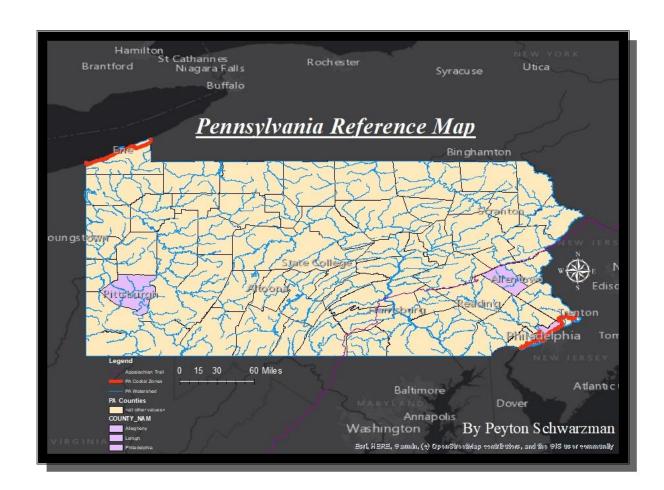
Where Should COVID-19 Vaccinations Be Sent First in Pennsylvania to Prevent Chronic Conditions & Death?

Background:

Due to a criminally negligent lack of leadership, the COVID-19 Virus has been allowed to ravage the entire United States for the past year. While Pennsylvania was largely spared from the initial massive spread of infection, the continuation of the pandemic eventually began to lead to increased infections in PA. The dangers of becoming infected with COVID-19 have been well-documented as the pandemic has continued, with a slow death being the result everyone is terrified of. However, data has begun to emerge showing that in many age groups that don't succumb to the virus, long-term complications can develop (Williamson, 2020). The most worrisome of these complications compound on the lungs. Examples of these long term-complications manifest as newly developed asthma, COPD, shortness of breath, and extreme fatigue due to decreased oxygenation (Chudasama et al., 2020). These chronic respiratory conditions can then be dangerously exacerbated by air particulates in the environment, which led to one of the factors being evaluated in the following maps.

Background Cont:

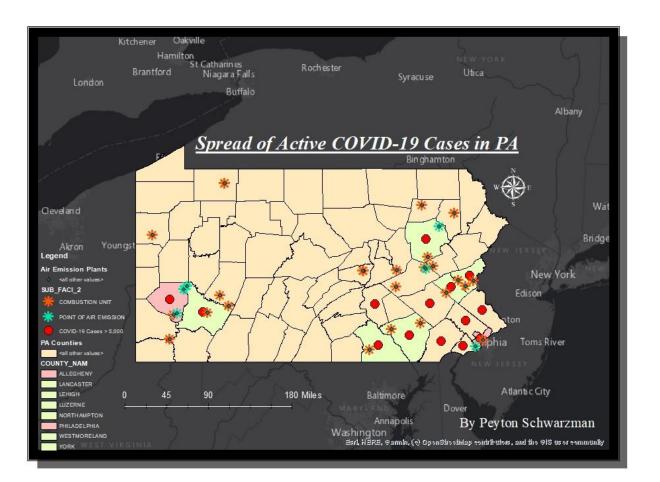
For many U.S. citizens, the recent news about potential COVID-19 Vaccinations has been seen as a God-send. As a result of Operation Warp Speed, multiple COVID-19 Vaccinations have been sent through a rapid fire clinical trial phase with many expecting to be shipped out to the United States by early December (Sullivan, 2020). In total, 1 Billion doses are expected to be shipped to the United States from the first batch of vaccines. The following maps were created out of the goal to determine where these vaccines should be sent first in regards to Pennsylvania counties, in order to minimize the mortality rate in the older population and the potential complications in younger populations.



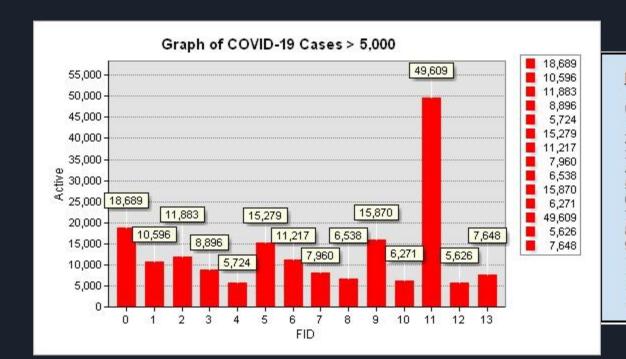


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31 Point PHILA ENERGY SOLUTIONS REFINING & MARKE POINT OF AIR EMISSION PLANT Unavailable 749286 POINT OF AIR EMISSION ACTIVE ACTIVE 32 Point HARSCO METALS AMER DIV OF HARSCO CORP HARSCO METALS AMER DIV OF HARSCO CORP AIR EMISSION PLANT Unavailable 23-1483991-26 POINT OF AIR EMISSION ACTIVE ACTIVE 33 Point SMITHFIELD PACKAGED MEATS CORP SMITHFIELD PACKAGED MEATS CORP AIR EMISSION PLANT Unavailable 36-2332471-1 POINT OF AIR EMISSION ACTIVE ACTIVE 34 Point SMITHFIELD PACKAGED MEATS CORP SMITHFIELD PACKAGED MEATS CORP AIR EMISSION PLANT Unavailable 36-2332471-1 POINT OF AIR EMISSION ACTIVE ACTIVE 36 POINT OF AIR EMISSION ACTIVE ACTIVE 37 POINT OF AIR EMISSION ACTIVE ACTIVE ACTIVE ARE MISSION PLANT Unavailable 36-2332471-1 POINT OF AIR EMISSION ACTIVE ACTIVE	29	Point	US STEEL DIV OF USS CORP	US STEEL DIV OF USS CORP	AIR EMISSION PLANT	Unavailable	25-0996816-35	POINT OF AIR EMISSION	ACTIVE	ACTIVE	ACTIVE	NO
32 Point HARSCO METALS AMER DIV OF HARSCO CORP HARSCO CORP HARSCO CORP ARE EMISSION PLANT Unavailable 23-1483991-26 POINT OF AIR EMISSION ACTIVE ACTIVE 33 Point SMITHFIELD PACKAGED MEATS CORP SMITHFIELD PACKAGED MEATS CORP AIR EMISSION PLANT Unavailable 36-2332471-1 POINT OF AIR EMISSION ACTIVE ACTIVE 34 Point SMITHFIELD PACKAGED MEATS CORP SMITHFIELD PACKAGED MEATS CORP AIR EMISSION PLANT Unavailable 36-2332471-1 POINT OF AIR EMISSION ACTIVE ACTIVE 36 POINT OF AIR EMISSION ACTIVE ACTIVE 37 POINT OF AIR EMISSION ACTIVE ACTIVE 38 POINT SMITHFIELD PACKAGED MEATS CORP SMITHFIELD PACKAGED MEATS CORP AIR EMISSION PLANT Unavailable 36-2332471-1 POINT OF AIR EMISSION ACTIVE ACTIVE 38 POINT SMITHFIELD PACKAGED MEATS CORP SMITHFIELD PACKAGED MEATS CORP AIR EMISSION PLANT Unavailable 36-2332471-1 POINT OF AIR EMISSION ACTIVE ACTIVE 39 POINT SMITHFIELD PACKAGED MEATS CORP SMITHFIELD PACKAGED MEATS CORP AIR EMISSION PLANT Unavailable 36-2332471-1 POINT OF AIR EMISSION ACTIVE ACTI	30	Point	KEYSTONE CONEMAUGH PROJ LLC	KEYSTONE CONEMAUGH PROJ LLC	AIR EMISSION PLANT	Unavailable	83-3299524-1	COMBUSTION UNIT	ACTIVE	ACTIVE	ACTIVE	NO
33 Point SMITHFIELD PACKAGED MEATS CORP SMITHFIELD PACKAGED MEATS CORP ARE MISSION PLANT Unavailable 36-2332471-1 POINT OF AIR EMISSION ACTIVE ACTIVE 34 Point SMITHFIELD PACKAGED MEATS CORP SMITHFIELD PACKAGED MEATS CORP AIR EMISSION PLANT Unavailable 36-2332471-1 POINT OF AIR EMISSION ACTIVE ACTIVE APPLIES FOR A PLANT Unavailable 36-2332471-1 POINT OF AIR EMISSION ACTIVE ACTIVE APPLIES FOR A PLANT Unavailable 36-2332471-1 POINT OF AIR EMISSION ACTIVE ACTIVE ACTIVE APPLIES FOR A PLANT Unavailable 36-2332471-1 POINT OF AIR EMISSION ACTIVE ACTIVE ACTIVE APPLIES FOR A PLANT UNAVAILABLE ACTIVE AC	31	Point	PHILA ENERGY SOLUTIONS REFINING & MARKE	PHILA ENERGY SOLUTIONS REFINING & MARKE	AIR EMISSION PLANT	Unavailable	749286	POINT OF AIR EMISSION	ACTIVE	ACTIVE	ACTIVE	NO
33 Point SMITHFIELD PACKAGED MEATS CORP SMITHFIELD PACKAGED MEATS CORP ARE MISSION PLANT Unavailable 36-2332471-1 POINT OF AIR EMISSION ACTIVE ACTIVE 34 Point SMITHFIELD PACKAGED MEATS CORP SMITHFIELD PACKAGED MEATS CORP AIR EMISSION PLANT Unavailable 36-2332471-1 POINT OF AIR EMISSION ACTIVE ACTIVE APPLIES FOR A PLANT Unavailable 36-2332471-1 POINT OF AIR EMISSION ACTIVE ACTIVE APPLIES FOR A PLANT Unavailable 36-2332471-1 POINT OF AIR EMISSION ACTIVE ACTIVE ACTIVE APPLIES FOR A PLANT Unavailable 36-2332471-1 POINT OF AIR EMISSION ACTIVE ACTIVE ACTIVE APPLIES FOR A PLANT UNAVAILABLE ACTIVE AC	32	Point	HARSCO METALS AMER DIV OF HARSCO CORP	HARSCO METALS AMER DIV OF HARSCO CORP	AIR EMISSION PLANT	Unavailable	23-1483991-26	POINT OF AIR EMISSION	ACTIVE	ACTIVE	ACTIVE	NO
34 FUILL SMITHTIELD PACKAGED MEATS CORP SMITHTIELD PACKAGED MEATS CORP	33					Unavailable	36-2332471-1	POINT OF AIR EMISSION	ACTIVE	ACTIVE	ACTIVE	NO
35 Point WOOD MODE LLC WOOD MODE LLC AR EMISSION PLANT Unavailable 84-2232763-1 COMBUSTION UNIT ACTIVE ACTIVE	34	Point	SMITHFIELD PACKAGED MEATS CORP	SMITHFIELD PACKAGED MEATS CORP	AIR EMISSION PLANT	Unavailable	36-2332471-1	POINT OF AIR EMISSION	ACTIVE	ACTIVE	ACTIVE	NO
SE NO. 1 (10.0 T. 10.0	35	Point	WOOD MODE LLC	WOOD MODE LLC	AIR EMISSION PLANT	Unavailable	84-2232763-1	COMBUSTION UNIT	ACTIVE	ACTIVE	ACTIVE	NO
	1000	505097	LINGOTKOKON TONTEU									



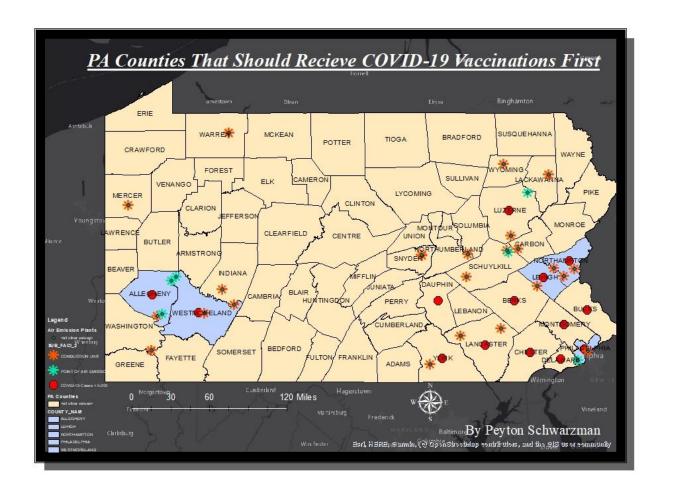


FID Sha	pe* OB	BJECTID	Province_S	Country_Re	Last_Updat	Lat	Long_	Confirmed	Recovered	Deaths	Active	Admin2	FIPS	Combined_K	Incident_R
0 Point	t	2294 F	ennsylvania	US	11/13/2020	40.468099	-79.981677	19129	0	440	18689	Allegheny	42003	Allegheny, Pennsylvania, US	1573.050339
1 Point	t	2298 P	ennsylvania	US	11/13/2020	40.415705	-75.924578	11036	0	440	10596	Berks	42011	Berks, Pennsylvania, US	2620.356916
2 Point	t	2301 F	ennsylvania	US	11/13/2020	40.336821	-75.108366	12519	0	636	11883	Bucks	42017	Bucks, Pennsylvania, US	1992.61464
3 Point	t	2307 F	ennsylvania	US	11/13/2020	39.972918	-75.747684	9279	0	383	8896	Chester	42029	Chester, Pennsylvania, US	1767.465604
4 Point	t	2314 P	ennsylvania	US	11/13/2020	40.413771	-76.779932	5924	0	200	5724	Dauphin	42043	Dauphin, Pennsylvania, US	2128.645809
5 Point	t	2315 P	ennsylvania	US	11/13/2020	39.916802	-75.402437	16056	0	777	15279	Delaware	42045	Delaware, Pennsylvania, US	2833.010144
6 Point	t	2328 F	ennsylvania	US	11/13/2020	40.039046	-76.247701	11712	0	495	11217	Lancaster	42071	Lancaster, Pennsylvania, US	2146.139807
7 Point	t	2331 F	ennsylvania	US	11/13/2020	40.615482	-75.594352	8332	0	372	7960	Lehigh	42077	Lehigh, Pennsylvania, US	2256.050341
8 Point	t	2332 F	ennsylvania	US	11/13/2020	41.17823	-75.984476	6760	0	222	6538	Luzerne	42079	Luzerne, Pennsylvania, US	2129.690596
9 Point	t	2338 P	ennsylvania	US	11/13/2020	40.210537	-75.366523	16773	0	903	15870	Montgomery	42091	Montgomery, Pennsylvania, US	2018.61803
10 Point	t	2340 P	ennsylvania	US	11/13/2020	40.751827	-75.304718	6593	0	322	6271	Northampton	42095	Northampton, Pennsylvania, US	2159.621337
11 Point	t	2343 P	ennsylvania	US	11/13/2020	40.003385	-75.137927	51513	0	1904	49609	Philadelphia	42101	Philadelphia, Pennsylvania, US	3251.951941
12 Point	t	2358 P	ennsylvania	US	11/13/2020	40.31378	-79.466155	5757	0	131	5626	Westmoreland	42129	Westmoreland, Pennsylvania, US	1650.047722
13 Point	t	2360 P	ennsylvania	US	11/13/2020	39.921009	-76.730401	7869	0	221	7648	York	42133	York, Pennsylvania, US	1752.334888



FID Legend

- 0= Allegheny
- 1= Berks
- 2= Bucks
- 3= Chester
- 4= Dauphin
- 5= Delaware
- 6= Lancaster
- 7= Lehigh
- 8= Luzerne
- 9= Montgomery
- 10= Northampton
- 11= Philadelphia
- 12= Westmoreland
- 13= York



Conclusion

In relation to the Final Map taking into account overall population by county, COVID-19 cases by county, and the level of air pollution, the initial shipment of COVID-19 Vaccinations sent to Pennsylvania should be distributed between: Philadelphia County, Allegheny County, Westmoreland County, Lehigh County, & Northampton County. The total population of these counties would add up to 3,792,441, with the required vaccinations doubling that figure to 7,584,882. After every eligible individual in those populations have been inoculated, there would still be a little over 12,000,000 vaccines available from the first shipment that could be delivered to the next "at-risk" areas.

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https://www.heart.org/en/news/2020/07/06/months-after-infection-many-covid-19-patients-cant-shake-illness