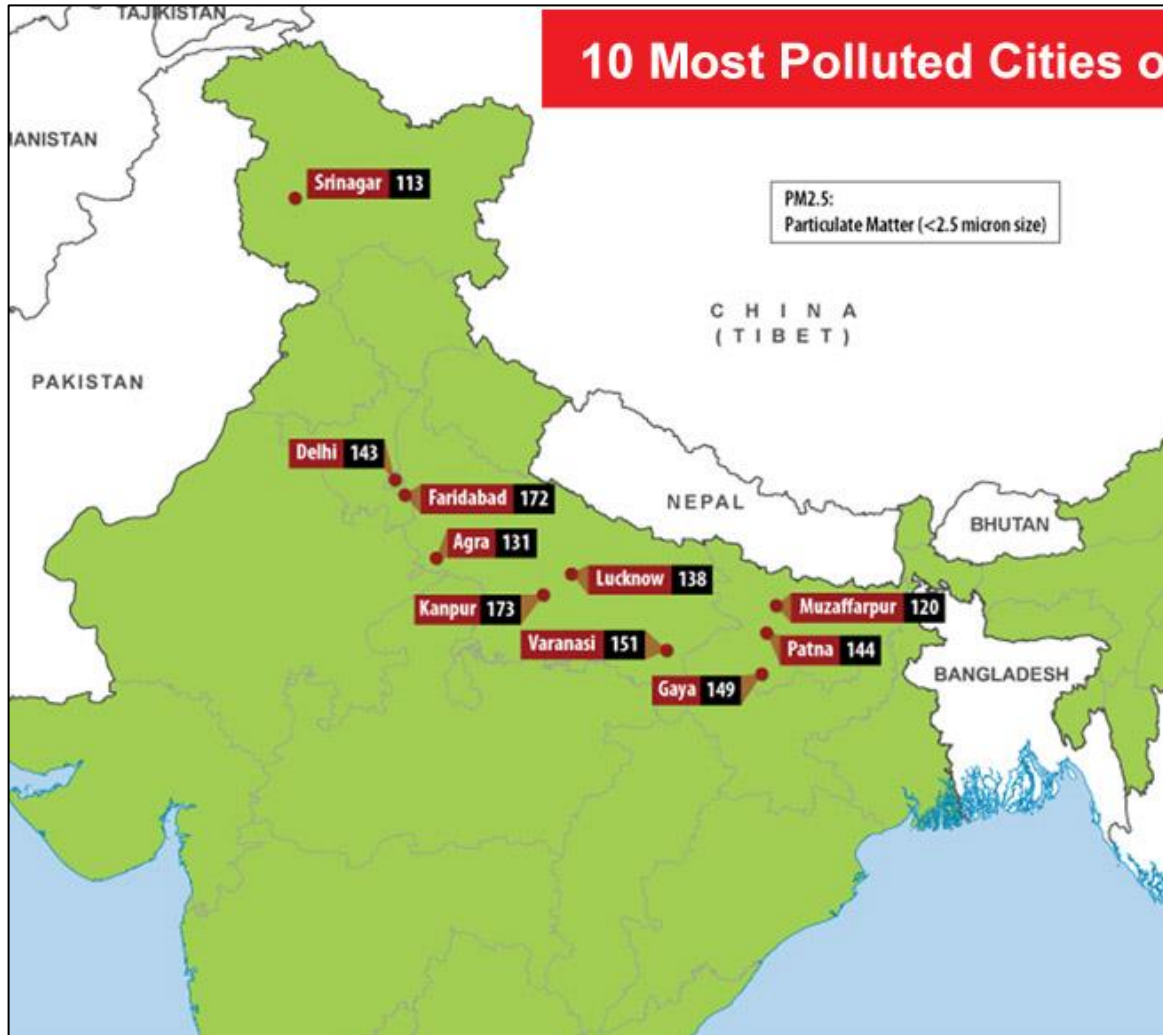
Map of 10 most polluted cities of India all in valleys of the Himalayan Mountains situated between India and China. See next chart.

India is the most polluted country in the world with a population of 1.3 billion people. Current death rate is 11 with 15,700 corona virus deaths.

Will India's death rate rise to Germany's at 110, to USA at 384, or UK at 640?
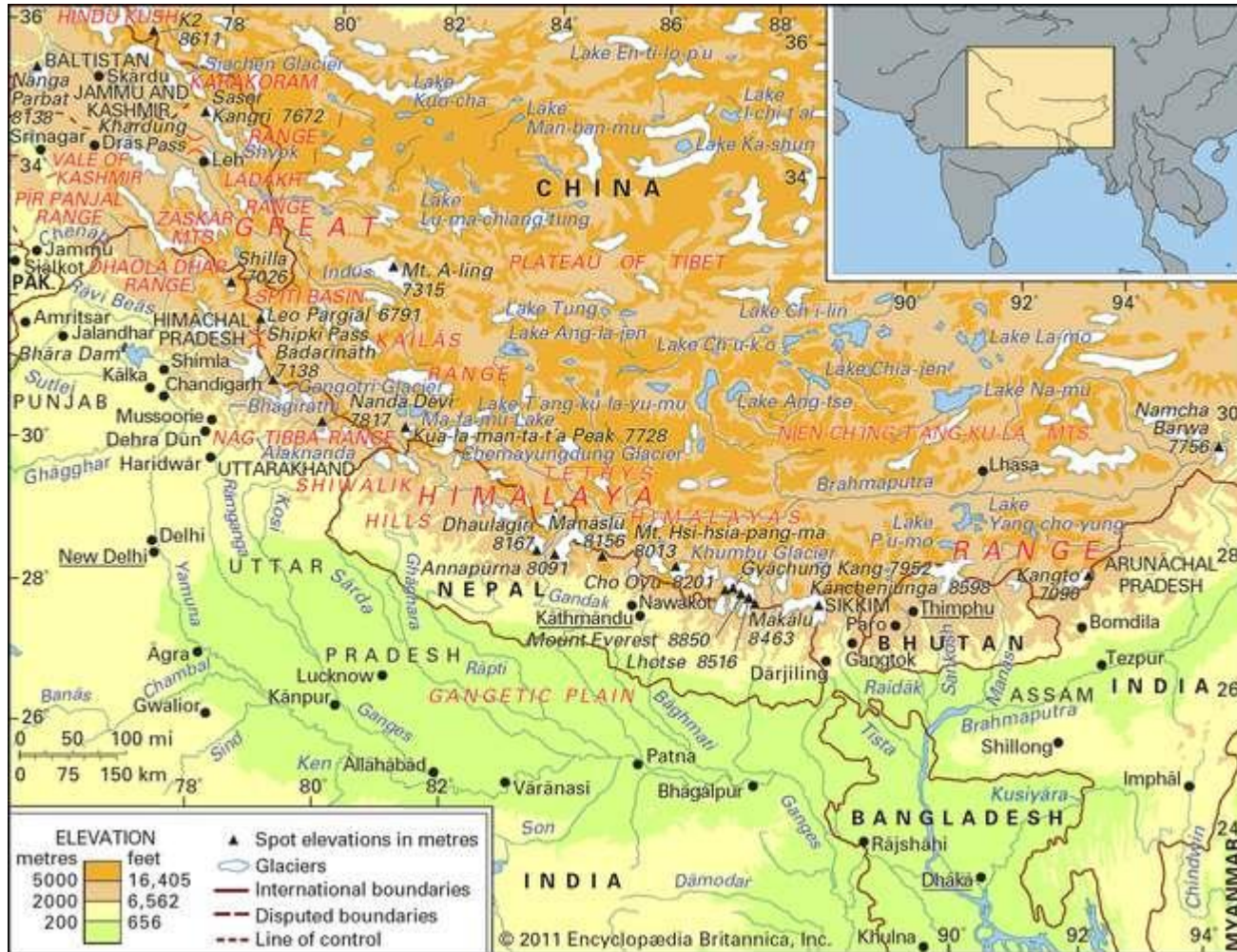
India and China are major trading partners. How do goods flow between the two countries? If cargo vehicles and personnel were corona virus carriers in Europe, what can be expected in Asia in coming months.

Imperial College of London predicted flow of the virus around the world in January and indicated it will return to Northern Hemisphere in the fall. They have been totally correct so far.

Plot 2. Comparison of European Countries Performance Normalized to Population of Germany
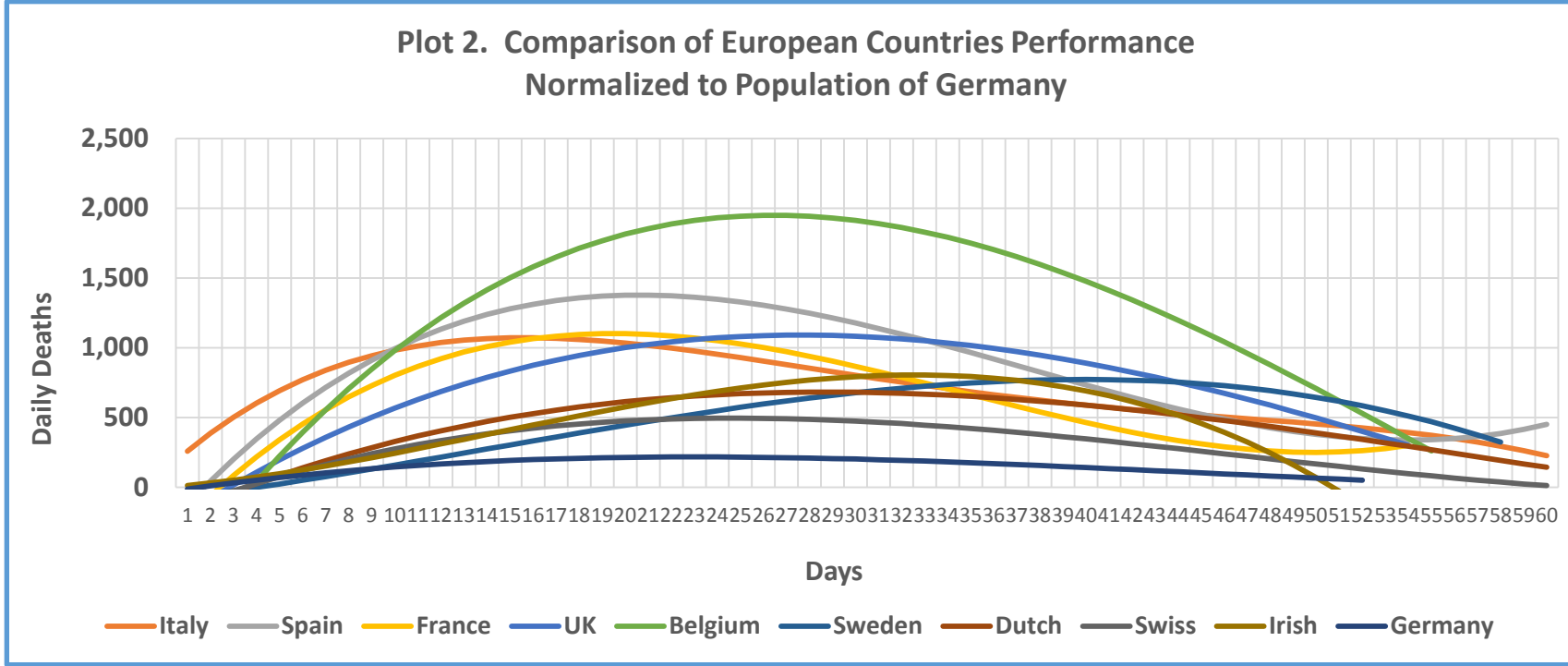
All European countries ran through their whole covid-19 cycle within 60 days. Peaks of each country's trend line relates to how fast and seriously a country responded to lock down and followed protocols of WHO and CDC.

Comparison Countries with Surging Daily Deaths
Normalized to Population of India

Legend: USA, Brazil, Mexico, Peru, Colombia, South Africa, Iran, India
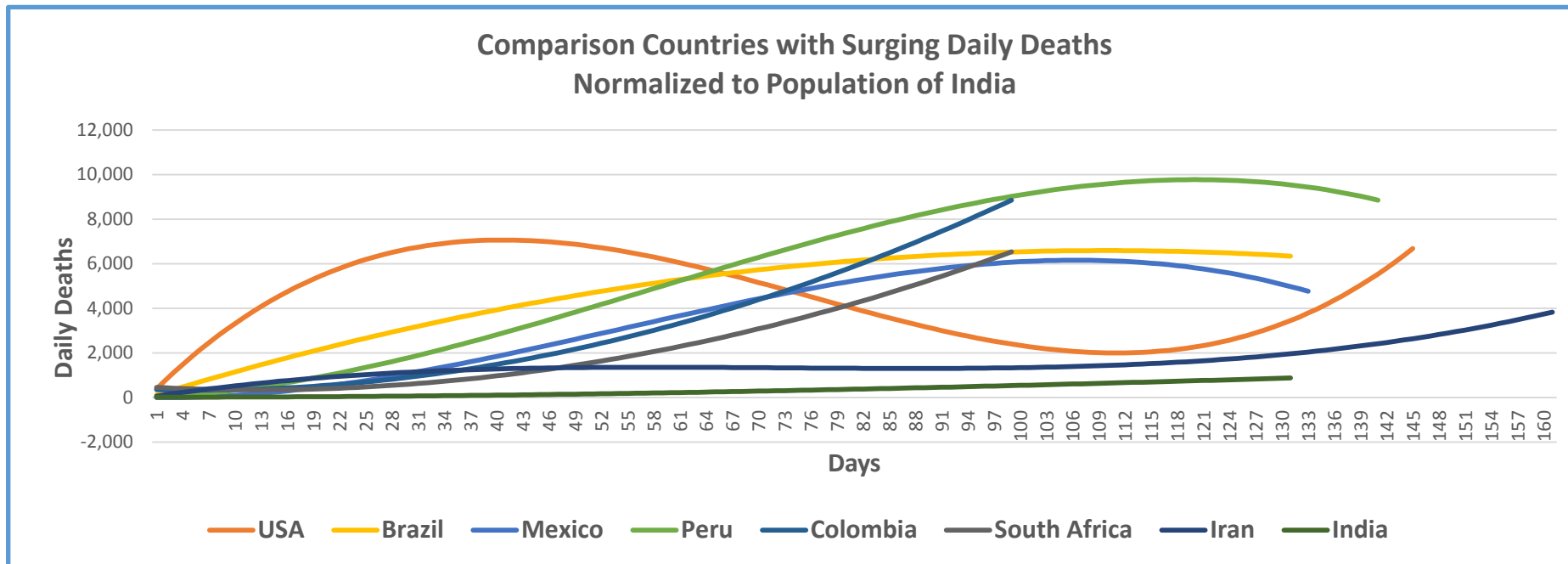
August 7, 2020 plot of countries with surging covid-19 daily deaths. Trend lines periods 2-3x Europe's.

Current death totals – USA 164,100; Brazil 99,700; Mexico 50,500; India 42,600; Peru 20,600;

Iran 18,100; South Africa 9,900. UK 4th highest with 46,200, but not surging.

Iran first country with extended resurgence. 2nd peak worst than first. India now at 940 deaths/day.

Peru's death rate now 625 vs UK's at 685, and will probably pass for 2nd world's worst.

Comparison of Countries with Surging Deaths "as is"
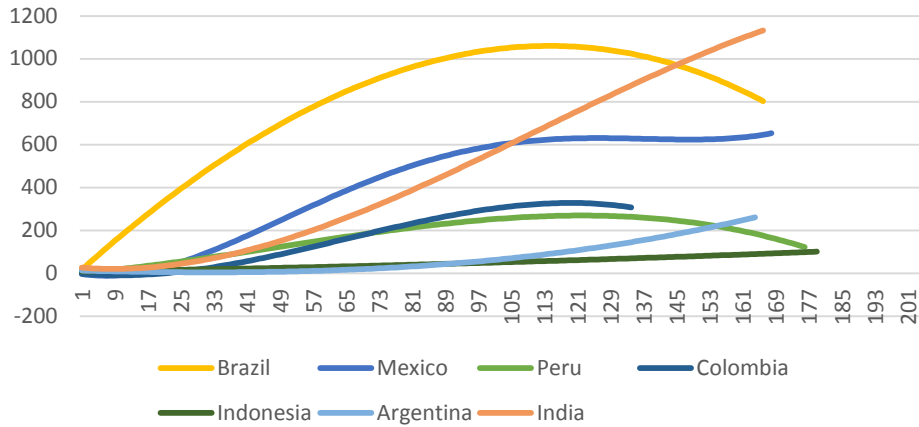
Comparison of Countries with Surging Deaths Normalized to Population of India

India (Death Rate 56) vs Indonesia (Death Rate 31) Normalized to Population of India.
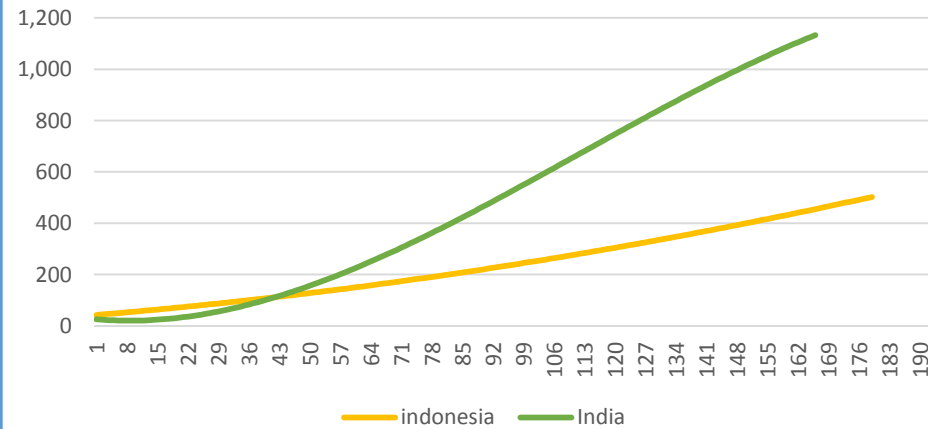
Predictive Capability of Trend Lines Developed Throughout This Analysis

- **European country daily trend lines are 3rd order polynomials. Excel trend line equations used to back-calculate number of daily deaths to ensure match to actual data.**

- **35-45% of total deaths occurred from initial reporting of daily deaths trend lines to peak; 55-65% of total deaths occurred thereafter.**

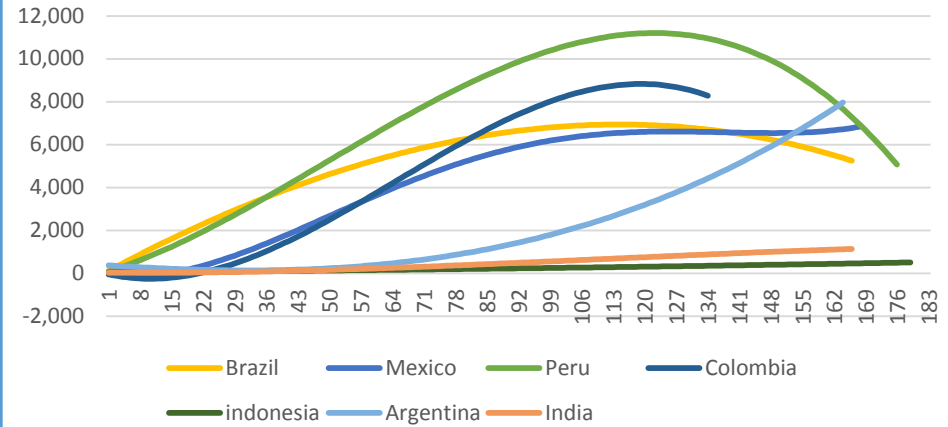- **Countries like India, Mexico, Brazil not yet reaching peak daily deaths were 2nd order polynomials with very high R-squared.**

- **Trend lines for countries with extended resurgence of daily deaths had better fit visually with 4th, 5th, 6th order polynomials, but Excel back-calculation provided very poor match.**

- **No evidence daily deaths profile ever veered from its trend line. Trend lines are like roaring freight trains pulled by multiple locomotives with very high momentum. Daily death profile follows trend line, so predictability extremely high.**

South American Mountain Ranges

South American Countries

Country	Death Rate	Covid-19 Deaths
Peru	880	29,068
Chile	591	11,321
Brazil	576	122,681
Bolivia	436	5,101
Colombia	393	20,052
Ecuador	371	6,571
Argentina	198	8,971
Venezuela	14	391
Paraguay	49	348
Uruguay	13	44

Covid-19 Death Statistics
204,500 total covid-19 deaths

During the initial phase of this analysis, only countries with at least 10,000 deaths were tracked in Excel. As more and more data became available, tracking expanded to all countries with over 4,000 deaths.

On October 22, 2020 Poland reached 4,000 deaths and countries in this region started showing significant numbers of deaths.
Question was why?

Hypothesis made that this region from Russia to Germany and south to Turkey and further could be considered the OPEC Corridor of Oil and Refining.

Poland 4,019 Deaths

Ukraine 6,043 deaths

Russia 25,242 deaths

Romania 6,163 deaths

Turkey 9,513 deaths

Iraq 10,463 deaths

Iran 31,650 deaths

Pakistan 6,702 deaths

Egypt 6,155 deaths

India 116,653 deaths

Saudia Arabia 5,520 deaths
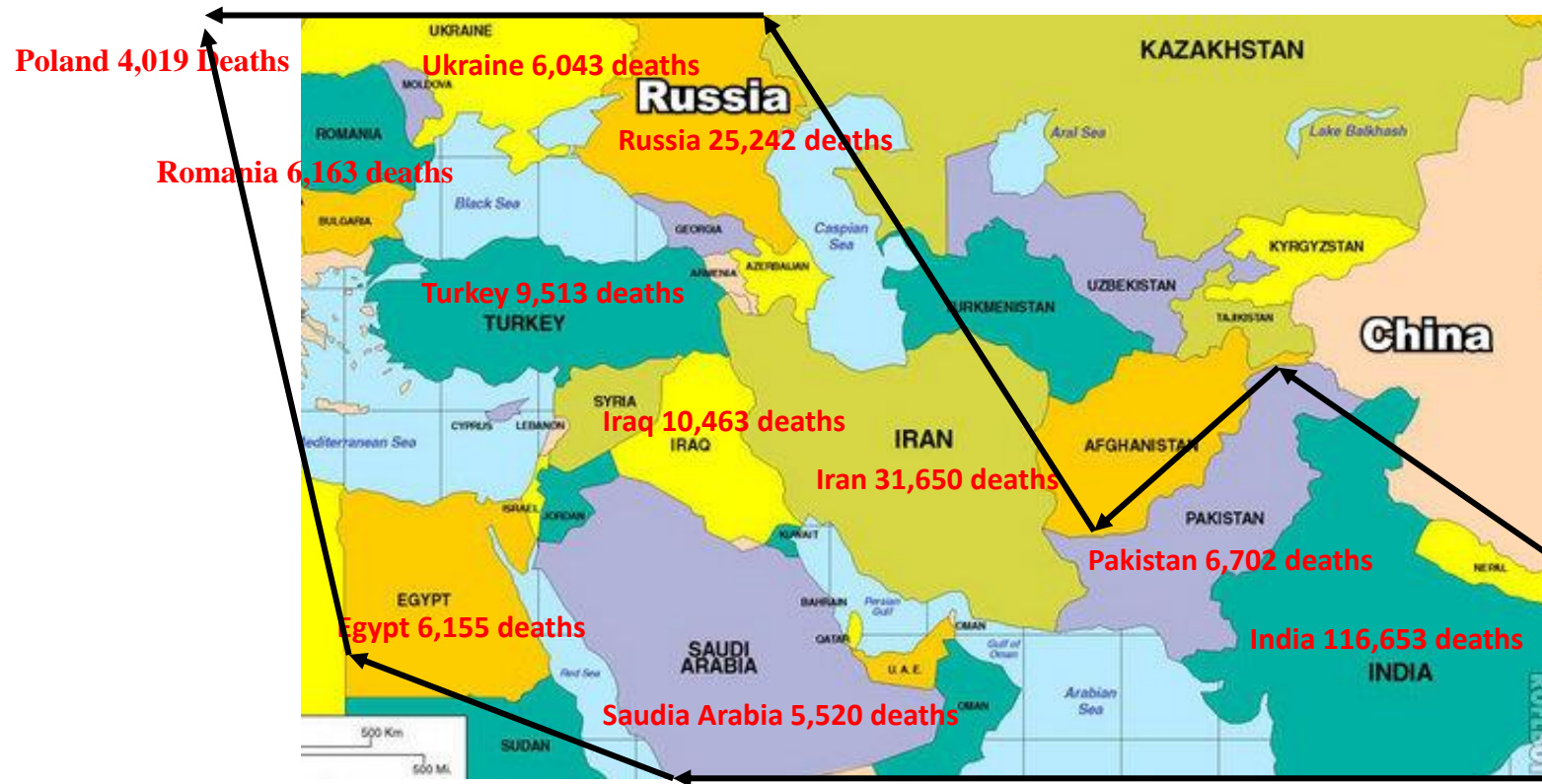
This corridor of Eastern Europe with Western Asia has 227,853 corona virus deaths as of noon October 22, 2020. Compare this to 183,000 total in Western Europe, 281,000 in South America, 324,000 in North America.

Global Oil Refinery Complex and Daily Capacity
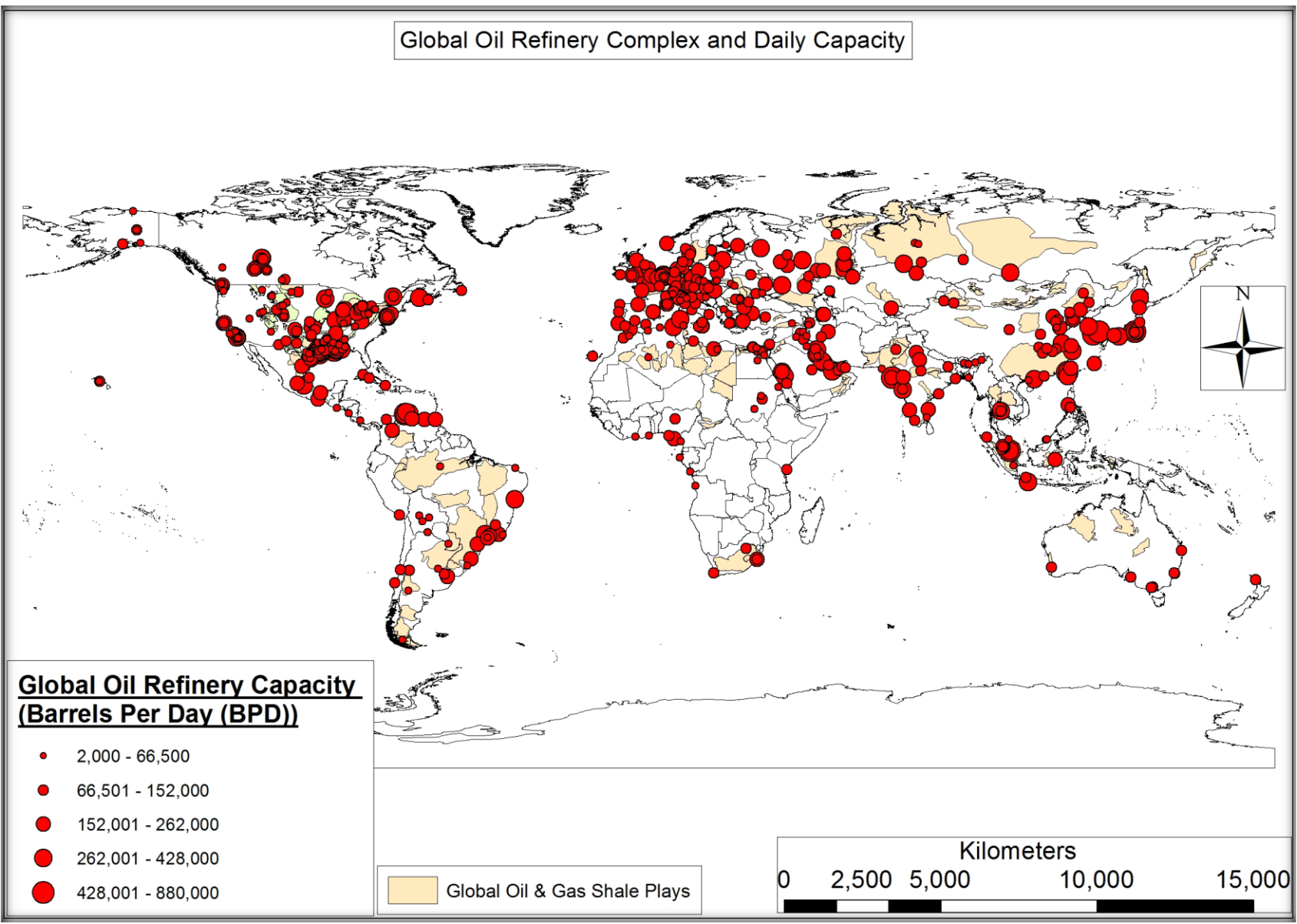
Map of Global Oil Refineries Shows that their locations overlap the regions of countries experiencing high corona virus death rates.

Global Oil Refinery Capacity (Barrels Per Day (BPD))

- 2,000 - 66,500
- 66,501 - 152,000
- 152,001 - 262,000
- 262,001 - 428,000
- 428,001 - 880,000

Global Oil & Gas Shale Plays

Kilometers
0   2,500   5,000   10,000   15,000

Corona Virus Data Analysis
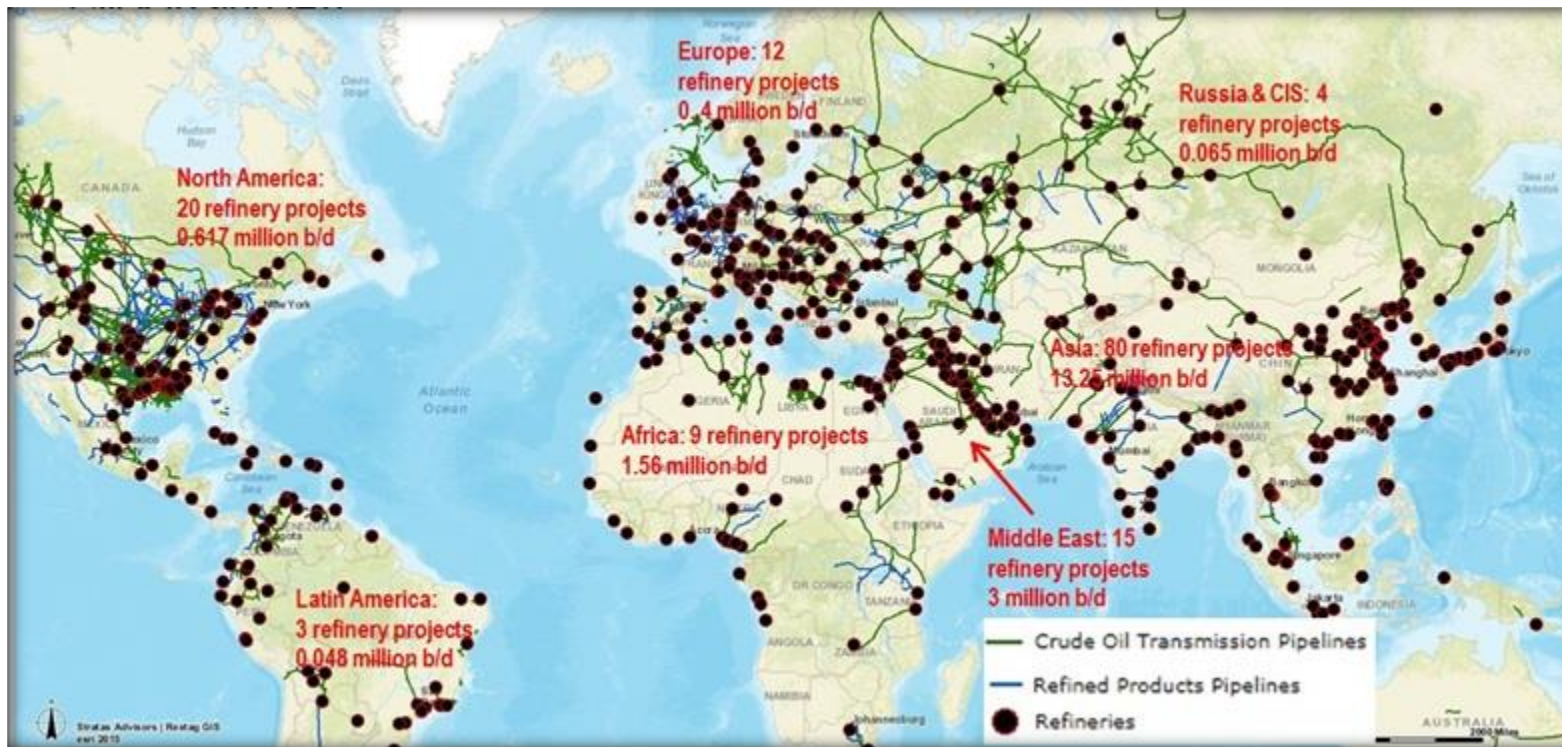
Oil Refiners to Reduce Air Pollution at Six Refineries Under Settlement with EPA and Department of Justice, July 18, 2016

Today's settlement, a consent decree lodged in U.S. District Court for the Western District of Texas, includes provisions that resolves ongoing Clean Air Act violations at refineries in Kenai, Alaska; Martinez, California; Kapolei, Hawaii; Mandan, North Dakota; Salt Lake City, Utah; and Anacortes, Washington.

Refineries process crude oil into products like gasoline, diesel fuel, kerosene, jet fuel, asphalt and liquefied petroleum gas and emit pollutants from a number of different sources. At the refineries subject to this settlement, fluid catalytic cracking units, sulfuric acid plants, heaters, boilers and sulfur recovery units, are substantial emitters of nitrogen oxides (NO_x) and sulfur dioxide (SO_2). Flaring results in emissions of SO_2, greenhouse gases and toxic air pollutants, including volatile organic compounds (VOCs) and hazardous air pollutants. Fugitive emissions of VOCs result from leaking valves and pumps and can result in numerous health effects, including eye, nose and throat irritation, headaches, loss of coordination, nausea and damage to liver, kidney and the central nervous system, among other effects.

Leaks, flares, and excess emissions from refineries emit hazardous air pollutants, or air toxics, that are known or suspected to cause cancer, birth defects, and seriously impact the environment. SO_2 and NO_x have numerous adverse effects on human health and are significant contributors to acid rain, smog and haze. Refineries also emit greenhouse gases that contribute to climate change, as well as fugitive VOCs.

	Pop, MM	Acc Pop	% of Pop	Country	Oil Refineries	Deaths	Case Rate	Death Rate	Acc Deaths	% of Deaths
				Countries with more than 3,689 Corona Virus Deaths on 11/21/20.						
1	332	332	4%	USA	Yes	261,831	37,513	789	261,831	19%
2	213	545	7%	Brazil	Yes	169,016	28,397	793	430,847	31%
3	1,388	1,933	25%	India	Yes	133,263	6,566	96	564,110	41%
4	129	2,063	26%	Mexico	Yes	100,823	7,925	779	664,933	48%
5	68	2,131	27%	UK	Yes	54,626	21,953	803	719,559	52%
6	60	2,191	28%	Italy	Yes	49,261	22,846	815	768,820	55%
7	65	2,256	29%	France	Yes	48,518	32,558	743	817,338	59%
8	84	2,341	30%	Iran	Yes	44,327	9,967	525	861,665	62%
9	47	2,388	31%	Spain	Yes	42,619	33,985	911	904,284	65%
10	45	2,433	31%	Argentina	Yes	36,902	30,120	814	941,186	68%
11	146	2,579	33%	Russia	Yes	35,778	14,146	245	976,964	70%
12	33	2,612	33%	Peru	Yes	35,549	28,599	1,072	1,012,513	73%
13	51	2,663	34%	Colombia	Yes	35,104	24,278	687	1,047,617	76%
14	60	2,722	35%	South Africa	Yes	20,845	12,842	350	1,068,462	77%
15	274	2,996	38%	Indonesia	Yes	15,774	1,796	57	1,084,236	78%
16	12	3,008	39%	Belgium	Yes	15,362	47,692	1,322	1,099,598	79%
17	19	3,027	39%	Chile	Yes	15,030	28,109	784	1,114,628	80%
18	84	3,111	40%	Germany	Yes	14,239	10,946	170	1,128,867	81%
19	38	3,149	40%	Poland	Yes	13,288	22,296	351	1,142,155	82%
20	18	3,167	41%	Ecuador	Yes	13,139	10,417	740	1,155,294	83%
21	84	3,251	42%	Turkey	Yes	12,219	5,205	144	1,167,513	84%
22	40	3,291	42%	Iraq	Yes	11,925	13,151	294	1,179,438	85%
23	38	3,329	43%	Canada	Yes	11,406	8,600	301	1,190,844	86%
24	44	3,373	43%	Ukraine	Yes	10,813	14,047	248	1,201,657	87%
25	19	3,392	43%	Romania	Yes	9,916	21,515	517	1,211,573	87%
26	12	3,404	44%	Bolivia	Yes	8,900	12,259	758	1,220,473	88%
27	17	3,421	44%	Netherlands	Yes	8,870	27,946	517	1,229,343	89%
28	110	3,531	45%	Philipines	Yes	8,080	3,784	73	1,237,423	89%
29	222	3,753	48%	Pakistan	Yes	7,603	1,669	34	1,245,026	90%
30	11	3,764	48%	Czechia	Yes	7,095	45,793	662	1,252,121	90%
31	102	3,866	50%	Egypt	Yes	6,535	1,093	63	1,258,656	91%
32	10	3,876	50%	Sweden	Yes	6,406	20,575	633	1,265,062	91%
33	168	4,044	52%	Bangladesh	Yes	6,350	2,693	38	1,271,412	92%
34	35	4,079	52%	Saudi Arabia	Yes	5,761	10,137	164	1,277,173	92%
35	37	4,116	53%	Morocco	Yes	5,256	8,656	142	1,282,429	93%
36	1,544	5,660	73%	China	Yes	4,634	60	3	1,287,063	93%
37	18	5,678	73%	Guatemala	Yes	4,074	6,563	226	1,291,137	93%
38	9	5,687	73%	Switzerland	Yes	4,031	33,482	464	1,295,168	93%
39	10	5,697	73%	Portugal	Yes	3,824	25,132	375	1,298,992	94%
40	10	5,707	73%	Hungary	Yes	3,689	17,646	382	1,302,681	94%
Global Population	7,800	million		**Global deaths**		1,385,772				
									11/21/2020	

13 countries, each with over 35,000 deaths, account for 76% of the world's corona virus deaths.

24 countries, each with over 10,000 deaths, account for 86% of world's corona virus deaths.

33 countries, each with over 6,000 deaths, account for 92% of the world's corona virus deaths.

40 countries, each with over 3,689 deaths, account for 94% of world's corona virus deaths.

All 40 of these countries have refineries.

Countries with greater than 3,689 covid-19 deaths on November 21, 2020

Western Europe	Death Rate	Deaths	Pop, MM
Belgium	1,322	15,362	12
Spain	911	42,619	47
Italy	815	49,261	60
UK	803	54,626	68
France	743	48,518	65
Sweden	633	6,406	10
Netherlands	517	8,870	17
Switzerland	464	4,031	9
Portugal	375	3,824	10
Germany	170	14,239	84
Morocco	142	5,256	37
	604	253,012	419

South America	Death Rate	Deaths	Pop, MM
Peru	1,072	35,549	33
Argentina	814	36,902	45
Brazil	793	169,016	213
Chile	784	15,030	19
Bolivia	758	8,900	12
Ecuador	740	13,139	18
Colombia	687	35,104	51
	801	313,640	391

North America	Death Rate	Deaths	Pop, MM
USA	789	261,831	332
Mexico	779	100,823	129
Canada	301	11,406	38
Guatemala	226	4,074	18
	731	378,134	517

OPEC Corridor	Death Rate	Deaths	Pop, MM
Czechia	662	7,095	11
Iran	525	44,327	84
Romania	517	9,916	19
Hungary	382	3,689	10
Poland	351	13,288	38
Iraq	294	11,925	41
Russia	245	35,778	146
Saudi Arabia	164	5,761	35
Turkey	144	12,219	85
India	96	133,263	1,388
Ukraine	89	10,813	248
Egypt	63	6,535	104
Bangladesh	38	6,350	167
Pakistan	34	7,603	224
	116	301,467	2,588

Others	Death Rate	Deaths	Pop, MM
Philipines	73	8,080	111
Indonesia	57	15,774	277
China	3	4,634	1,545
	15	28,488	1,932

Africa - Egypt	Death Rate	Deaths	Pop, MM
South Africa	350	20,845	60
Egypt+Morocco	84	11,791	141
Other Africa	15	16,876	1,146
Total Africa	37	49,512	1,346

Chart is arranged to show the 4 epicenters of corona virus deaths identified via this analysis.
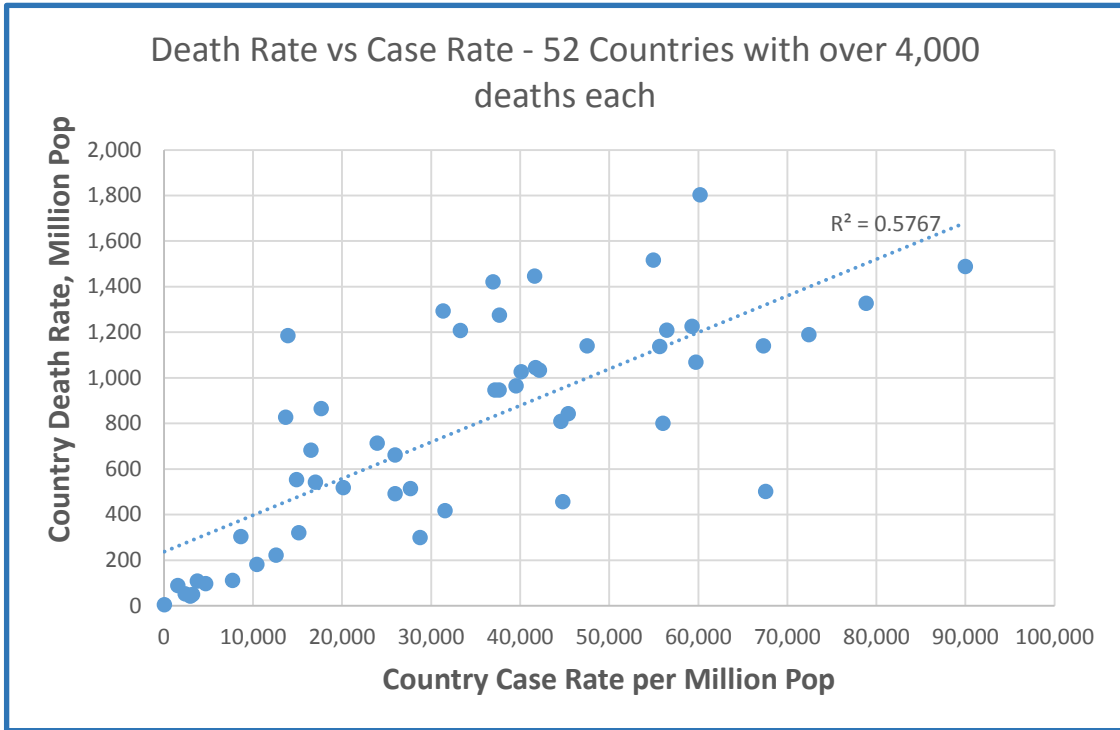
Two tables at bottom right provided to illustrate data for some other areas of the world. Indonesia is part of OPEC.

Continent of Africa with 1.346 billion people has only 48,509 deaths with death rate of 36.

2/3 of Africa's deaths in South Africa, Egypt, Morocco. All 3 have refineries, and none on the main continent.

The continent of Africa is not experiencing significant numbers of corona virus deaths. Many experts predicted the opposite. Why is Africa practically corona virus death free?

This is addressed later in this analysis.

Death Rate vs Case Rate - 52 Countries with over 4,000 deaths each

R² = 0.5767

Country Death Rate, Million Pop (y-axis): 0, 200, 400, 600, 800, 1,000, 1,200, 1,400, 1,600, 1,800, 2,000

Country Case Rate per Million Pop (x-axis): 0, 10,000, 20,000, 30,000, 40,000, 50,000, 60,000, 70,000, 80,000, 90,000, 100,000

Modest relationship of country death rates to country case rates of about 2%.

Country	Death/Case	Death rate
Boznia/Herze	12.6%	1425
Mexico	8.5%	1,196
Ecuador	6.0%	830
Egypt	5.6%	89
Bolivia	4.9%	869
China	4.8%	3
Iran	4.1%	683
Bulgaria	4.1%	1,297
Greece	3.7%	555
Peru	3.6%	1,212
Italy	3.5%	1,454
Guatemala	3.5%	308
Hungary	3.4%	1,283
Tunisia	3.2%	555
Belgium	3.0%	1,806
South Africa	3.0%	712
Indonesia	2.8%	107
UK	2.8%	1,533
Canada	2.6%	521
Colombia	2.6%	1,034
Germany	2.6%	674
Chile	2.5%	950
Argentina	2.5%	1,048
Romania	2.5%	950
Brazil	2.4%	1,039
France	2.4%	1,157
Poland	2.4%	972
Spain	2.1%	1,247
Iraq	2.1%	320
Pakistan	2.1%	52
Croatia	2.1%	1,215
Sweden	2.1%	1,144
Philippines	2.0%	96
Russia	1.9%	495
Austria	1.9%	847
Ukraine	1.9%	516
Switzerland	1.8%	1,076
Slovakia	1.8%	823
Morocco	1.8%	222
USA	1.7%	1,342
Saudi Arabia	1.7%	181
Portugal	1.7%	1,168
Czechia	1.7%	1,499
Panama	1.6%	1,189
Bangladesh	1.5%	49
India	1.4%	111
Netherlands	1.4%	809
Japan	1.4%	43
Jordan	1.3%	417
Serbia	1.0%	457
Turkey	1.0%	303
Israel	0.7%	511
Average	**2.8%**	**777**

Variation in death to case ratio for the 42 countries with over 4,000 deaths varies from 0.7% to 12.6%.
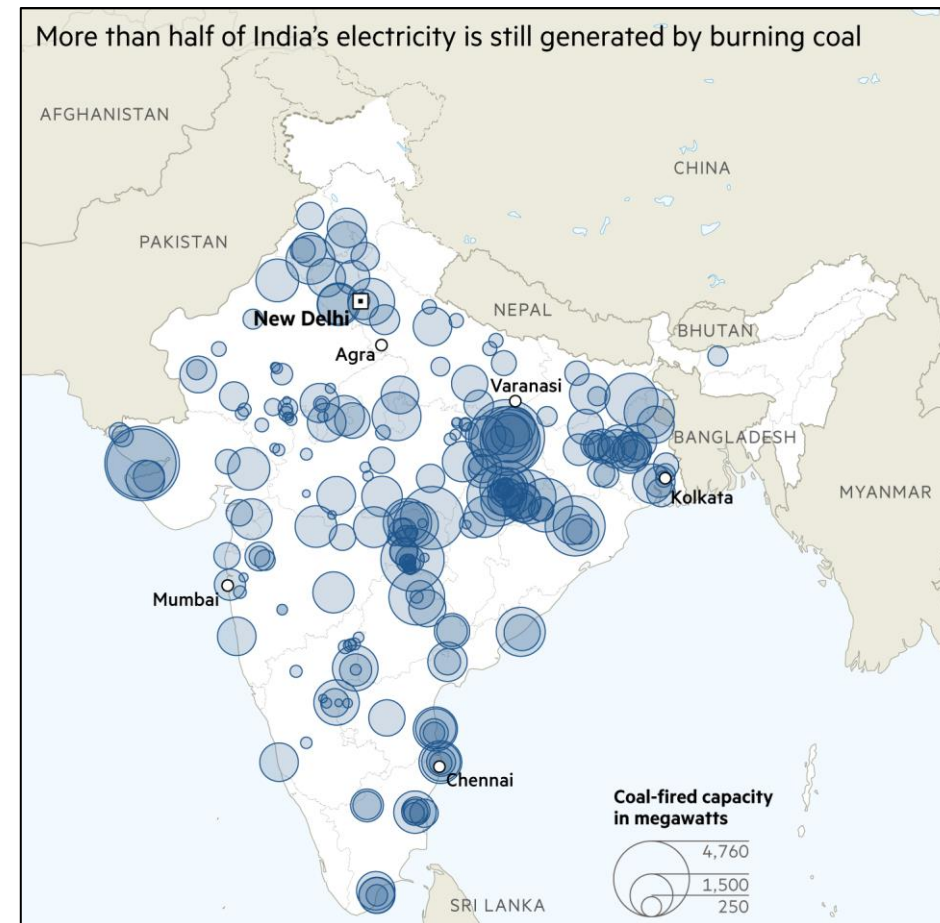
This ratio has no correlation with death rate.

Op-ed Forwarded to the Washington Post November 15, 2020; never published.

The Worldometer Corona Virus Update provides statistics for 217 countries and territories. 13 countries, each with more than 30,000 deaths, account for 77% or the world's corona virus deaths. 37 countries, each with more than 4,000 deaths, account for 94% of the world's corona virus deaths. Although the corona virus is a world pandemic, the intensity of deaths are alarming in limited regions. Four epicenters of deaths encompass most of the 37 countries: Western Europe (218,000 deaths, 543 death rate), North America (356,000, 688), South America (301,000, 770), the OPEC Corridor (271,000, 107). The OPEC Corridor includes the countries of Russia, Ukraine, Poland, Romania, Czechia, Iraq, Iran, Egypt, Turkey, Saudi Arabia, Pakistan, India, Bangladesh. All of these countries have refineries. Indonesia (OPEC) and South Africa, both with refineries add another 35,000 corona virus deaths. Most of the deaths in these epicenters have occurred during weather conditions of temperature inversions. These occur annually and are known to concentrate micron sized pollutants at ground level for long periods of time. Scientists from several countries are investigating the role of the interaction of corona virus aerosols with micron sized pollutants, which are well known to be easily inhaled into the lungs and bloodstream. The Daily Death Plots for Iran and Russia, each with over 30,000 deaths, have shown repeated peaks and valleys of deaths. These peaks and valleys are likely associated with production starts and stops of the refineries. This data analysis clearly associates the regions of the world's refineries with regions of intense corona virus deaths. But refinery pollution may not be alone. States like North Dakota and Florida have stringent regulations related to spraying of pesticides versus periods of temperature inversions with accompanying descriptions of how the pesticides can linger in the air for long distances and periods of time.
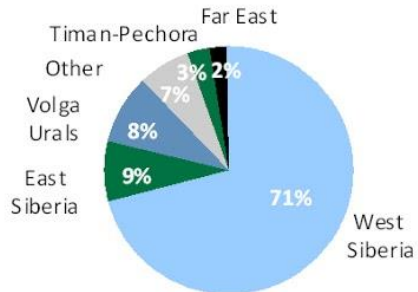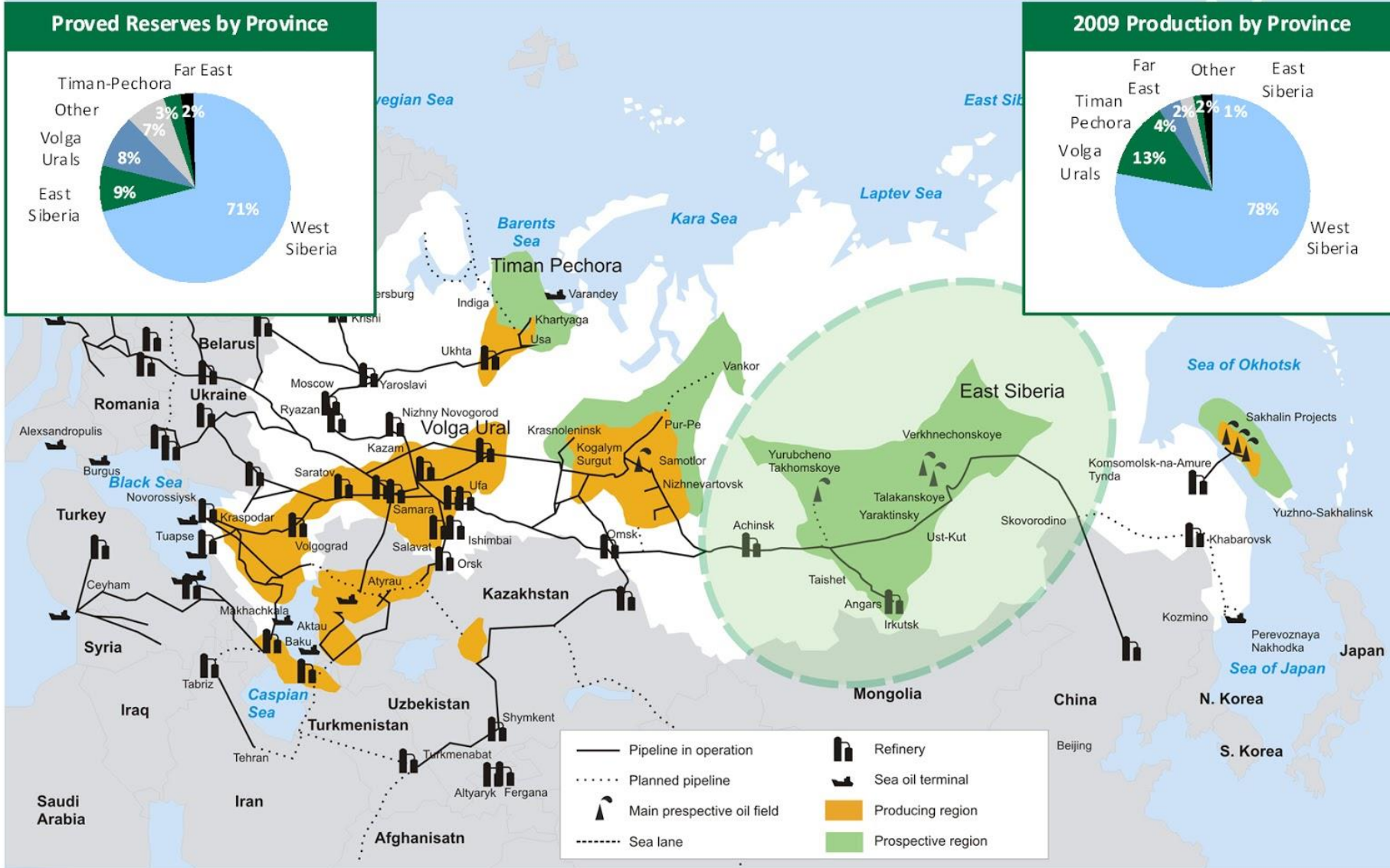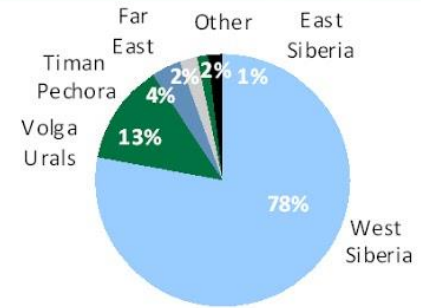
THE OIL CORRIDOR

■ Oil or gas field

R Refinery

Corona Virus Data Analysis

Major Oil Refineries in Inida

More than half of India's electricity is still generated by burning coal
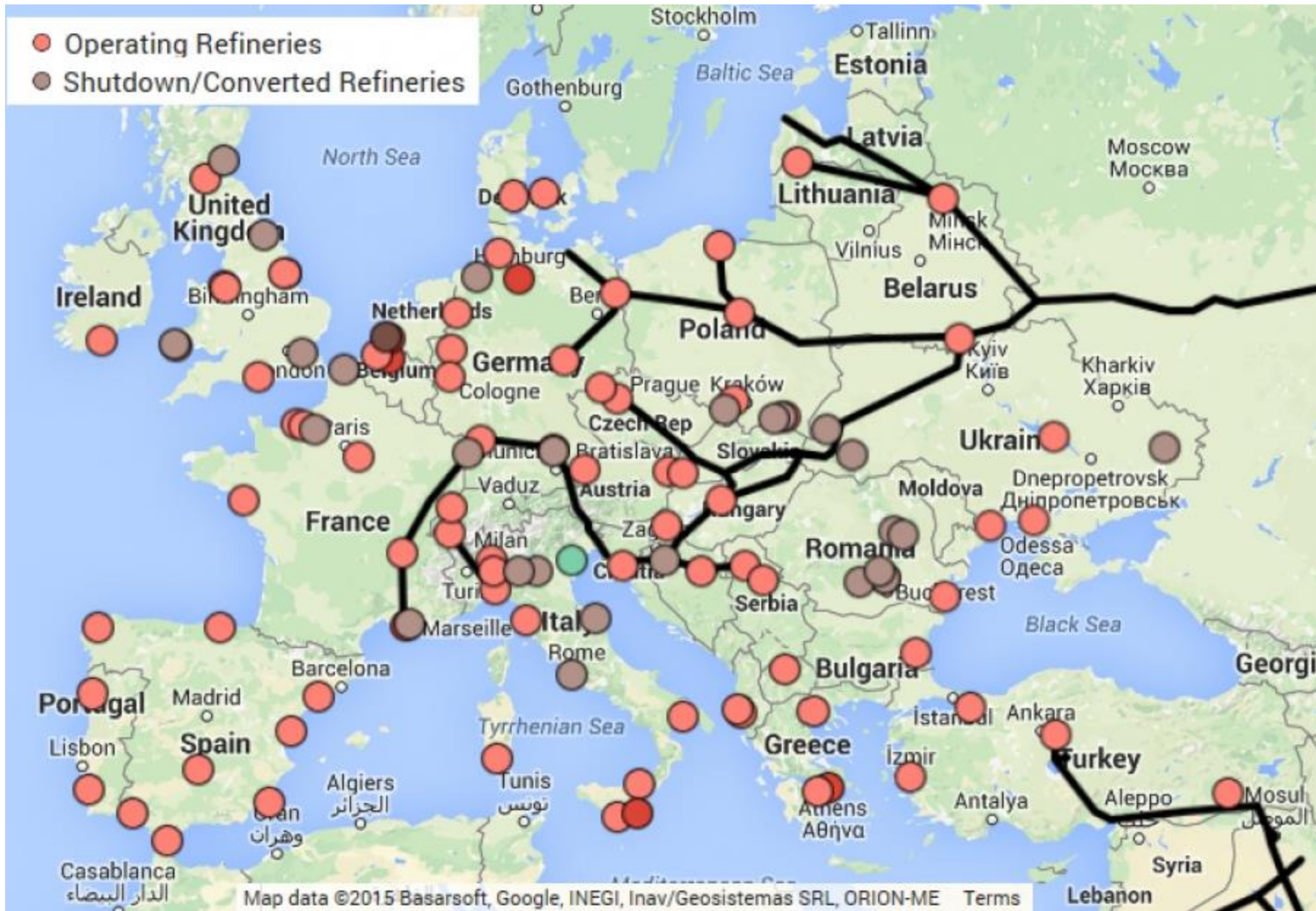
Map of Russian Oil & Gas Provinces

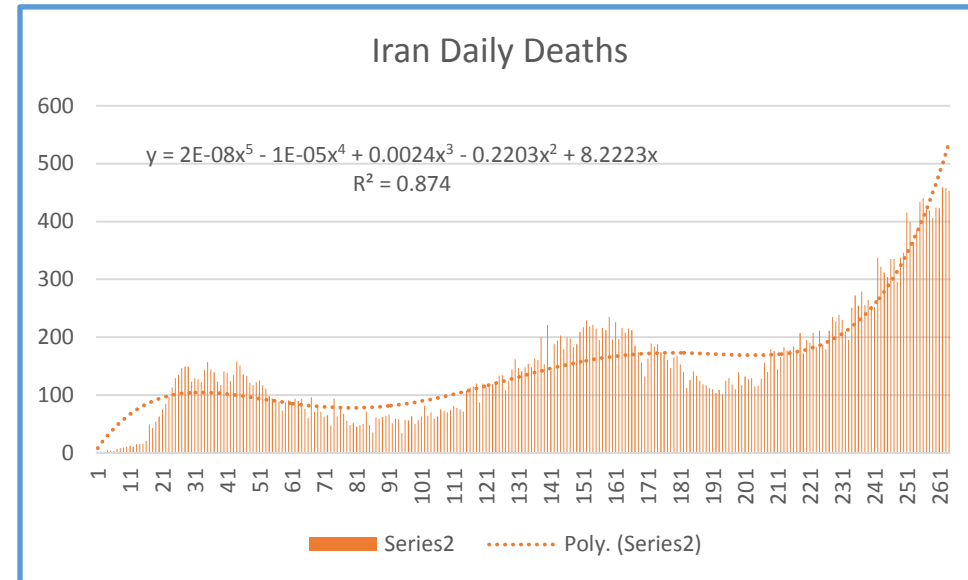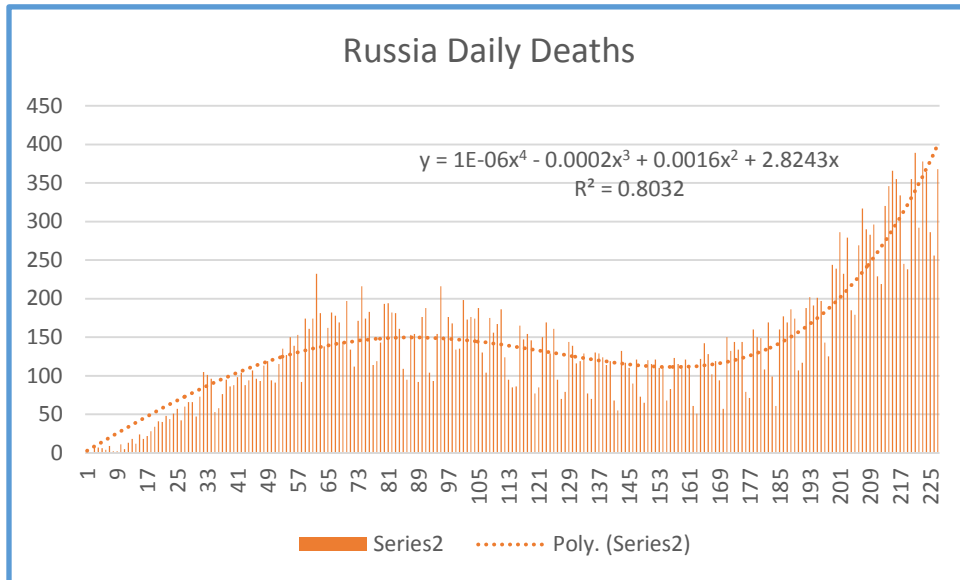Soviet Union
Petroleum Refining and
Chemical Industry

Petroleum refining
Synthetic rubber
Mineral fertilizers
Various chemicals

Size of circles and segments indicates relative importance.

505178 6-82

On Nov 3 Russia's Central Statistics Organization reported 11,917 deaths in June, not 4,880 reported. Worldometer not changed. Population in European Russia is 100M vs 144M total Russia. Google provides no data on split of corona virus deaths in each portion of Russia. Adding in the extra 7,037 deaths and assuming most deaths in European Russia would double currently reported death rate.
Similar thinking could apply to Northern India with a population of 368M.

Russia Daily Deaths

$$y = 1E\text{-}06x^4 - 0.0002x^3 + 0.0016x^2 + 2.8243x$$
$$R^2 = 0.8032$$

Iran Daily Deaths

$$y = 2E\text{-}08x^5 - 1E\text{-}05x^4 + 0.0024x^3 - 0.2203x^2 + 8.2223x$$
$$R^2 = 0.874$$

Both of these countries are exploding in CV deaths with multiple peaks. Suspicion is that when lockdowns enacted, refineries shutdown, deaths decrease. When lockdowns lifted, refineries re-start, deaths increase. Many countries reported pristine air quality during spring lockdowns, best in decades.
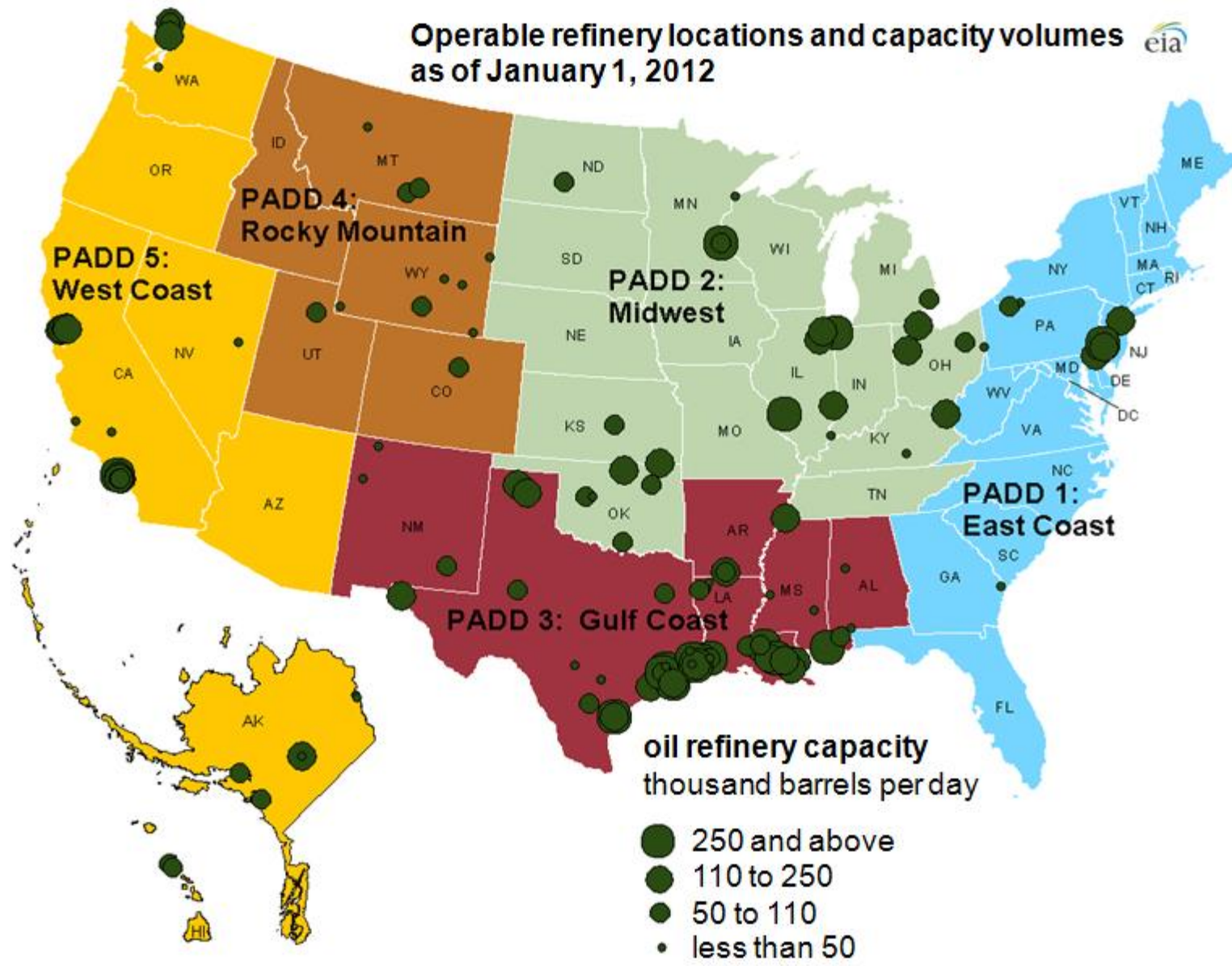
Refineries are in 35 US States. Reference article identifies refineries and capacities.

Oil refineries in the United States – InflationData.cominflationdata.com/…/oil-refineries-united states. November 12,2020. United States Oil Refineries by State: Alabama, Alaska, Arizona, California, Colorado, Delaware, Georgia, Hawaii, Illinois, Indiana, Kansas, Kentucky, Louisiana, Michigan, Minnesota, Mississippi, Montana, Nevada, New Jersey, New Mexico, North Dakota, Ohio, Oklahoma…

Operable refinery locations and capacity volumes as of January 1, 2012

oil refinery capacity
thousand barrels per day

- 250 and above
- 110 to 250
- 50 to 110
- less than 50

PADD 5: West Coast
PADD 4: Rocky Mountain
PADD 2: Midwest
PADD 1: East Coast
PADD 3: Gulf Coast

Observations Fundamental to Corona Virus Death Analysis

1. Global population 7.8 billion people. USA has 331 million or 4% to global, yet accounts for 19% of total global deaths.
2. Four countries with 26% of global population account for 49% of global deaths.
3. Thirteen countries with 34% of global population account for 76% of global deaths.
4. **94% of world's corona virus deaths are in 37 countries, all with refineries**.
5. Evaluation strongly supports concept that temperature inversions, which concentrate pollutants at ground level, are contributing significantly to deaths and death rates in these 37 countries.
6. Scientists from various countries evaluating concept that corona virus aerosols at very small micron size could be interacting with pollutants of similar size.
7. Refineries are clearly implicated as major contributor of these pollutants.
8. *But spraying of pesticides in North Dakota and Florida known to cause pollution, which can float hundreds of miles. Both States stringently regulate spraying vs periods of temperature inversions. (more on next 3 charts)*
9. Particulates of 2 micron size well know for targeting lungs and blood. Bodily systems do not reject particulates of this size. E.g., asbestosis

SWEEPING U.S. PESTICIDE REFORM BILL INTRODUCED, BANNING SOME CHEMICAL AGENTS
By Liza Gross 8/5/2020

The Protect America's Children From Toxic Pesticides Act of 2020, introduced on Tuesday by Sen. Tom Udall, a New Mexico Democrat, and Rep. Joe Neguse, a Democrat of Colorado, would overhaul the nation's framework for regulating the sale and use of pesticides to safeguard public health and the environment, the legislators said in a press call with a panel of experts. Current regulations are based on outdated science and contain loopholes that keep dangerous pesticides on the market despite clear evidence of harm to people and the environment, they said. "Our nation's system for regulating harmful pesticides is broken and badly outdated," said Sen. Udall. The system was meant to protect farmers and agricultural workers, consumers and the environment, he said. "But it's not. It's protecting the pesticide industry."

The Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) governs how pesticides are sold and used through registration and labeling requirements. Pesticide manufacturers must show that their product, if used properly, will not cause "any unreasonable risk to man or the environment, taking into account the economic, social, and environmental costs and benefits of the use of any pesticide." The EPA is charged with ensuring that they do so.

Yet since pesticide regulations were last updated a quarter century ago, scientists have discovered that many pesticides on the market cause a range of neurodevelopmental effects and are likely contributing to the catastrophic decline of the bees that pollinate the nation's crops. The EPA has wide latitude in deciding whether to ban a dangerous pesticide, Sen. Udall said. "And the EPA has been coming down on the side of industry profits and against the health of our children, farmworkers, families and the environment." Rep. Neguse's district in Colorado includes top experts in organic and regenerative agriculture, he said. "And for years, these experts have been warning us of the dangers posed by the profit-driven pesticide regulation and oversight system as it exists today."   Once pesticides are approved in this system, they often remain on the market for decades, Rep. Neguse said, "even when scientific evidence overwhelmingly shows that a pesticide is causing harm to people or the environment." The organic food industry, which is the fastest growing sector of the food industry, has proven that farmers don't need to use toxic pesticides, said Gary Hirshberg, cofounder of Stonyfield Organic. Where organics were once a niche market, he said, now 100% of supermarkets in America have "enormous" organic food sections. The United States also allows use of dozens of toxic pesticides that other countries have banned, Sen. Udall said. "One third of annual U.S. pesticide use, over 300 million pounds from 85 different pesticides, comes from pesticides that are banned in the European Union." (…continued next chart…)

The Udall-Neguse bill bans the most dangerous pesticides and strengthens EPA oversight by closing loopholes that allow pesticides on the market without comprehensive evaluation of their health and environmental impacts. It creates a process for citizens to petition the EPA to review dangerous pesticides and requires the agency to review substances the European Union or Canada deem unsafe. It also protects frontline communities by establishing an injury reporting system, while requiring pesticide labels to be printed in English and Spanish or in any language spoken by more than 500 individuals working with the pesticide

The pesticides covered in the bill are some of the most harmful known to science: organophosphates, insecticides used as chemical weapons in World War II, that cause neurodevelopmental damage in children; neonicotinoids, insecticides linked to the collapse of pollinator populations and restricted or banned in the European Union and Canada; and paraquat, an herbicide associated with increased risk of Parkinson's disease that is so dangerous even the EPA warns "one sip can kill." "We have a growing body of research that these pesticides, once thought safe to humans, are probably causing birth defects and other adverse developmental problems," said Lynn Goldman, dean of the Milken Institute School of Public Health at George Washington University.

Goldman was at the EPA in the 1990s, when agency scientists first reviewed the organophosphate chlorpyrifos' potential to harm the developing brain. "We removed it from a number of products," she said, and set in motion a process that culminated in EPA's 2016 decision to phase it out completely. The Trump administration reversed that decision the next year.

A few weeks after the Trump administration's reversal, several women harvesting cabbage in California's Kern County fell ill when chlorpyrifos drifted from a nearby field. Bricmary Lopez, a mother of three, collapsed in convulsions.

"Organophosphate pesticides not only poison farmworkers, they also rob the nation's children of their intellectual potential," said Teresa Romero, president of the United Farm Workers. "Exposure extends to consumers who unknowingly feed their families food with vestiges of nerve agents."

The States that Use the Most (and Least) Pesticides in America

Estimated kilograms used of pesticides by state in 2016

Most

Rank	State	Kilograms Used
1	California	63,457,224
2	Washington	34,021,922
3	Illinois	33,592,529
4	Iowa	32,890,444
5	Kansas	29,684,785
6	Texas	26,440,282
7	Nebraska	26,425,089
8	Florida	24,543,630
9	Minnesota	20,124,568
10	North Dakota	19,696,865
11	Idaho	19,668,812
12	Missouri	17,767,395
13	Georgia	16,636,591
14	South Dakota	15,713,569
15	Indiana	15,680,390
16	Arkansas	15,250,344
17	North Carolina	12,740,663
18	Ohio	11,512,270
19	Wisconsin	10,007,055
20	Mississippi	8,753,264
21	Colorado	8,583,696
22	Michigan	8,298,525
23	Montana	8,187,098
24	Louisiana	8,012,888

Least

Rank	State	Kilograms Used
1	Rhode Island	9,576
2	New Hampshire	43,679
3	Connecticut	106,372
4	Vermont	111,530
5	Massachusetts	117,291
6	West Virginia	215,891
7	New Jersey	396,647
8	Wyoming	472,921
9	Maine	508,043
10	Utah	620,574
11	Nevada	708,208
12	Delaware	820,458
13	New Mexico	932,082
14	Arizona	1,883,599
15	Maryland	2,482,162
16	Virginia	3,205,591
17	New York	3,673,507
18	Pennsylvania	3,870,357
19	Alabama	4,828,473
20	South Carolina	4,909,025
21	Oklahoma	5,870,858
22	Kentucky	6,399,243
23	Tennessee	7,280,119
24	Oregon	7,421,233

Data source: USGS high end estimates for 2016

WeedKiller *Crisis*

Reviewing corona virus death data in US showed that 65% occurred in States with refineries or directly in refinery regions; e.g. New York vs New Jersey. Searching had identified pesticide spraying during periods of temperature inversions as a significant problem.

Table shows pesticide consumption for each US State. The fruit, vegetable, corn, wheat producers are the States that consume the most pesticides.

Reviewing the corona virus deaths by US States, the States with 35 refineries and the heavy consumers or pesticides fit the model that corona virus plus pollutants plus temperature inversions lead to regions of high corona virus deaths and death rates.

But this comparison leaves a gap! New England has no refineries and minimal use of pesticides. What is the likely pollutant in New England that fits the proposed model of corona virus deaths?

But there is a gap! New England – no refineries, minimal pesticide usage.

Massachusetts, Connecticut, and Rhode Island have extremely high death rates, but do not have refineries nor significant pesticide usage.   Maine and Vermont have the lowest corona virus death rates in the USA. And New Hampshire's is pretty low. What is the reason half of New England is very low in death rate, while the other half is extremely high.

Providence Air Pollution Among Worst in New England April 10, 2017 By ecoRI News staff

PROVIDENCE — Rhode Island's capital is one of most polluted cities in New England, according to new report on air pollution. The 60-page report by the Frontier Group and Environment Rhode Island looked at smog and soot created by fossil-fuel power plants and industrial sector in 2015.

Providence has the most smog in the state, and ranks 53rd in the nation for soot. The main contributors are its industrial waterfront, a natural-gas power plant near downtown and Interstate 95, which cuts through the center of the city.

By comparison, Providence had 48 smog days in 2015; Boston had 41 and Worcester had 33. Providence also had 112 days of high-particulate matter, while Boston had 92 and Worcester had 41. The report included Warwick within its Providence study area. Thus, T.F. Green Airport is considered a source of pollution.

According to the recent report, local air pollution will likely worsen as temperatures increase due to climate change. Higher temperatures speed up creation of ozone and smog. Ground-level ozone and airborne particles are main triggers of air pollution. Environment Rhode Island also warns that pollution days may increase as environmental safeguards are eliminated by Trump administration. President Trump has instructed the Environmental Protection Agency (EPA) to rewrite the Clean Power Plan and review two regulations in the Clean Air Act.

Trump also wants to cut the EPA's budget by 31 percent and cancel vehicle-emission standards set by President Obama.

Does Personal Development of Lungs Impact Susceptibility to Covid-19?

- Personal 1987 experience conducting pilot plant operation in Nevada. Plant elev. 6,500 ft. Unable to get up, almost delirium first morning. Forcing down coke brought on instant cure. Continued snack/drink every hour at this elevation. Plant doctor advised normal reaction of people born and raised at sea level. A 11/6/2007 paper by Bartsch and Gibbs provides excellent summary of impact of elevation on hearts and lungs.

- Pilot plant process development extended to 6 months instead of 1 month until recognized natural concentration of oxygen in water at 6,500 ft vs sea level – 1 vs 5 ppm. Reaction kinetics 2nd order vs oxygen.

- Do people born and raised at different elevations breath differently naturally? Does this impact susceptibility to covid-19? Does oxygen concentration at sea level impact? Is there kinetic effect of oxygen concentration in humid air reaching lungs that impacts susceptibility?

- A common denominator between Florida, Louisiana, Texas, Sal Paulo is that they are all at sea level with extremely humid atmospheres.

Inhibition: - - ->
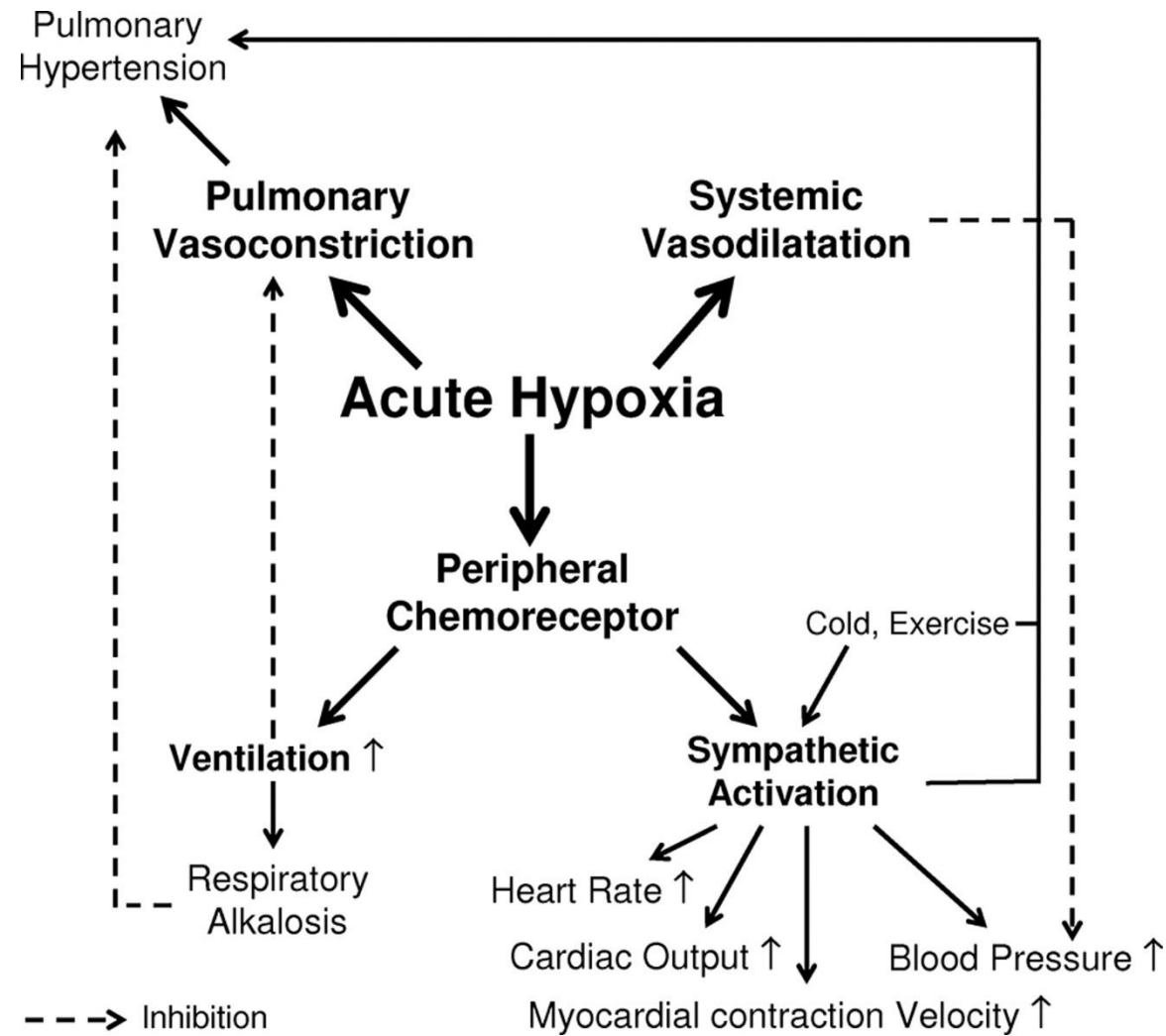
Why is everyone going the wrong way?