MIPHA CLUB Presentation

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what is an Epidemiologist?

Epidemiologists are people who studies the outbreak of an infectious disease. The study includes the cause of the outbreak, the location, and the places that were affected by the disease. Sometimes, epidemiologists were called the “disease detective” because they track down diseases and collect various data from it. Epidemiologists are essential because they informs the public about the facts of the pandemic, which includes the symptoms, the location of the pandemic, and the prediction of cases and deaths. Most importantly, epidemiologists use the data they collected to formulate a plan to stop and prevent the pandemic from happening again.

How to become an Epidemiologist?

Becoming an epidemiologist is a long and stressful journey as a successful epidemiologist requires an abundance of education. However, the ultimate gift is very rewarding since the career truly contributes to the human society. Approximately, you will have to complete at least six years of education, which includes an undergraduate degree (most epidemiologist holds a degree public health) and a master's degree in epidemiology. Realistically, no one would want to hire an epidemiologist with only an undergraduate and a master's degree. Hence, if you want to be a great epidemiologist, like Dr. Fauci. It would be excellent if you have a doctoral degree (studying medical or epidemiology) and a PhD. With the two degrees, it would significantly increase your credibility and the likelihood of getting hired by the government.

Don't fire me!!!

Salary

According to the Salary.com, “The median annual wage for epidemiologists is $96,980.” $96,980 is considered a good amount of money to make since the average national salary is only $56,516. Statistically, a median epidemiologist gets pay 1.72 times higher than the national average. However, the entry epidemiologist gets pay around $70,562. In spite of the lack of experience and trust the new epidemiologist acquires, it still gets pay 1.25 times higher than the national average. Other than the high salary an epidemiologist deserves, they also have many job benefits. Career State University shows that, “epidemiologists are usually provided with medical insurance, paid vacations and holidays, and retirement plans.” Despite of the spectacular salary and benefits, becoming an epidemiologist is extremely difficult and competitive. According to studentscholarships.org, “there are only 5,000 people in US that are employed as an epidemiologist.” This statistics shows that in order to become an epidemiologist, you have to be the best of the best. Normally, epidemiologists works for the government and universities to collect and analyze data of the pandemics. Some notable organizations are the CDC (Central Disease Control) and the WHO (World Health Organization).

Three "Pros" of being an epidemiologist

1. **Highly Respectable.** Normally, research scientists are well-respected due to their intelligence and their social status. Epidemiologist is consider as a research scientist also. Therefore, epidemiologist can enjoy the privilege of glory and honor received from other people. Lastly, the most important factor of why epidemiologist are so respectable is their years of education. Many epidemiologists have PhD and doctorate degrees, which is a contributing factor of their high social status.
2. **Contribution to the World.** During a pandemic, epidemiologist is one of the most important job as their researches and knowledge can possibly save the world. Many wants to dedicate themselves to the improvement of public health, and they are devoted to the growth of the society. Hence, being a epidemiologist would serve those two purposes as they find a meaning in life.
3. **Continue in Education.** An epidemiologist is always leading the world in terms of researches about diseases and ways to control the pandemic. There are few people who are interested in epidemiology, and what they learned from textbooks and other research papers won't satisfy them. In order to pursue their interest in education, they became an epidemiologist.

Three "Cons" of being an epidemiologist

1. **Has a Low Fault Tolerance Rate.** Under a pandemic, epidemiologists have to correctly advice the administration with their best opinion formulated from their researches and findings. The consequence of giving a bad advice can possibly be sacrificing the lives of many people. Hence, an epidemiologist has to undergo an abundance of stress.
2. **Extremely Competitive.** As I mentioned on the fourth slide, being an epidemiologist is highly competitive since there are only 5,000 people who are employed as an epidemiologist in U.S. And usually, you would need a PhD or a Doctorate degree in order to be hire by the Federal government.
3. **Better to be a Specialty Doctor.** It is great to save millions of lives, but you can achieve the same goal in an easier way by becoming a doctor. Doctors are also in charge of the public health, and they are highly educated and respectable. Furthermore, average doctors get paid around $300,000 per year. It is around 2-3 times higher than an epidemiologist.

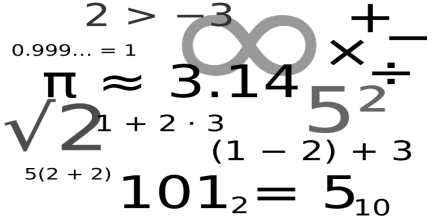
Mathematics used by Epidemiologist (Part 1)

1. Logarithms and exponential functions. As mentioned on slide two, epidemiologists predict the change of the pandemic (number of cases and death). Logarithms and exponential equations would be a good techniques to make predictions on how the pandemic progresses.
2. One-Variable Data Table. One-variable table may be consider the easiest mathematical table epidemiologists use. However, it is extremely useful as it shows how “one variable” influences the rest of the data. Interestingly, most tables that are used to inform the public about the progress of the pandemic are one-variable table due to the lack of mathematical comprehension skill it requires to interpret it.
3. SIR Model. The SIR Model is the most common used model in the “Compartmental Model Family.” It is also known as the Suspected, Infected, and Recovering model, and it consist of three graphs showing the suspected (people who might be infected) infected, and recovering. Epidemiologists use the model to track the progress of a pandemic. In addition to that, many major decisions such as state reopening are based on the results of the SIR Model.

Mathematics Used by Epidemiologist (Part 2)

4. Probability. Epidemiologist uses probability to predict whether the disease would become an influenza or not. For instance, a disease with the R0 above 1 signifies that a pandemic would be extremely likely to occur. Whereas when the R0 is below 1 signifies that the disease would slowly die out by itself without human interference.

5. Compartmental Models. Compartmental models are the type of model are widely used in epidemiology. It is used to simplify the mathematical modeling of infectious diseases. The models are complicated as it runs with differential equations and stochastic framework.



Fake Interview

1. Why would you want to be an epidemiologist even though being a doctor will receive similar amount of respect?

2. How do you usually handle your stress under a pandemic?

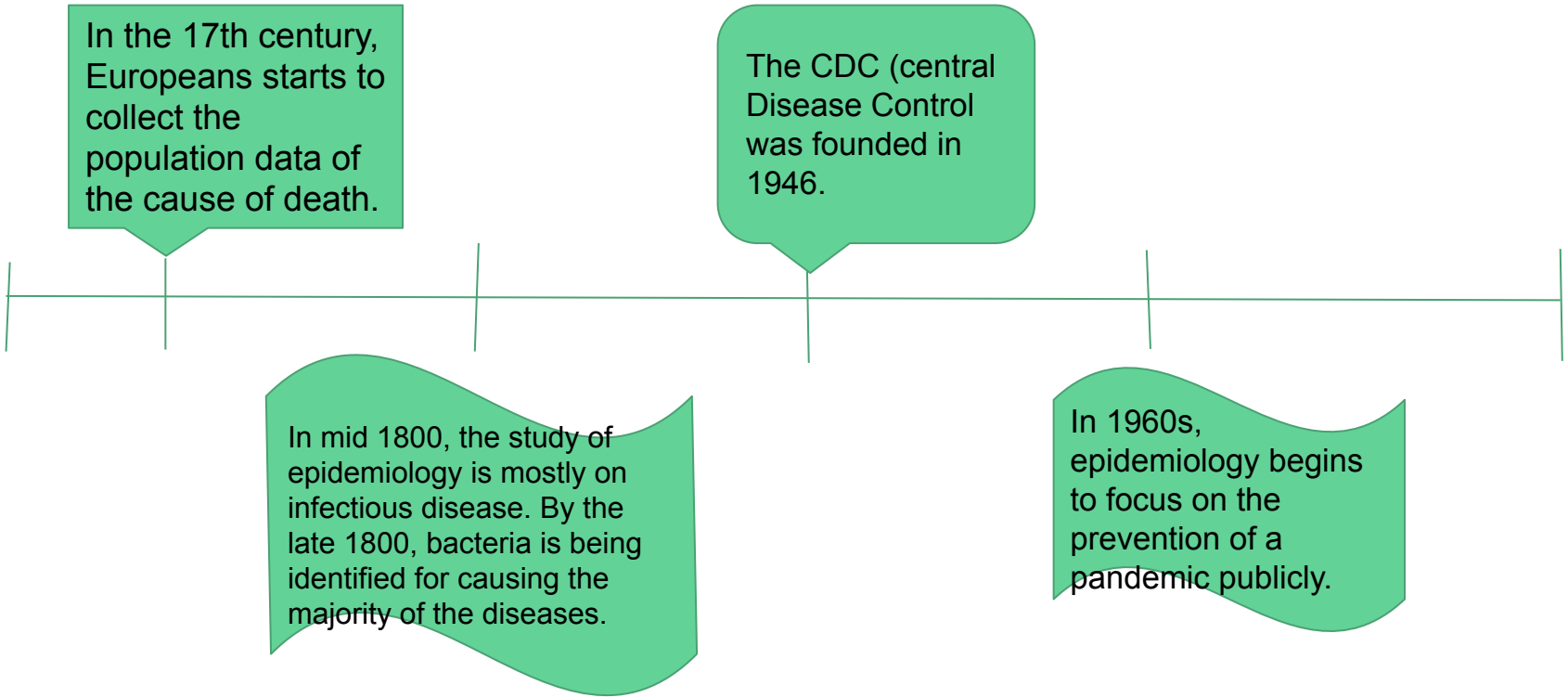
3. If you have a doctorate degree in medicine as an epidemiologist does that mean you are technically a board certified doctor?

An Awesome Video Elaborating on Epidemiologist

Link

[What Is Epidemiology, and Why Should You Study It?]

Somewhat Accurate Timeline of Epidemiology



What? Another Slide?

Congratulation!!! You had finished the entire over-achieving presentation of what epidemiologists do. However, in order to make the slides more “over-achieving.” I decided to create a quiz just for you. The quiz will contain facts and knowledge that is shown on the slides. Also, there are going to be some irrelevant trick questions on the quiz just to make life harder (kinda like the math tests and quizzes. JK) Well, good luck, just as Effie Trinket from *The Hunger Games* said, “may the odds be ever in your favor.”

Good Luck Quiz

Sources, Reference and Citation

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