DIABETES IN USA: PUBLIC HEALTH LED BY DATA

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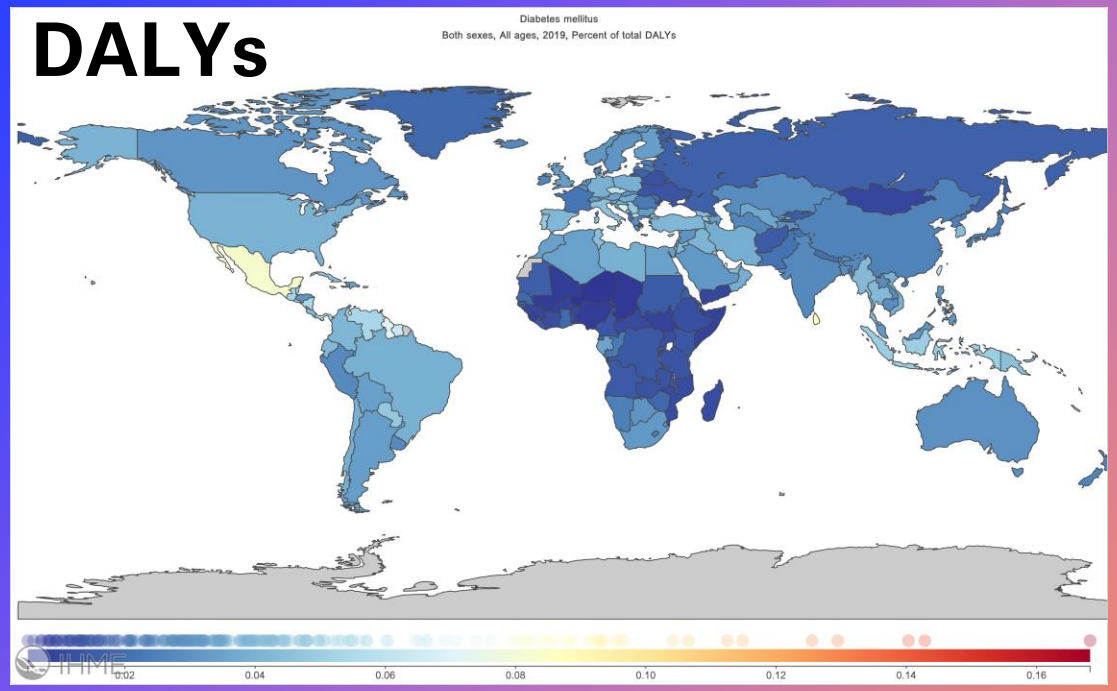
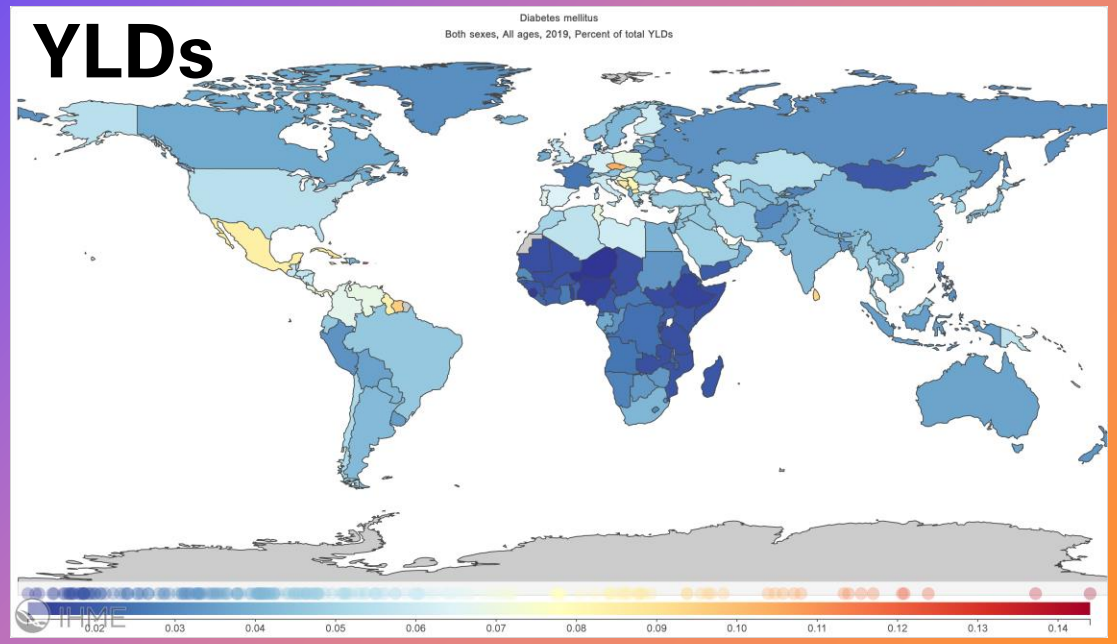




Diabetes: By the Numbers

- **Global DALYs proportion:** 2.79%
- **Diabetes in USA:**
  - **Deaths:** 2.64%
  - **YLD:** 5.50%
  - **DALYs:** 4.01%
- Diabetes affect **life with disability** more than **cause of death**

Our Goal: To **better target cheap and effective public health programs** before and after diabetes diagnosis using **data science techniques**

Essential Questions: Non-Predictive

1. Which **demographics** are most likely to **develop diabetes**?
2. What **measurable bodily attributes** suggest the presence of diabetes?
3. How are diabetes patients' **blood glucose levels tracked in real time**?
4. Are **certain regions** of the United States **more affected** by diabetes than others?
5. Does **food scarcity** impact diabetes incidence?

Essential Questions: Predictive

1. Can we **predict diabetes diagnoses** based on readily available **medical vitals** (e.g., blood pressure, blood mineral levels, BMI)?
2. Can we **predict blood glucose levels** of Type-1 diabetes patients **at least 30 minutes ahead** of time to **warn** them about **potential hazardous spikes**?

Our Approach

Visualizations: Demographic Exploration of Diabetes

Data Streaming: Real Time Blood Glucose Streaming

Machine Learning: Prediction of Diabetes from Medical Vitals

Deep Learning: Prediction of Blood Glucose Levels 30 Min in Future

(Transition to Dashboard)

Suggested Action

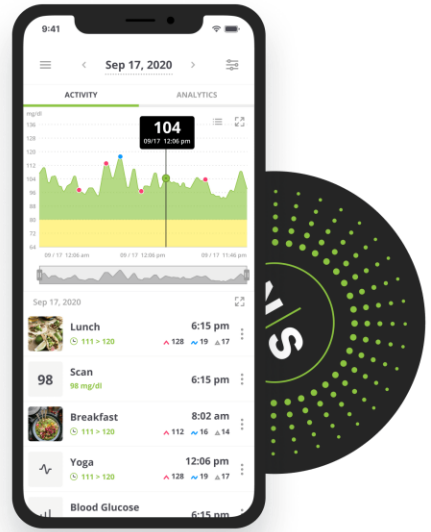
Pre-Diagnosis Care

- Fund **food programs** that **increase** consumption of **home cooked meals**
- Focus diabetes **public outreach** to **Southeastern states**
- Create a **public marketing campaign** around **yearly BMI calculations** in **40+ year olds** as an **at-home diabetes risk check**

Post-Diagnosis Care

- Improve technologies that track blood glucose levels in real time
- Improve **automated prediction** and **feedback** for diabetes patients, especially at **hazardous blood glucose levels**

Example Device to Use Smart Models:
NutriSense Continuous Glucose Monitor



QUESTIONS!