**The US Honeybee Project**

**Link to Deepnote**

https://deepnote.com/workspace/katia-punter-b87e-5961d568-8910-4898-b65f-4f4ab45a4b86/project/Katlynn-Rose-c7b4d534-46a3-4b72-8bac-1b255c724f31/notebook/Notebook%201-0e234e5400a14efba22acac4498517ff#c1b5548a70334c428b644d3c8838a806

**Rationale**

**Overall Rationale**

Honeybees are a critical part of nature as well as the world’s food supply. Without the pollination by Honeybees, major crops, medical herbs and trees would all fail to grow and mature. As such, all land mammals would face extinction. Given that fact and the beneficial, harmonious nature of humanity’s relationship with honeybees, United States annual honey production reports, in recent years have become alarming. To better understand the unique set of issues the honeybee industry faces, a deep dive into several sources of data is needed.

Examination of overall production numbers from the year 2021 are 10.5% of the overall production numbers the US achieved in the year 2000. That is a 89.5% drop in 20 years. A very alarming statistic indeed. 55.4% of the drop has occurred from 2015-2021 alone. Although shareholders have not felt the sting of production loss through the skyrocketing sales prices of honey, the importation cost of honey in recent years should be cause for concern. The US spent 8.43M from 2021-2022 on imported honey while exporting a mere 712k worth of honey in the same year. With forty-four states currently producing honey, in theory, there should be no need to import honey at all.

Given that such a large majority of states are producing honey, not to mention the home-based beekeepers, one must ask the following questions, why is the US producing such a small amount of honey? Why is production over all forty-four states dropping so rapidly? What factors are leading to the colony collapses, deaths and overall drop in production? These questions and a desire to understand all relatable data led to the choosing of this dataset. Several outside data resources, studies and articles were also chosen to become a part of this project to give a wide scope of the issues US bee colonies currently face. The goal of this project is to understand the issues currently facing the honey production industry to better ascertain how these issues may be resolved.

**Personal Rationale**

My name is Katlynn Rose. I am an aspiring Data Analyst with a background in marketing, sales and customer service. As someone who has worked from the ground floor, I have a talent for connecting to the consumer as well as being able to see things from a marketing/sales perspective. I understand the needs of the shareholders all the way down to the everyday workers and consumers who make it all possible.

At the beginning of my educational journey with NEU, I had no prior experience with the intricate details of Data Science. However, I am curious by nature and have a long history of research and study into topics of interest stretching back to my childhood. A love of knowledge has driven me forward to this point in my professional life. Along this journey, I have discovered a passion for coding as well as data science in general. I endeavor to continue my education, even after obtaining employment as there is still so much to learn and expand my knowledge on. Data science is a truly fascinating and enjoyable career path that I look forward to exploring.

When considering what I wanted to present to all attending today, I wanted to choose a subject that would not only showcase my newly acquired analytical skills, but also be a subject that I am passionate about. The survival of the honeybees and humanity is a subject I can be very passionate about. Having heard for years that honeybees are in trouble I became curious to find out why. I endeavored to find out, exactly what issues are present in our honeybee population here in the United States.

My project goals are as follows;

* Determine whether US honeybee population is sufficient for the desired production outcome.
* Determine if honeybees are facing extinction and provide potential solutions to halt this possible extinction.
* Ascertain what caused US honeybee production to drop and provide potential remedies to increase production.

It is my analysis that plummeting honey production appears to be the result of pesticides, a reduction in crops caused by weather and other factors, as well as colony collapse disorder. Pesticides being the largest contributor with crop reduction coming in second.

Potential viable solutions to these issues is further research into pesticides that are safe for bees and a wide distribution of the resulting product to the agricultural industry as well as a media campaign to encourage the American public to stop use of harmful pesticides. One path for research direction would be investigation into the historical natural remedies for pests that our global ancestors used. An exchange of knowledge between the US and countries like China, New Zeland and India could obtain the information the US is in so dire need of regarding bee friendly pest control. The aforementioned countries being the top three largest honey producers in the world.

A campaign could also be initiated to create a foundation that plants bee friendly plants all over the country in local parks and through school project initiatives like Earth Day. One could even petition the Federal Government to provide extra funding for schools to participate in the Bee Friendly Plant Project as well as provide incentives for businesses in the agricultural sector to switch to more bee friendly pesticides.

Weather, one of the greatest challenges facing agriculture, is a bit harder to address. In some states, draughts are responsible for the reduction in crops. Even with modern day irrigation systems, this is a challenge. Most irrigation systems run from local water sources, an issue if that region is facing a major draught. A potential solution to this issue would be looking into connecting water irrigation sources that are further away and are less affected by the draught. One would have to look at the expenditure of resources to determine if this would be a viable solution and would depend on the layout of aquatic resources in the area.

Deforestation also contributes to weather related and production source issues in any given region. In this modern world, progress means growth and growth creates more metropolitan environments. While convenient and enjoyable, creating these metropolitan environments takes away precious resources from the US honeybee population. Progress without proper replacement of these vital resources must be addressed. Removal of trees and destruction of other natural resources, i.e., small lakes, ponds and flowers also removes pollen resources and hinders the honeybee’s ability to produce quality honey. A potential solution to the issue of deforestation would be creating incentives for newly established structures to plant bee friendly flowers, trees or bushes on the edges of their properties away from public traffic. Setting up bee reserves around the country where pesticide use is strictly prohibited would be another viable option that would require fundraising and/or government assistance.

**Data Set**

For this analysis, I have obtained a data set from Kaggle. This data is real and authorized for public use. I personally checked the data against USDA statistics and news articles to ensure data accuracy and quality. I will not violate any data privacy protection laws by using this data. I have also obtained data from several other resources which I will list separately.

For this project, I have chosen the following methods of showing my data:

* Deepnote
* Salesforce
* Tableau

**Contributor(s)**

This project was created by me with the aid and support of:

* Katia Punter- Python and coding resource

**Processes**

I utilized Github for project management to ensure completion of tasks.

**Final Analysis**

After examining all of the data presented, it is clear that my initial hypothesis was rather accurate. Pesticides and deforestation are leading causes of production issues**.**