

A stylized illustration of a beach scene. On the left, a surfboard with a purple body and two white diagonal stripes is partially visible. The background is a light blue sky with a single white cloud. Below the sky is a horizontal band of blue representing the ocean, with three white horizontal lines indicating waves. The foreground consists of orange sand dunes with two white five-pointed stars and several small orange dots scattered across them.

# BEACH WATER QUALITY



Hi!, I am  
'Timi  
Adejumo

# AGENDA

- ❖ **BUSINESS PROBLEM**
- ❖ **DATA UNDERSTANDING**
- ❖ **METHODS**
- ❖ **FINDINGS**
- ❖ **CONCLUSIONS**
- ❖ **FUTURE RESEARCH**



# STAKEHOLDERS: SURF CLUB





# BUSINESS PROBLEM

# IS IT SAFE TO SWIM TODAY?



OR





# ILLINOIS OCEAN TOURISM & RECREATION INDUSTRY

## WORTH \$4B GDP + 96K WORKFORCE AFFECTED BY BEACH CLOSURES

# DATA UNDERSTANDING:

**~59K SENSORS READINGS (2013-2017)**

- CHICAGO DATA PORTAL
- OFFICE FOR COASTAL MANAGEMENT



# MACHINE LEARNING MODELS

PREDICTIVE

**LOGISTIC  
REGRESSION**

MODELING

**Maximum  
Accuracy  
~95%**

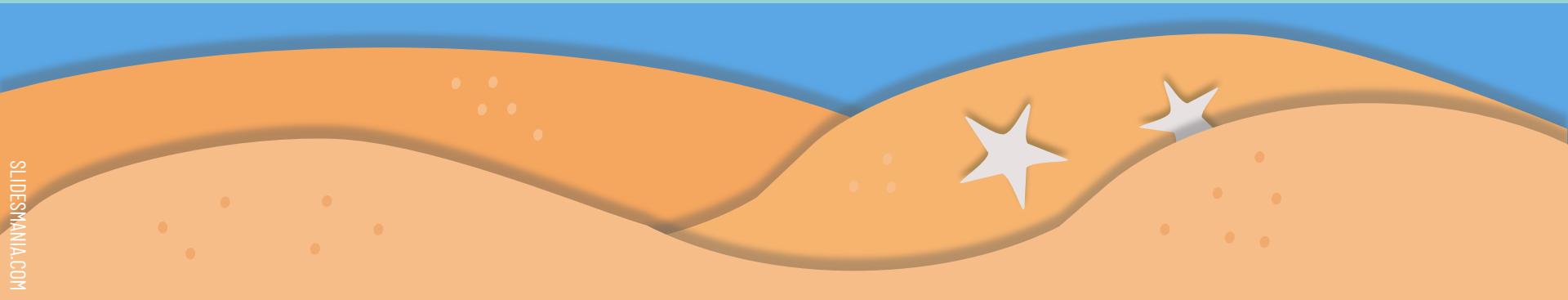
INFERENTIAL

**DECISION  
TREE**


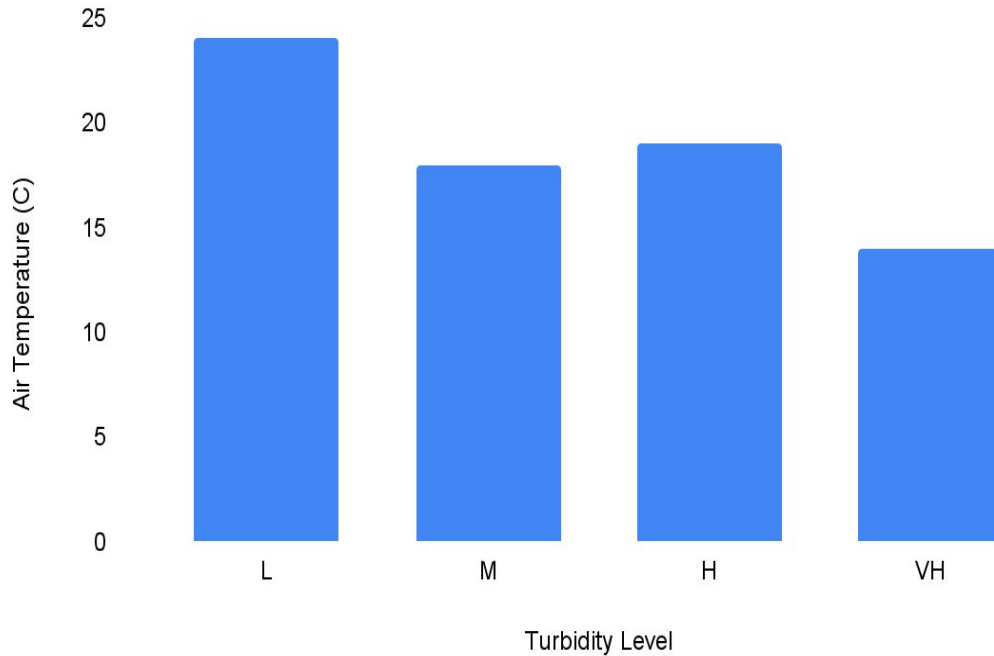
# MACHINE LEARNING MODELS:

**MAXIMUM ACCURACY**

**~ 95%**

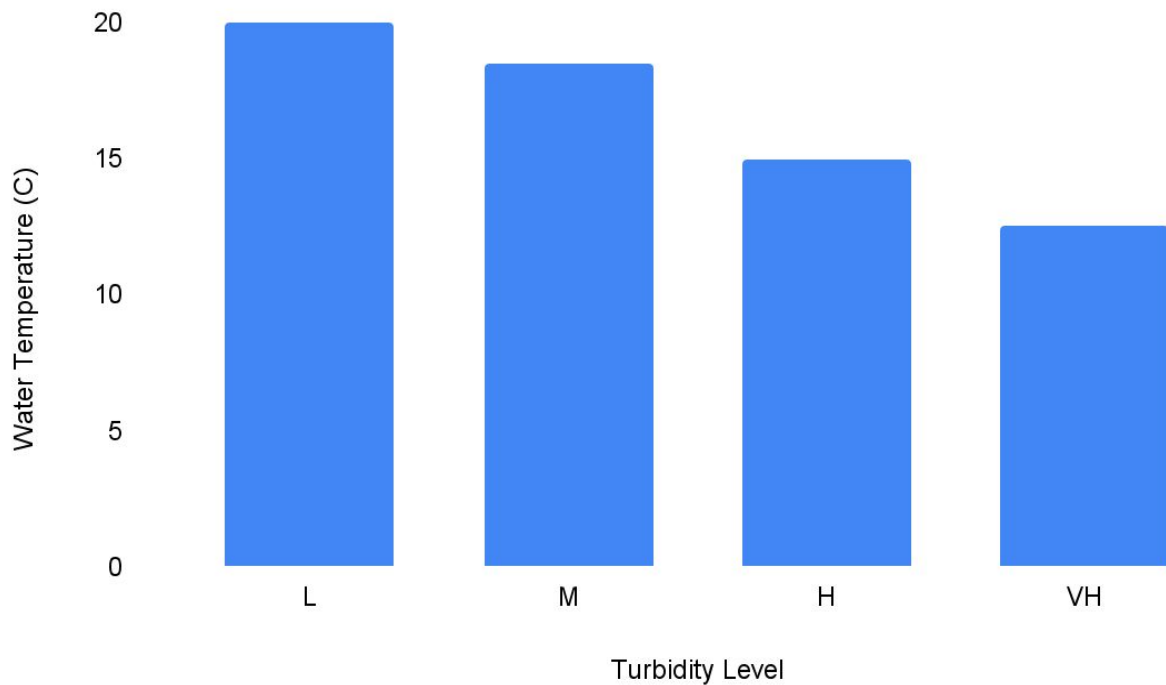


Air Temperature (C) vs. Turbidity Level



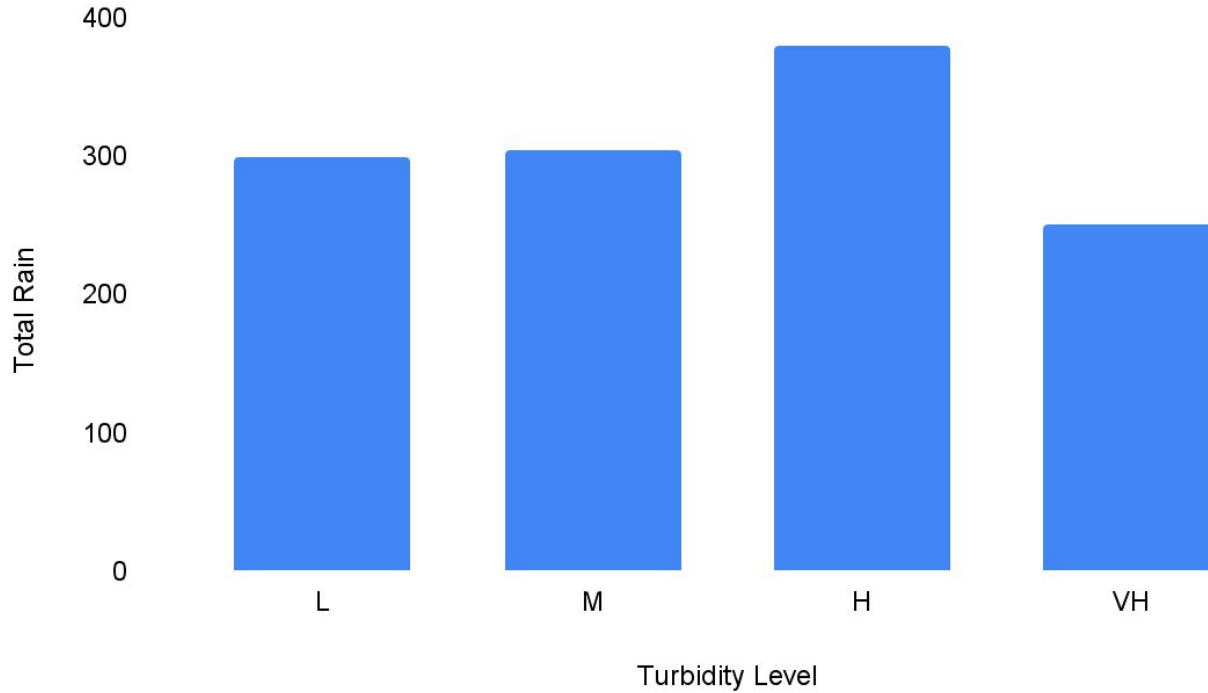
AIR TEMPERATURE  
VS.  
TURBIDITY LEVEL

## Water Temperature (C) vs. Turbidity Level



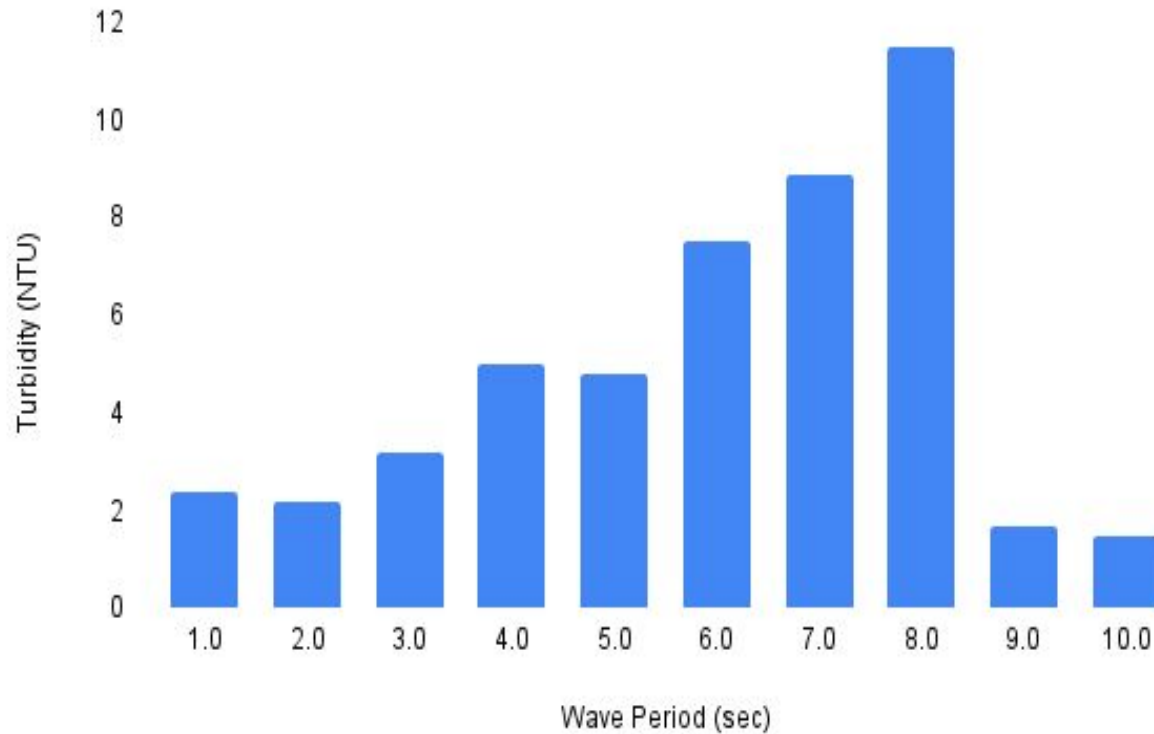
TURBIDITY  
LEVEL VS.  
WATER TEMP

Total Rain vs. Turbidity Level



TOTAL RAIN  
VS.  
TURBIDITY  
LEVEL

Turbidity (NTU) vs. Wave Period (sec)



**TURBIDITY (NTU)**  
**VS.**  
**WAVE PERIOD(sec)**

# CONCLUSIONS:

- REDUCED SAMPLING TIME  
4HRS → 1HR
- SAFER BEACHES







# FUTURE RESEARCH

- **ENSEMBLE MODELS**
- **ARTIFICIAL NEURAL NETWORKS**



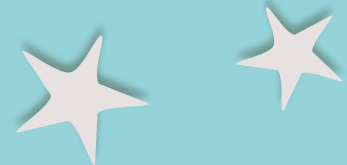




# THANK YOU!



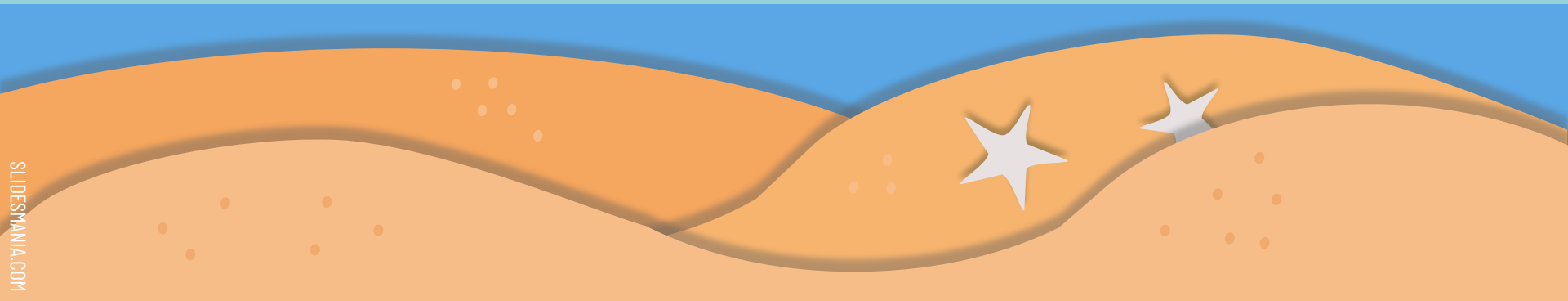
**‘Timi Adejumo**  
(Data Science Graduate, Flatiron School)



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