



# Surf City XVIII

Huntington Beach High School



FAO

Topic A: Food Dumping  
&  
Topic B: Zoonotic Diseases

Grace Lane  
Iris Clark  
Amanda Haidl



## Welcome Letter

Dear Delegates,

On behalf of the Huntington Beach High School Model United Nations Program, we would like to welcome you to our virtual Surf City XVIII advanced conference!

Our annual Surf City conference upholds the principles and intended purpose of the United Nations. Delegates can expect to partake in a professional, well-run debate that simulates the very issues that those at the United Nations discuss every day. Both novel and traditional ideas will be shared, challenged, and improved.

It is our hope that all delegates will receive the opportunity to enhance their research, public speaking, and communication skills as they explore the intricacies of global concerns through various perspectives, some of which may be very different from their own. We hope their experiences here give them new insight and values that they can apply outside of the realm of Model UN for the betterment of the world community.

Although we will be entertaining a new style of a virtual conference, we hope all delegates will experience a fruitful and enhancing debate. Please do not hesitate to approach our Secretariat or Staff Members with any questions or concerns that you may have throughout the day. We wish the best to all our participants and hope that they may share a fulfilling experience with us! Enjoy the conference.

Sincerely,

Summer Balentine  
*Secretary-General*

Jenna Ali  
*Secretary-General*

Kayla Hayashi  
*Secretary-General*

Hailey Holcomb  
*Secretary-General*



## Meet the Dias

### Grace Lane

Hello! My name is Grace Lane, I am a senior at Huntington Beach High and have been a part of the Model United Nations program for four years now. In addition to my school activities, I have participated in my school's Academy for the Performing Arts dance program as well as the National Honors Society. Outside of my academic life some of my hobbies include dancing, spending time with my friends, listening to music, and arts and crafts. Moving back to MUN, this will be my second time chairing for HBHS and I am extremely excited to see good debate being put forth and the unique solutions you all come up with. I look forward to seeing you all in committee on January 9th and 10th!

### Iris Clark

Hello Delegates! My name is Iris Clark, I am a senior at HBHS, and this is my fourth year in HBHS's Model United Nations program. Other than MUN, I am a Co-president of the ASL Club, I am in several advanced classes and I'm currently involved in the Academy for the Performing Arts program as a popular music major. Outside of school, I am a lead singer in a band and I love having dance parties in my room as a fun stress reliever. I am also a strong activist when it comes to the environment and gender equality. I am looking forward to hearing about all of the solutions you come up with for these topics! Best of luck delegates!

### Amanda Haidl

Hi delegates! My name is Amanda Haidl, I am a junior at Huntington Beach High School and this is my third year in Model United Nations. In school I am involved in activities including American Sign Language and the golf team. Outside of school, I am involved in National Charity League. In my free time, I love to hang out with my friends, snowboard, and go to the beach. This is my first time chairing for HBHS and I cannot wait to hear all of the great debate. Hopefully we can pass some great resolutions. See you in committee!

**All Papers are due on January 2, 2021 by 11:59pm to  
[surfcitymun.fao@gmail.com](mailto:surfcitymun.fao@gmail.com)**



## TOPIC 1: Food Dumping

### BACKGROUND

Food dumping affects many developing nations and can ultimately lead to detrimental effects on both the economic status and social status of the nation. Food dumping can be seen as simple from the outside, but there are so many elements that make this issue very complex. What is food dumping? Food dumping is when aid is presented to developing countries in the form of food and food resources, but when too much is provided it can send countries into economic turmoil.<sup>1</sup> Food dumping can also be the action of dumping and wasting food products which is extremely bad for the environment and for the food supply system. Many things cause the demand for food aid, which then leads to food dumping. Every year over 8 million people die of starvation and malnutrition.<sup>2</sup> This shocking information leaves the international community in need of a way to successfully feed the hungry. Right now food aid is the most viable option in many countries eyes, yet there are many loopholes within this strategy that end up causing more destruction than progress. Oftentimes with this influx of food goods, agricultural workers within these countries are unable to continue their services as there is an extreme excess of products.<sup>3</sup> This then leads to a decline in cost of these products, loss of a stable income for agriculture workers, a lack of competition within the marketplace and the inability to raise prices for food goods.<sup>4</sup> Within Haiti for example, local farmers try to save products such as rice when food aid is being provided, as selling their rice would be nearly impossible when community members can already access it for free. Without the opportunity to sell their rice, they are unable to afford their crop for next season and this is often a domino effect among merchants within these communities.<sup>5</sup>

Despite these points food aid can be convenient for some, however with this aid comes other major social consequences that are not directly related to the economy. With these new forms of food aid within the country, community dynamics often begin to deteriorate. This is because of the newfound resources that do not require interaction between neighbors or community members. Additionally, this form of aid can also cause foul play within the agricultural industry. With this type of aid benefiting some citizens within developed countries there is a drive to continue receiving it. Because of this, some have sabotaged farms and agricultural workers so that they are unable to raise a successful crop. This then makes the city/country more likely to receive more of this aid, leaving these farmers in even worse economic conditions.<sup>6</sup> This spiteful behavior is often a spiral that continues for years and years, further destroying the agricultural industry within a given country.

There is also a political side to this topic as well. As aid often allows for stability within a country, with this aid can come positive political affiliations. This aid can help with world hunger and decrease a country's hunger rate, however with this power that more developed nations have over developing countries comes many challenges. As food aid can act as a



peacemaker, it can also act as an extreme divider. In some cases, developed nations refuse to provide food aid to countries who they do not agree with or have a steady alliance with. This can leave developing countries without access to food in the times of need.<sup>7</sup> Additionally, this gives developed nations the upperhand in controlling those who live in developing countries.

Developed nations already have the most power and influence in the international community, and with the constant influx of food aid comes more reliance on the most powerful nations.

Next there is the growing debate on food aid regarding GMOs. GMOs or genetically modified organisms, are a new way to have widespread access to food yet there are many unknowns about the practicality of them. There have been instances that food that is genetically modified has decreased the effectiveness of antibiotics.<sup>8</sup> These side effects are very dangerous for more developing nations who are more prone to the rapid spread of diseases. One of the main issues with these GMOs is the harm they cause on natural seeds and crops. GMOs have the ability to contaminate whole fields of native crops and seeds which can lead to a lack of biodiversity and the destruction of many necessary crops.<sup>9</sup> These GMOs can provide a short term solution for providing food aid but the debate continues on whether or not they will be sustainable in the long term or if they will cause longer term health concerns.

Going into more depth on food waste, in the cases of food dumping it is often an issue of lack of demand in the market, price competition, or even occasionally aesthetic purposes.<sup>10</sup> One example of this is the dairy industry within Jamaica. With an increase in trade liberalization, new imports of dairy products have become widespread.<sup>11</sup> This has begun to take a serious toll on native dairy farmers that were doing great business before the influx of imports. Dairy farmers have gone out of business and the food security in Jamaica has been greatly weakened. As dairy farmers go out of business this then causes these farmers to dump the milk produced by their cattle and has caused many to have to sell their cattle to have any sort of sustainable income.<sup>12</sup> With food waste being a serious issue, COVID-19 has only angered this causing more factors that lead to food dumping. Many farmers have been left with over half of their produce having no buyers, causing them to dump all products they had produced.<sup>13</sup> As restaurants and businesses had to abruptly shut down in the early months of this year, many food resources had to be dumped because there was no longer a demand for the normal food supply within restaurants.<sup>14</sup> More livestock has been euthanized in the months of COVID-19 because of the extreme loss of demand for animal products within restaurants as well.<sup>15</sup> Regarding supermarkets and produce, there is often immense waste produced due to overstocking of shelves of products that often have the shortest shelf life.<sup>16</sup> Often the products wasted are fruits and vegetables which are often not bought if they do not look extremely fresh and new as aesthetics often have a large impact on what products are used and what products are wasted.<sup>17</sup>

Overall with food dumping becoming a widespread issue between developed and developing nations, as well as the immense changes within the food supply chain due to COVID-19, this issue is pressing and is in need of immediate attention.



### UNITED NATIONS INVOLVEMENT

The United Nations has not passed many resolutions specific to food dumping due to every country having a very unique view on the topic based on what is in it for them. However, the Millennium Development Goals, with goals that included halving the amount of people worldwide that were struggling with hunger and poverty by 2015, were adopted in 2005 by every member state of the United Nations, should be a good start for phasing out the practice of food dumping.<sup>18</sup>

To further the advancement for reliable food systems, the United Nations has announced a food systems summit for September 2021. At this summit, one of the main discussion points is to ensure that inequalities in access to economic opportunities, as it relates to food systems, are developed and socialized. This includes commitments from governments, private and public sectors and others to take action towards these goals. It is important that policies around food systems also address roles that women and indigenous people play in the agricultural world. Coordinating a sustainable food system will require the coordination of players across all sectors, both national and international, in order to be effective. Creating an inclusive food system process will also require social protection that is sensitive to the needs of the poor, especially women and indigenous people. Finally, this summit is planning on addressing the laws and regulatory mechanisms and ensuring the capacity of communities to implement them. International convention and treaty obligations that relate to the equity and rights need to be included in national league frameworks.<sup>19</sup>

The World Trade Organization (WTO) that works closely with the United Nations Economic and Social Council (ECOSOC) has closely studied the impact of food dumping on developing countries and its effects on farming, food security, and balance of payments.<sup>20</sup> The WTO suggests that the first step to ending food dumping is to eliminate export subsidies. In addition, exporting countries need to take a strong legislative stance on regulating the imbalance of exports of food while the importing countries must impose countervailing duties such that the imported prices match the cost of production levels in order to level the playing field. While this cannot be done overnight, the World Trade Organization believes that over a period of five years, through the elimination of export subsidies and the utilization of full cost production pricing, the incentives for food dumping will be phased out.

In a recent United Nations document, *The State of Food Security and Nutrition in the World 2019*, it states that primary commodity prices have resulted in economic slow downs in countries that are dependent on primary commodity imports or exports.<sup>21</sup> In order to limit this, countries need to protect incomes and purchasing power through various social programs and develop policies that reduce the volatility of food prices.

In addition, the World Food Program provides assistance including goals to assist nations with their shock capacity and stress factors that affect food security by focusing on government and institutional strengthening and support.<sup>22</sup>

As part of the United Nations Sustainable Development Goals set for a target date of 2030 include large scale changes to the global food and agricultural systems, including doubling the agricultural productivity and incomes of smaller food producers, doing what it can to support sustainable food development systems, making larger investments in agriculture, changing and preventing trade restrictions in the worlds' agricultural sphere, and finally ensuring that the food commodity markets function properly.<sup>23</sup> All of these initiatives will hopefully lead to the elimination of food dumping practices.



## CASE STUDY: Sub-Saharan Africa

Twenty seven out of the twenty eight world's poorest countries are located within Sub-Saharan Africa, specifically underlining that the poverty level is above thirty percent within said countries<sup>24</sup>. Connecting the morality and actual aid that food dumping provides to the Sub-Saharan region of Africa, it is essential to understand that almost 62% of the population lives in rural areas, surpassing the world average of only 51% living in rural communities and that it estimated that rural poverty makes up for 90% of total poverty. 80% of the region relies on agricultural occupations to manage livelihood and income, unfortunately rural areas continue to follow the cycle of poverty<sup>25</sup>. The average rate of poverty continues to increase partly due to the United States and European union's policies that allow for surplus dumpings of grain into the world market. The agricultural market is a highly impacted source of income when food dumping regulations are not placed. Within Sub-Saharan Africa, Maize (corn) makes up 45% of all crop production and is the most necessary staple crop for the region<sup>26</sup>. In addition to Maize, Sub-Saharan Africa makes up for 83% of all sugar production within Africa. In relation, specifically analyzing Mozambique shows how food dumping has negatively impacted the agriculture sector for sugar in Sub-Saharan Africa<sup>27</sup>. Mozambique exports almost 300,000 tons of sugar each year, and costs about 350 USD to produce a single ton of sugar from the sugarcane crop. In addition sugarcane has been beneficial in a multitude of ways within Mozambique, and provided almost 25,000 jobs in 2001 alone<sup>28</sup>. Due to loose regulations on the European Union's part, the African Sugar industry is wounded by massive dumpings of sugar. In addition, exceedingly high tariffs and duties damper Mozambique's ability to export goods into the European Union<sup>29</sup>. It has taken years for Mozambique to create a network for producing and exporting sugar in an effort to rehabilitate their agricultural sector, but the dumping of European surpluses halts all production. The subsidies placed on sugar within the European Union display that they are one of the largest exporters of sugar in the entire world, thus allowing for the union to have a large impact on global prices for sugar<sup>30</sup>. A study done under the World Bank Organization displays the estimation of the European Union sugar regime has caused for the world market prices of sugar to fall by almost 17%. This fact leads Mozambique and Sub-Saharan Africa to be completely pushed out of the market due to their prices not matching the European Union's cheaper and subsidised sugar. For example the EU in 2001 exported almost 770,000 tons of white sugar into Algeria in addition to the 150,000 tons exported into Nigeria. This is highly detrimental to the economic growth of Mozambique as they have now been beat by the European Union as competitors. The loss of agricultural sales causes Mozambique to lose up to \$70 million USD every year, which is essentially the national budget for rural as well as agricultural development. In addition, it is estimated that if the competition ceased to exist almost 20,000 new jobs would be created<sup>31</sup>. To better understand why countries dump surpluses of food, The Common Agricultural Policy (CAP) shows how there are price



support mechanisms as well as protective borders. During the 1960s producers were given incentives to not create surpluses in order to create a stable and developing food market. But, now looking at the European Union it displays the disregard for the policy and the EU continues to overproduce thus resulting in food dumpings in Sub-Saharan Africa. The European Union now accounts for 18 percent of sugar exports and 8 percent of wheat exports, which has largely affected Sub-Saharan Africa due to their staggeringly low prices and competitive strategies. In addition, subsidies support the production of surplus goods such as wheat, sugar, and dairy which undermine the livelihoods of smallholder farmers with underdeveloped nations<sup>32</sup>. It is stated that the European Union is urged to reconstruct their agricultural sector in order to promote the welfare of small farmers to promote food and environmental security, specifically within Sub-Saharan Africa. In relation to benefiting the Sub-Saharan African market the Communication from the Commission to the Council and the European Parliament have begun to follow the CAP under the agenda 2000. The second pillar of the agenda specifically states that rural development is highly essential for development. Thus the EU will reduce their competitiveness with Africa and the amount of products they are allowed to dump<sup>33</sup>. Shifting topics, under the Food and Agriculture Organization of the United States a study has shown that almost 1 billion people are suffering from food insecurity and starvation which is why it is a part of a Millenium Development Goal. Unfortunately it can be concluded that the world insecurity total, especially within regions in Africa are only increasing. Despite the negative effects of food dumpings within the Sub-Saharan African region, there have been positive effects in terms of food insecurity. Seeing as almost 27.4% of Africa faces the issue of food insecurity, Sub-Saharan Africa continues to grow higher with a 3% increase since 2014<sup>34</sup>. It is estimated that 239 million people within Sub-Saharan Africa face extreme poverty and hunger, which is especially detrimental to women and children. In addition rising prices and food riots are partly a factor to the region's food insecurity which is why the dumping of cheap agrifood products from other countries aids food insecurity but not local African farmers within the rural communities<sup>35</sup>. Food insecurity is especially bad within the Horn of Africa and Madagascar, this is due to the fact that production and availability are extremely scarce. Competition from powerhouse countries make the concept of food dumping far more negative and detrimental than it is beneficial. Madagascar is a prime example of how insecure countries are used for economic gains, which completely disregards the insecure countries economy<sup>36</sup>. The Madagascar sugar cane market was harmed by the European Union, and although there have been adjustments made within the Union to start to aid the Sub-Saharan region, the damage has already been done and food insecurity only continues to rise. The study can conclude that food dumping only manages in forms of short term relief, but is highly detrimental to the country's developing economy and agricultural market.



## QUESTIONS

1. Has your nation put forth any form of legislative reform to reduce the amount of food developed countries can dump?
2. Are there any recovery programs put in place to aid the agricultural communities loss of occupation?
3. Is your county affected by the importing of food through dumping? Or is your country guilty of food dumping on other countries?
4. What is your country currently doing to combat food dumping?
5. What is your country's status on food dumping and is the agriculture sector being majorly affected by food dumping within your nation?
6. Has your country done anything that has been successful in combating food dumping in the past?



## TOPIC 2: Zoonotic diseases

### BACKGROUND

Three out of four new and developing diseases in humans originated in animals.<sup>37</sup> These diseases are known as zoonotic diseases or zoonoses. Zoonotic diseases are diseases that are carried by animals that ultimately can spread to humans.<sup>38</sup> These diseases can be extremely dangerous and many animals can be carrying them without showing any noticeable signs.<sup>39</sup> Because of our close relationship with animals in our day to day lives it is very common for humans to contract these diseases. These diseases can be transferred from animals to humans in various different ways. Direct contact such as contact with an infected animal's bodily fluids such as blood or saliva can easily spread zoonoses. This can occur when touching or getting bitten by an infected animal.<sup>40</sup> Even if there is no contact directly with an infected animal, there are still ways humans could be infected. The touching of a contaminated surface that an animal has been present on can pose a threat. Even simple items such as a pet's water dish can transmit the disease if the pet has contracted a zoonotic disease. This would be an indirect way of transfer.<sup>41</sup> Another way of contraction is through the animal products that humans consume. Within the EU, over 350,000 cases of zoonotic diseases from contaminated food are reported every year.<sup>42</sup> The presence of any sort of bacteria or parasite within meat can contaminate the entire supply of meat from that animal, and this is almost always unknown by the producers.<sup>43</sup> Zoonotic diseases can be contracted by the animal or contaminate the meat throughout any of the steps along the process of production of meat and animal products. This makes it challenging to completely prevent all causes of these diseases as they can strike at any given time. Contracting these diseases in this way is extremely prevalent as when a human consumes uncooked meat of any sort or any contaminated foods they can easily contract a zoonotic disease.<sup>44</sup> Some of the common zoonotic diseases that come from food are Salmonella and E.Coli that often come with symptoms such as nausea and vomiting.<sup>45</sup> Another way that zoonotic diseases can be transferred is through small bugs and bacteria, or through a vector-borne transfer.<sup>46</sup> Vectors are connecting organisms that can contract the disease from an animal and then transfer it to a human, such as a mosquito or a tick.<sup>47</sup> These small insects often strike without notice as bugs are very frequently present within areas where animals are located. Once they come in contact with an infected animal they would then be infected with the disease possessed by the animal by coming in contact with blood or other bodily fluids from the animal. If the infected bug then comes in contact with human blood the disease is then successfully transferred.<sup>48</sup> Some common vector-borne zoonotic diseases are rabies and malaria which can both be possessed within bugs such as mosquitos and fleas.<sup>49</sup> Oftentimes, within areas where the climate is more suitable for insects of this sort, zoonotic diseases are more likely to be present. Next is when a zoonotic disease is spread through water. In places where access to clean drinking water is scarce, it is quite common to contract a zoonotic disease from dirty contaminated water. This water can



possibly be contaminated by either animal feces or even previous human contamination.<sup>50</sup> Around the world over 2 billion people drink water that is contaminated.<sup>51</sup> This proves the immense threat that zoonotic diseases pose to the human population. Zoonoses such as SARS and Cryptosporidium are often spread through contaminated water within more impoverished communities.<sup>52</sup> In all, zoonotic diseases are prevalent in many aspects of our lives and they can often pose large threats to our health and safety.

There are many factors that cause the transfer of zoonotic diseases in the world today, in addition to this, these diseases have already had many effects on humans and the international community as well. Within the United States over 300 million dollars is spent on zoonotic disease control and treatment every year.<sup>53</sup> This large sum of money is often for small treatments or coverage for people who contract a zoonotic disease. With these diseases now so close to home and even present within the home, in our pets, they have made an extreme footprint on the spread of disease globally. Agriculture is also often majorly affected by zoonotic diseases as they can plague farms, and ranches leading to many health issues within livestock. This makes it challenging for agriculture workers as there are higher death rates for livestock who contract zoonotic diseases. Additionally, impoverished areas are often the most prone to the spread of disease and poverty plays a large role in the development of zoonotic diseases.<sup>54</sup> In these areas there is a cycle that continues to compile as with an increase in poverty comes an increase in disease which then leads to lack of sanitation and the further contaminating community areas, etc.<sup>55</sup> As livestock is produced within these areas, there is less availability for sanitation and prevention of the transfer of possible zoonoses. This then can lead to less healthy livestock which does not provide as much for the person raising it, lowering their income and ultimately increasing poverty within the area.<sup>56</sup> Also within these areas, these diseases can pose further threats to the human population because of a lack of health services and access to treatment if needed. This unfortunate cycle is extremely detrimental to both the human population and the animal population. To summarize, with an increase in zoonoses come an increase in poverty and vice versa which can lead to a downward spiral of poverty and disease.

In the more recent months, COVID-19 has hit the international community very hard. COVID-19 is a zoonotic disease that has wreaked havoc on the world as we know it, and every person has experienced its detrimental effects first hand. Diving into the logistics of the coronavirus, there are several different coronaviruses that have been spread from animals to humans such as SARS-CoV which was transferred from civet cats to the human population.<sup>57</sup> The coronavirus that hit the human population this year is related to SARS-CoV but the strand of coronavirus that is the most present in society today was bat-borne.<sup>58</sup> The virus we know today is now coined SARS-CoV-2 with the disease resulting from it being called COVID-19.<sup>59</sup> This virus spread rapidly throughout China, because of its ability to be spread through touch and through air-borne means as well. It is now present in every country in the world and the rates have continued to skyrocket. With COVID-19 being one of the most relevant zoonotic diseases in society today, it is now recognized how dangerous and deadly zoonotic diseases really can be.



All in all, zoonotic diseases are very widespread and can affect both animal and human populations in many ways. Urgent action must be taken to stop the spread and development of these zoonoses across the globe.

### UNITED NATIONS INVOLVEMENT

The United Nations has made Zoonotic Diseases a very crucial topic to address in recent years. Since the United Nations Environment Programme reported that 75% of infectious diseases starting to show in and infect humans are of zoonotic origin, they have begun doing more research on how to prevent zoonotic diseases in the future.<sup>60</sup>

The “One Health” approach that the United Nations is recommending recognizes that human health, animal health, and planetary health cannot be separated.<sup>61</sup> Another recommendation that has come out of this is that it is important for there to be collaboration between agencies that work on environment, animal, and human health. The One Health approach needs to be implemented everywhere and receive more financial and institutional support. Understanding the origin of zoonotic diseases (zoonoses) is the key to reduce the risk of future epidemics and pandemics.

The World Health Organization’s One Health approach is designed to have a planned approach to implement programs, policies, legislation, and research where various sectors work together to have a healthier global society. One Health addresses various aspects that affect health, such as food safety, diseases that can spread from animals and humans, and the ongoing issue of antibiotic resistance.

Some of the same microbes can infect both animals and humans since they share many of the same living environments. Because these sectors overlap, work on prevention and treatment of zoonoses needs to take place in both sectors. An example of this is that rabies in humans is prevented by vaccinating dogs, who are one of the animal sources of the virus.

With the One Health approach, experts with different areas of expertise in sectors like public health, animal health, plant health and the environment, will work together to support the One Health goals and come up with solutions for the prevention, detection, and response to zoonoses. This includes the sharing of information regarding epidemiological data and laboratory data across all sectors of the world governments, including the joint response to potential health threats.<sup>62</sup>

A great example of the United Nations work on zoonoses is how they are supporting COVID-19 responses globally. The UN Crisis Management Team has coordinated responses to 173 countries supplying respirators, medical masks, face shields, medical gowns, medical gloves, and medical goggles. They have also supported the training of first responders in areas such as epidemiology of COVID-19, infection prevention, personal protective equipment training, and waste and medical management.<sup>63</sup> In addition, the World Health Organization (WHO) is working in concert with international experts, global governments and other partners to quickly expand and share scientific knowledge regarding COVID-19 virus, to track the spread and strength of the virus, as well as to provide guidance for countries on what they can do to protect the health of their people and prevent further spread of this virus.<sup>64</sup>

Another tool that was developed through the joint FAO (Food and Agriculture Organization), OIE (World Organization for Animal Health), and WHO is the Global Early Warning System (GLEWS). It tracks the “health threats and emerging risks at the



human-animal-ecosystem interface.” The goal of the Global Early Warning System is to prevent and control health threats from human animal interactions through rapid detection and risk assessment, as well as monitoring and timely communication regarding the threats. Some examples that the GLEWS system has tracked are African Swine Fever, Rift Valley Fever, and Ebola Virus.<sup>65</sup>

### **CASE STUDY: West Nile Virus**

The West Nile Virus (WNV) is a specific arboviral disease, which is essentially the spread of viruses through the bite of an insect<sup>66</sup>. Almost one in every five people who are infected with the virus develop some type of fever alongside various other symptoms, and one in every one hundred fifty people infected develop life threatening symptoms<sup>67</sup>. Within the United States alone and in 2020 there were only a total of 451 cases of the disease reported to the CDC, out of the limited cases 76% were classified as a neuroinvasive disease such as Encephalitis or Meningitis, and the other 24% were non neuroinvasive disease. Although the disease can be highly fatal, 80% of those who contract the virus will not show any symptoms. Despite the common belief that WNV is only contractible through Mosquitos, birds are natural hosts and spreaders of the virus. The WNV is the major leading cause of the mosquito-borne viruses in the United States alone. WNV is most prominent during times of mosquito seasons, which is usually in between the warmer periods of June through October<sup>68</sup>. In order to diagnose the virus, doctors will often times use serology which is a diagnostic examination of one's blood<sup>69</sup>. Serological tests also include ELISA's which is a diagnostic assay used in analytical biochemistry<sup>70</sup>. If a patient receives a positive reaction to serological tests they may also be tested with a PRN test. All of the previous tests listed are able to diagnose patients through the testing of their blood and tissues, specifically in the cases of WNV, patients can be diagnosed in a few days especially if symptoms occur<sup>71</sup>. WNV is most commonly found within Africa, seeing as the first ever case to be found was within the West Nile district of Uganda in 1937, and is where the virus got its name from. The virus was identified in 1953 in the Nile delta region in birds, but studies show that the virus was not classified as a pathogenic for birds before 1997. In 1999 the West Nile Virus was spreading throughout Tunisia and was imported into New York, thus creating the large outbreak within the United States, which occurred from 1999 to 2010. Despite the United States' outbreak, the virus was the largest and most heavily impacted Greece, Romania, Russia, and the United States. Originating from Africa, the virus has now become established within Canada, the United States, Middle East, parts of Europe, West Asia, and Australia. Touching upon transmission, the most common way of human infection is through the bites of an infected mosquito, which occurs when mosquitoes feed on infected birds thus causing the virus to circulate within their blood for many days. Eventually the virus moves into the salivary glands of the mosquito which injects itself into human or animal blood streams during periods of mosquito feedings. The virus also has the capability of spreading through contact with other infected animals through blood, or tissues. Studies have also shown that the virus can be spread through human to human transmission through organ transplants, blood transfusions, and breastmilk, although there is only one reported case under the CDC of transplacental transmission which is from mother to child<sup>72</sup>. Further addressing symptoms, 20% of those who contract the virus will develop the West Nile fever. The illness can form in victims of any age, but those who are over the age of fifty and immunocompromised are at the most risk of becoming fatally ill. In order to



reduce the risk of the virus certain tasks must be taken, such acts include: reducing the risk of transmission through mosquitoes. This can be done through community protection with personal insect repellent, nets, and light colored garments. The next possible act is reducing the amount of animal to human transmissions. This can be carried out through protective wear when handling sick or diseased animals, especially during periods of slaughtering and culling procedures. Addressing vector control is also essential. The need for integrated and comprehensive mosquito surveillance is the first step to control. The World Health Organization states that studies should identify local mosquito species that are specifically prone to transmit WNV, also including species that also serve as a connection from birds to humans. The WHO states that studies of mosquito tracking must be centered around source reduction, water management, biological and chemical control methods<sup>73</sup>. In 1937 during the period of the virus's origin, the disease eventually evolved into two major distinct lineages within Sub-Saharan Africa, thus causing the spread of the virus from continent to continent. Studies published within the Sub-Saharan African region show that in the past seventy years, the virus has become endemic throughout the region but because of the lack of resources and availability of diagnostic methods the West Nile Virus is highly understood. Within the two major lineages of the virus, the first lineage is most often found within central and northern Africa, Europe and within the Americas in 1999. The second lineage is endemic and found within Southern Africa, specifically Madagascar, and rural Europe during the 2000's<sup>74</sup>. Another important topic to address is the effect of the virus on the environment and climate. Data under the United States library of Medicine National Institutes of Health show a study to understand the environmental effects of the virus specifically within Iran. The study specifically analyzed climatic factors, which includes: relative humidity, rainfall, temperature, which all dictate the factors of successful mosquito breeding. The study showed that within Iranian stables 41.5% of the stables were positive for WNV, additionally the study proved that higher temperatures and precipitation caused for a 100% higher infection rate of WNV<sup>75</sup>. The main understanding of the study is to show the effects of the virus in terms of climate change. With rising temperatures also leads to the conclusion of an increase in reproduction and population of mosquitoes who carry the West Nile Virus, thus meaning the higher human infection rate<sup>76</sup>. Several scientists have stated that climate change is one of the most significant factors which contribute to the spreading of the WNV. The United States Protection Agency states that the virus is also a helpful indicator in the changing of temperatures, or global warming. In addition to the rapid changing of temperatures, droughts can lead to the close contact of mosquitos and avian hosts that surround remaining water sources, thus speeding up the process of epizootic cycling, which is the spreading of viruses specifically among animals, which eventually leads to the spreading of it as a zoonotic diseases. In the United States alone, the past fifty years have resulted in average temperatures to rise, and precipitation to rise by 5%, this factor alone causing a spike of cases within the United States during the time period. Studies done under the PLOS Pathogens estimate that the WNV spread from the East Coast to the West Coast at a dispersal velocity rate of 1,000 from 1999 to 2003. It also states that the virus spread the most during 2001 and 2002 because the strain was able to diversify when switching hosts. In 2019 958 people contracted West Nile virus, and 626 of those people were affected within their central nervous system and brain<sup>77</sup>. The West Nile virus is an extremely important example of a zoonotic disease because it is connected to multiple factors within the world. Climate change causes for the acceleration of the disease, thus allowing for more cases to occur, more strains to develop, and for more symptoms to advance.



### QUESTIONS

1. Has your country made any effort to reduce the spread of zoonotic diseases?
2. Does your country have any precautionary measures for the instance of a zoonotic disease outbreak?
3. How has your country been affected by COVID-19, a zoonotic disease?
4. Has your country worked with any United Nations organizations to help reduce the amount of zoonotic diseases throughout the world?
5. Do zoonotic diseases affect your country's agriculture industry and how has your country responded to these effects?
6. What has your country done in the past to prevent the spread of zoonotic diseases within your country?



## Endnotes

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