



uOttawa

# E-Hospital: Data Analysis & Visualization for Chronic Diseases

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DTI 6302 - Final Presentation

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# PROJECT OVERVIEW

## Project Objectives:

- Enhance the E-Hospital app by providing actionable data analysis and visualizations for chronic diseases.
- Empower healthcare professionals and patients with data-driven insights for better diagnosis of chronic disease and enhance primary care.

## Phases & Outcomes:

- **MVP Phase:** Focused on heart disease, delivering dashboards for risk assessment, lifestyle recommendations, and management of complex cases.
- **Final Phase:** Expanded to include analysis for diabetes and lung cancer & Integrated the analysis and visualizations into the E-Hospital app for effective use by healthcare providers.



# EXPANSION OF ANALYSIS & VISUALIZATION

## DIABETES ANALYSIS:

### Data Insights:

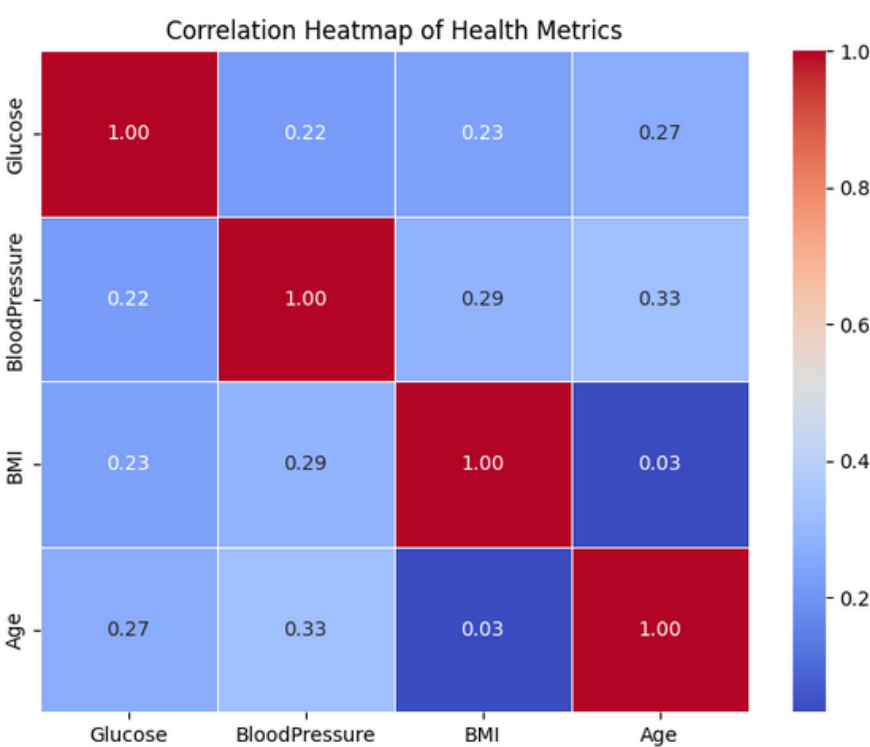
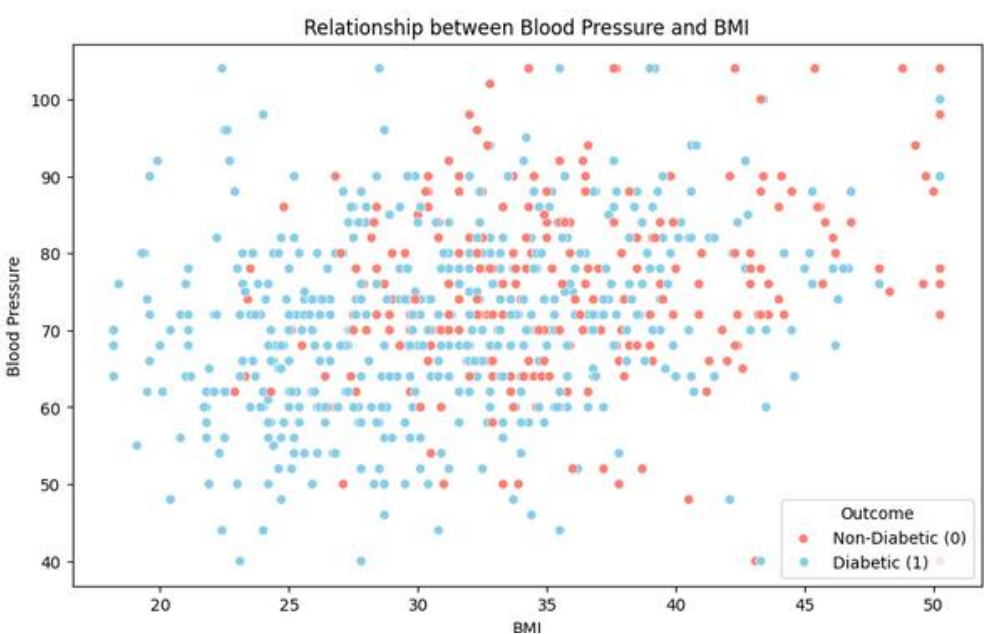
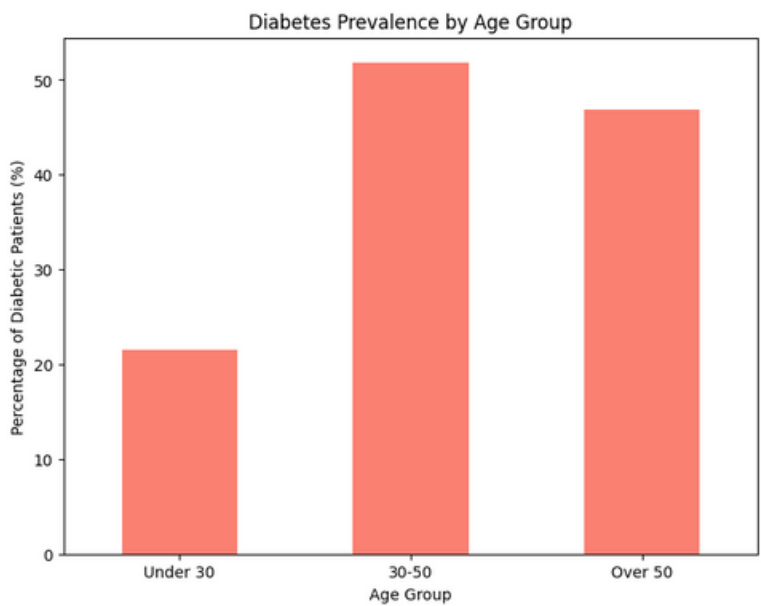
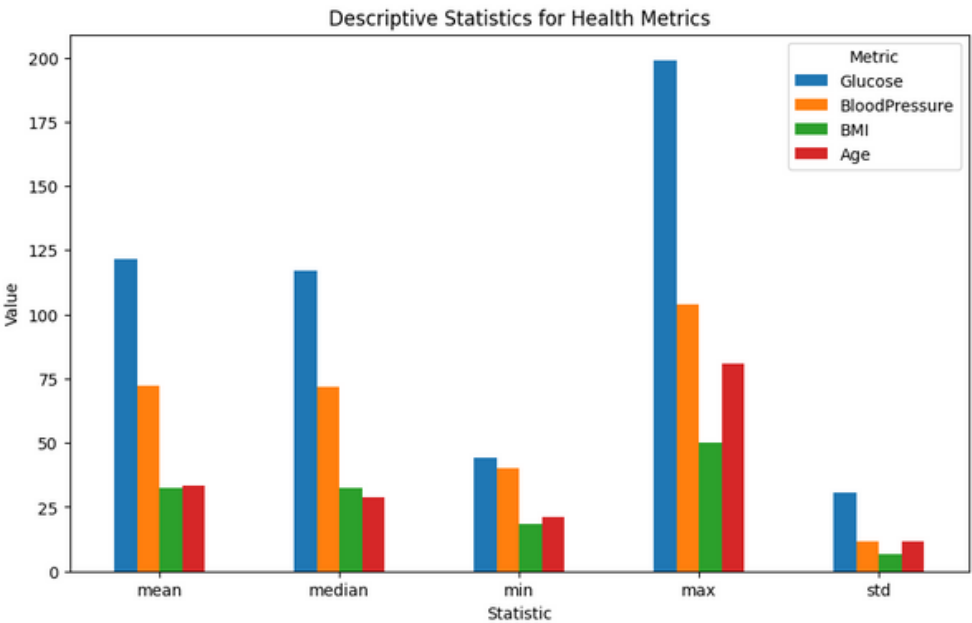
- Risk Factors: Elevated glucose, BMI, and blood pressure.
- Demographics: Age group **30–50** shows the **highest diabetes prevalence**.
- Thresholds:
  - Pre-Diabetic glucose levels: **68.5%** diabetes prevalence.
  - Obese BMI category: **45.8%** diabetes prevalence.

### Key Findings:

- Glucose and BMI are the strongest indicators for diabetes.
- Correlation observed between BMI and blood pressure.

### Implications for Healthcare:

- **Targeted Screening:** Focus on individuals with pre-diabetic glucose levels and obese BMI.
- **Preventive Care:** Encourage lifestyle modifications (e.g., diet, exercise) in high-risk age groups (30–50).
- **Personalized Treatment:** Tailored plans for patients with coexisting high BMI and blood pressure.
- **Long-Term Management:** Continuous monitoring for glucose and BMI levels.





# EXPANSION OF ANALYSIS & VISUALIZATION

## LUNG CANCER ANALYSIS:

### Data Insights:

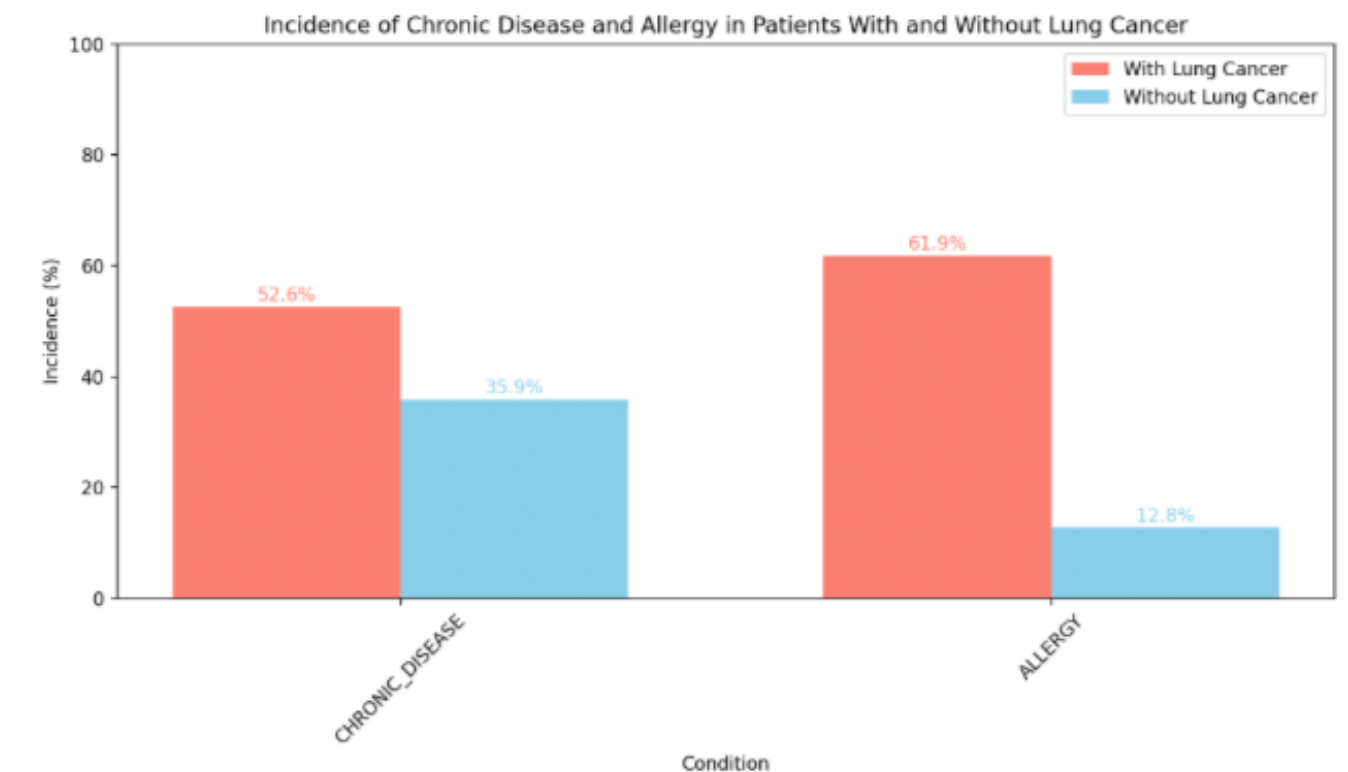
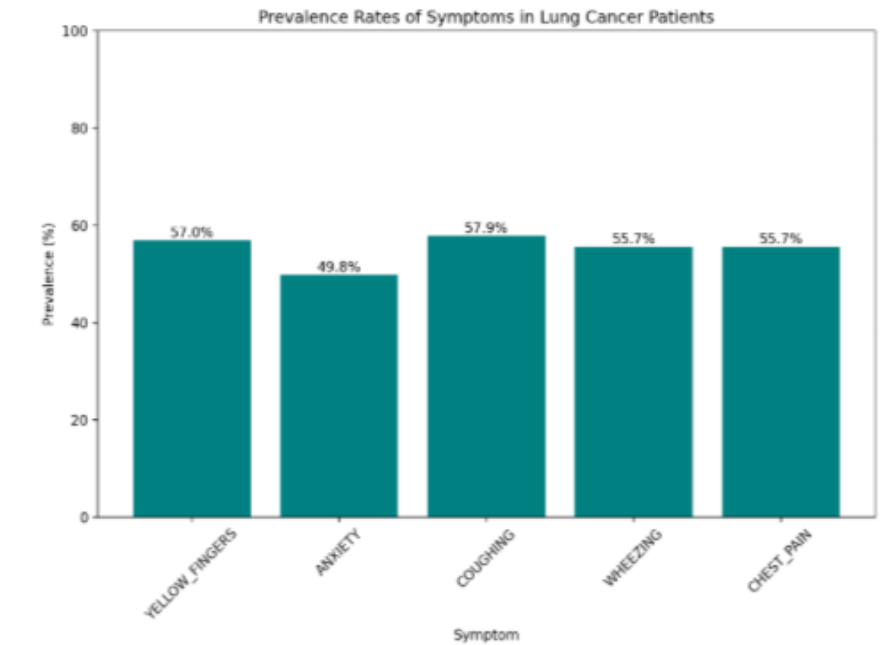
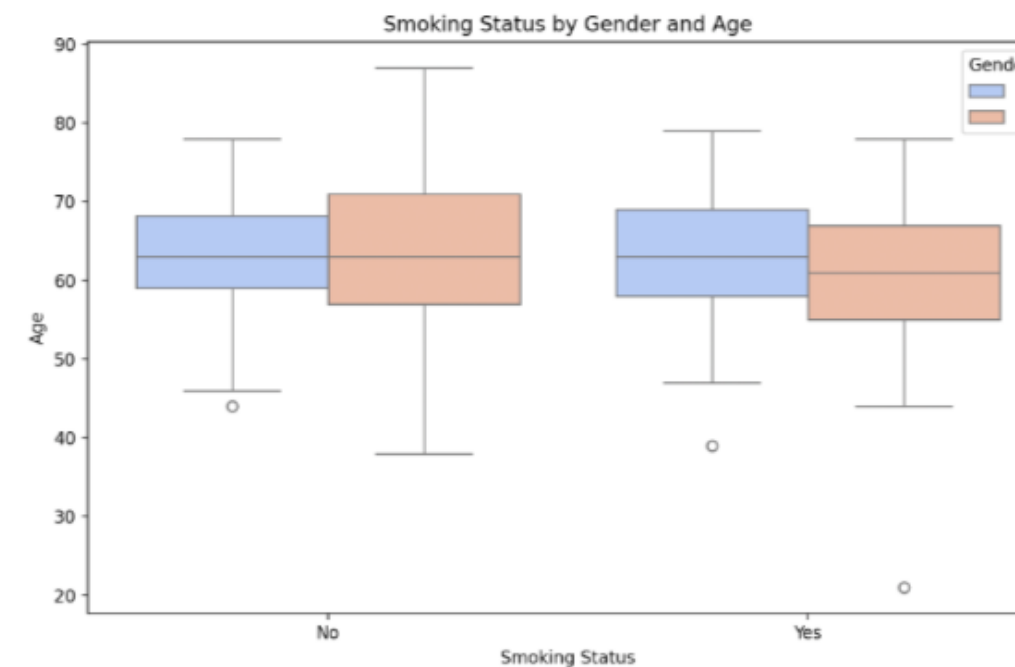
- Key Risk Factors: Smoking, age (50–70), symptoms (e.g., coughing, chest pain).
- Demographics: Slightly higher prevalence in men.
- Symptoms: ~60% prevalence for **coughing** and **yellow fingers** in lung cancer patients.
- Comorbidities: Chronic diseases (52.6%) and allergies (61.9%).

### Key Findings:

- Smoking is the leading cause of lung cancer.
- Coughing, wheezing, and yellow fingers are critical indicators for lung cancer.
- High prevalence of multiple symptoms and comorbidities.

### Implications for Healthcare:

- **Focused Screening:** Prioritize older smokers (50–70) with specific symptoms (e.g., coughing, wheezing).
- **Symptom-Based Detection:** Use prevalent symptoms (e.g., chest pain, yellow fingers) for early diagnosis.
- **Integrated Care:** Develop multi-disciplinary care plans addressing lung cancer along with comorbidities such as chronic diseases (e.g., diabetes, hypertension) and allergies.



# INTEGRATION INTO E-HOSPITAL

localhost:3000/doctor/dashboard

Pages / Dashboard

**Hello Dr.Smith,**  
Have a good day at work.

**Patients Appointments** Today ≡ 🔍

Patient ID	Name	Age	Visit Type	SCHEDULED TIME	STATUS
Sorry, no matching records found					

Rows per page: 10 0-0 of 0 < >

**Diagnose** **General Services**

**Calendar** 2024 Nov

Su	Mo	Tu	We	Th	Fr	Sa
27	28	29	30	31	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
1	2	3	4	5	6	7

**Upcoming Tasks**

No data

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# FUTURE SCOPES

01

## Broader Disease Coverage

Extend analysis to other chronic conditions like cancer, hypertension, and arthritis.

02

## Integration of Predictive Analytics

Leverage machine learning to predict disease outcomes and trends.

03

## Enhanced User Experience

Develop interactive dashboards for both patients and doctors.

04

## Cross-Institutional Collaboration

Share anonymized data insights to inform public health policies and research.

# BENEFITS

## For Doctors:

01

- **Improved diagnosis:** Data-driven insights for identifying high-risk chronic disease patients.
- **Personalized care:** Actionable recommendations tailored to individual patients.
- **Enhanced efficiency:** Streamlined dashboards simplify complex data interpretation.

02

## For the Healthcare Sector:

- **Better resource allocation:** Insights help prioritize high-risk populations.
- **Improved preventive care:** Early detection reduces disease progression and complications.
- **Scalable model:** Framework can be expanded to other diseases.

# THANK YOU!

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*Our project showcases the transformative power of data-driven healthcare solutions, paving the way for more effective, and scalable care delivery systems.*

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