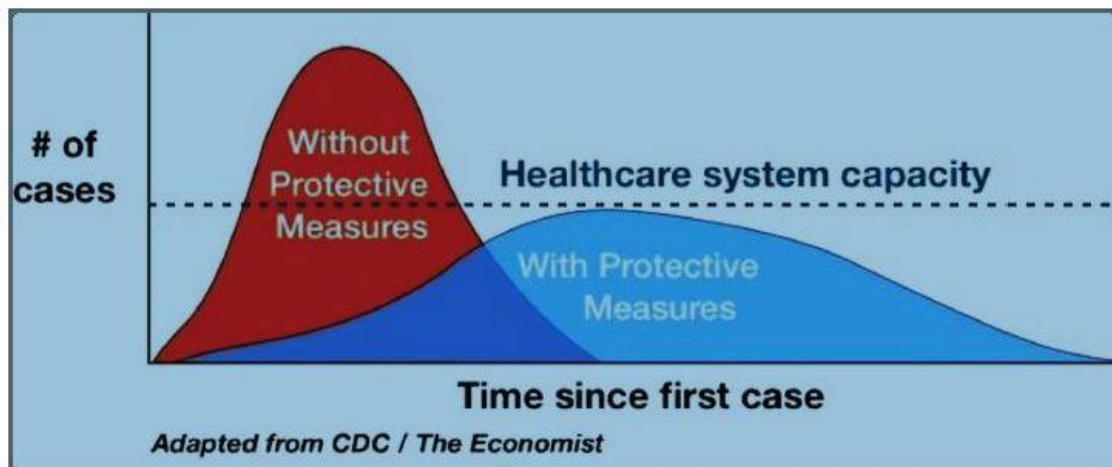


Schools need to function as sources of good, actionable information about COVID-19. We, the Las Cruces Academy, have secured excellent information. Our Board of Trustees and our teachers, who count among themselves 3 PhDs in the sciences and experienced teachers with advanced degrees, have reviewed this information. Here we present a link to one of the most useful presentations by Michael Lin, MD-PhD, of Stanford University. It's lengthy but valuable. It provides a good background and a fine set of best practices, while it also debunks a lot of irresponsible and downright dangerous misinformation that has circulated on the Internet.

<https://drive.google.com/file/d/1DqfSnlaW6N3GBc5YKyBOCGPfdgOsqk1G/view>

Here are a few highlights:

- Coronaviruses have been with us a long time, in forms that vary from mild to dangerous.
- COVID-19 has one of the highest spreading rates, measured as reproduction number,  $R_0$ . That's how many people one infected person is likely to infect. It's 2.5 for COVID-19 *when* no precautions are taken. It can be dropped, even to less than 1 (its extinction) with strong measures.
- All the closures of schools, cancellations of big events, suggestions of keeping a few feet apart in meeting people, NOT shaking hands, and other ways to achieve "social distancing" are meant to reduce the *rate* of spread of the disease



*Staying under that dotted line means everything*

See the attachment at the end for the consequences of not flattening the curve

- COVID-19 appears to have a high fraction of severe infections (20%; 5% are critical) and a high fraction of fatal infections (as high as 2%). Projected to the half or so of the world's population who may contract it, that give tens of millions of potential deaths.
- All age groups are susceptible. Most young people have mild cases, even no symptoms. The probabilities of severe cases and of death rise sharply with age. Half of all deaths have been among people 70 or older. However, young people and others with mild cases or asymptomatic cases can spread it to others.
- While vaccines may come into play later, the effect of these measures is to spread out the number of cases (which will include a significant fraction of the world's population). That way, hospitals will be less overburdened and able to give better care. This saves lives.
- Michael Lin also points out that there is a number of existing drugs that ameliorate the infection.

- If you have any symptoms of COVID-19, isolate yourself at home. The symptoms include congestion, shortness of breath (not seen in ordinary flu!), runny nose, and cough. Testing for the infection is advised but is often restricted to serious cases, because many health care facilities and even whole states have few test kits available.
- Wash your hands with soap and water for 20 seconds before eating and after using anything that others may have used – a computer, gym equipment, etc. Do this also before you use anything someone else may then use. When you can't wash, use hand sanitizer. There are good sanitizers, less effective ones, and bad ones. High alcohol content is effective. You can make your own with 95% alcohol (not the denatured alcohol) and half as much glycerin.
- Sanitize surfaces you touch or that others have touched. There are effective sanitizers, including alcohol, dilute bleach (1 tsp. in a quart), and Windex.

If we don't flatten the curve:

- If we did nothing and doubling rate remains 1 week, then in worst case, deaths and infections will grow exponentially until virus runs out of people to infect (using CA-only numbers now):

week	weekly deaths	cum deaths	new infection rate (1/n)	new infection rate (%)	cum infection rate (%)	notes
2020-03-13	3	3	8333	0.01%	0.01%	
2020-03-20	6	9	4167	0.02%	0.03%	
2020-03-27	12	21	2083	0.05%	0.08%	
2020-04-03	24	45	1042	0.10%	0.18%	
2020-04-10	48	93	521	0.19%	0.37%	
2020-04-17	96	189	260	0.38%	0.75%	
2020-04-24	192	381	130	0.77%	1.52%	
2020-05-01	384	765	65	1.54%	3.06%	
2020-05-08	768	1533	33	3.07%	6.13%	
2020-05-15	1536	3069	16	6.14%	12.27%	
2020-05-22	3072	6141	8	12.29%	24.56%	
2020-05-29	6144	12285	4	24.58%	49.14%	
2020-06-05	12288	24573	4	24.58%	73.72%	
2020-06-12	24576	49149				Cumulative deaths exceed flu
2020-06-19	49152	98301				Virus stops doubling because most people have become immune. I kept new infection rate constant for the last week to reach ~70% cumulative infections as this is the highest projection I've heard. Deaths continue as they are 1% of infections from 3 weeks earlier
2020-06-26	49152	147453				

- For US numbers, multiply by 8: ~1,100,000 cumulative deaths
- The above is not meant to be numerically accurate, it is just for illustration
- Professional models: 100,000,000 cumulative infections (30%), 500,000 cumulative deaths (IFR 0.5%, a "conservative" estimate) ([www.nytimes.com/2020/03/13/us/coronavirus-deaths-estimate.html](http://www.nytimes.com/2020/03/13/us/coronavirus-deaths-estimate.html))