
DS-5110 FINAL PROJECT



HOSPITAL MANAGEMENT SYSTEM

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OBJECTIVE & GOALS

- ▶ Develop a comprehensive hospital management system for managing data of doctors, patients, nurses, and appointments
- ▶ Streamline hospital data management and daily operations
- ▶ Improve appointment handling
- ▶ Provide analytical insights to help Hospital administration improve their services





LITERATURE REVIEW

Overview of existing hospital management systems

- ▶ Traditional paper-based systems: Limited efficiency and prone to errors
- ▶ Early digital systems: Focused on patient records and billing
- ▶ Modern integrated systems: Combine various modules but often complex and expensive



LITERATURE REVIEW

How this project builds upon and improves existing solutions

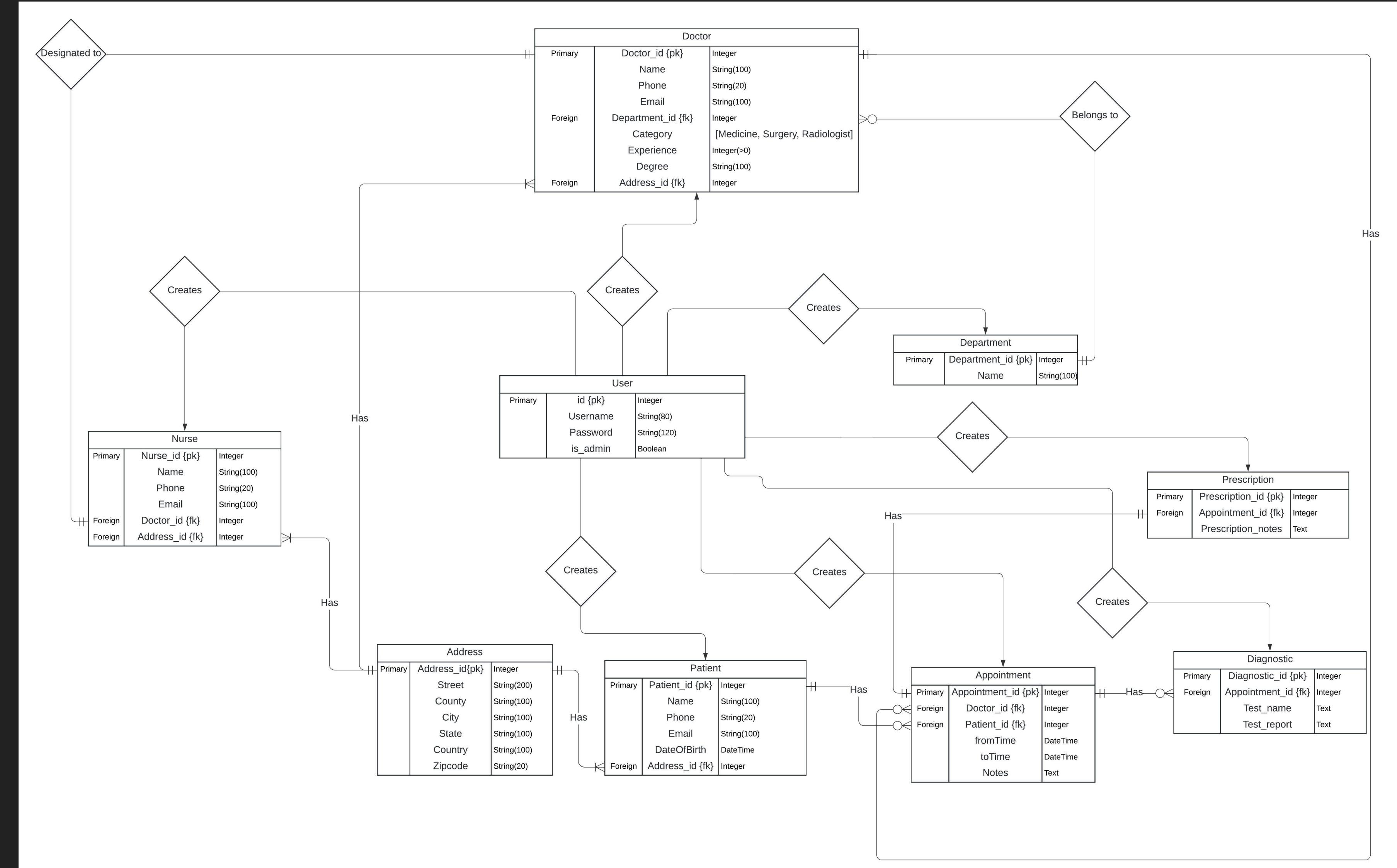
- ▶ User-friendly interface for all stakeholders (doctors, nurses, admin staff)
- ▶ Focus on appointment management to improve patient experience
- ▶ Built-in conflict resolution for scheduling, reducing administrative overhead
- ▶ Integration of analytics for data-driven decision making
- ▶ Comprehensive yet modular approach, allowing for easy scalability

TECH STACK

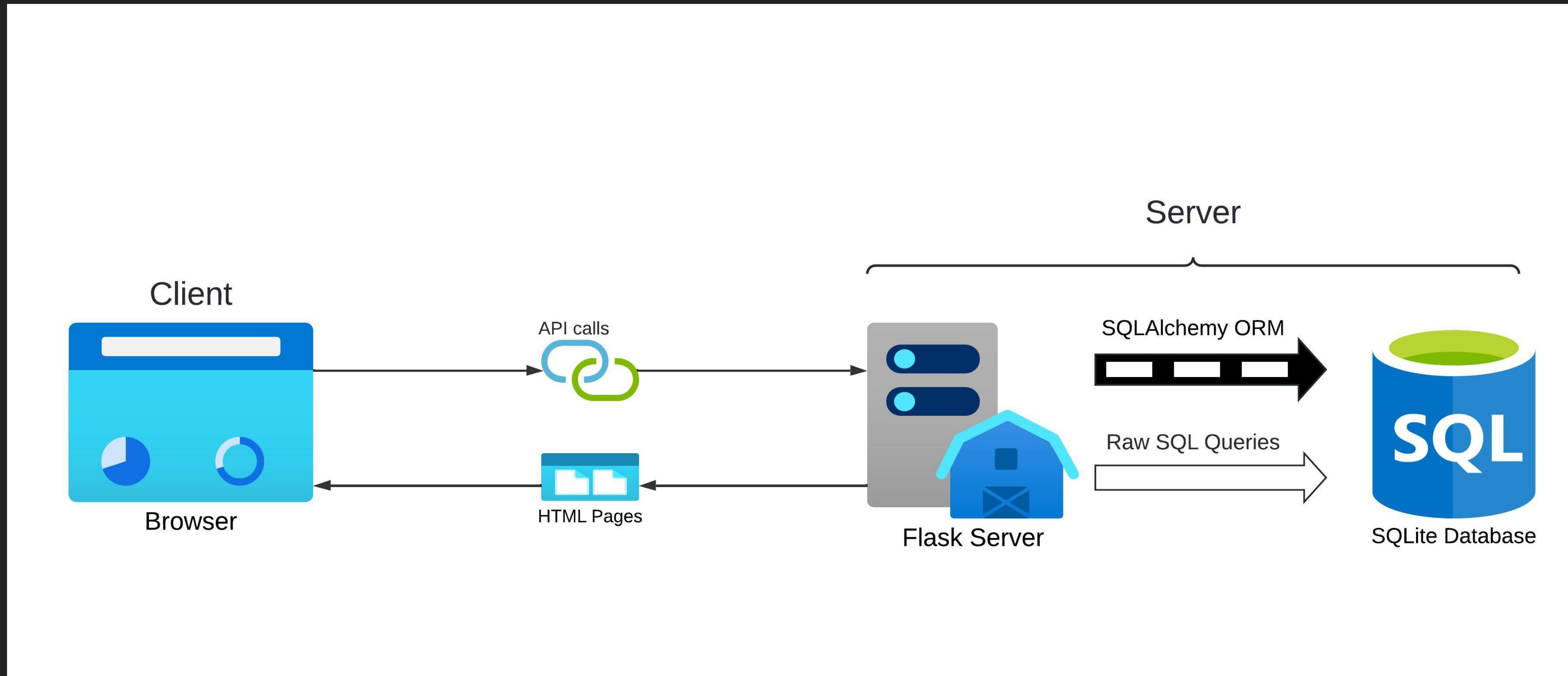
- ▶ Flask for web application and APIs
- ▶ HTML and Jinja for frontend
- ▶ SQLAlchemy with SQLite for database management
- ▶ Dash and Plotly for analytics integration

ER DIAGRAM

- ▶ Departments
- ▶ Doctors
- ▶ Nurses
- ▶ Appointments
- ▶ Prescription
- ▶ Appointments
- ▶ Prescription
- ▶ Diagnostics
- ▶ Address
- ▶ Users



APPLICATION ARCHITECTURE



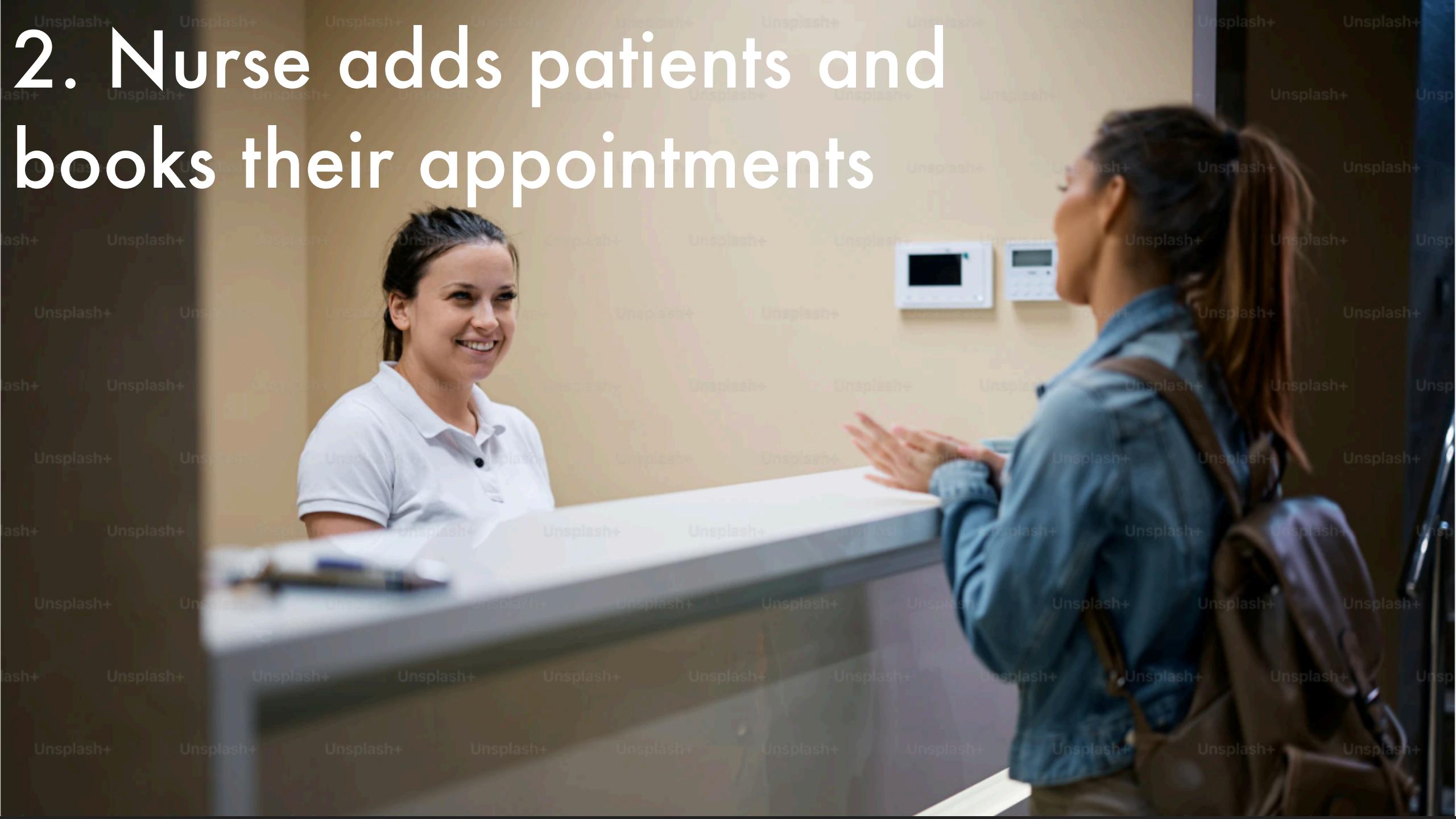
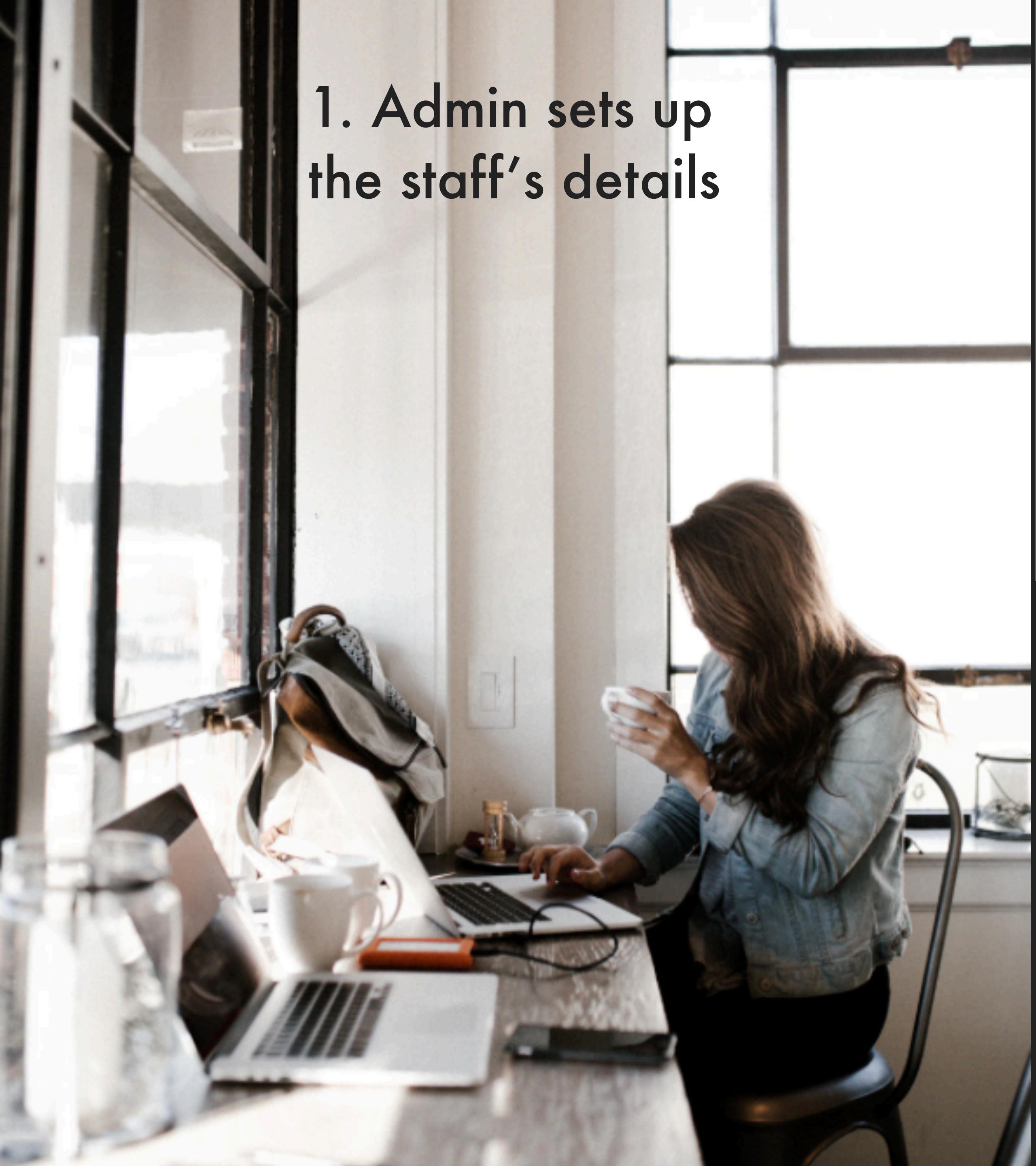
DEMONSTRATION





HOW DOES IT WORK?

**1. Admin sets up
the staff's details**



**3. Doctor conducts
appointments**

4. Doctor adds prescription and diagnostic scans



6. Patient visits again and gets an appointment scheduled



5. Patient gets the diagnostics done, nurse then updates appointment with the diagnostic reports



9. Hospital Administration can easily decide on adding a doctor or staff seeing the trends, their popularity among patients, critical department



7. Patient revisits, doctor pulls up appointment notes and reads them diagnostic reports



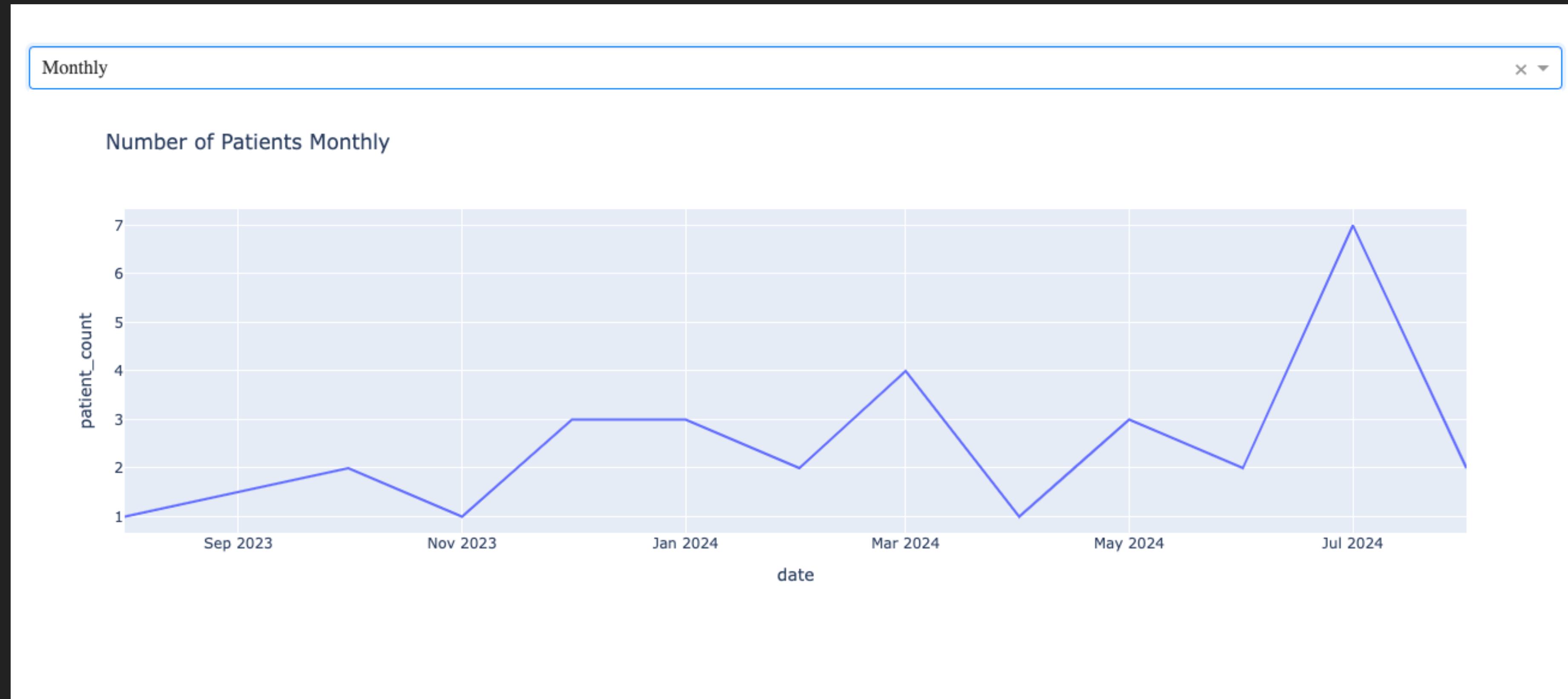
8. Meanwhile, we prepare analytics from data and show using the dashboard



ANALYTICS & INSIGHTS

Patient trends (daily/monthly/yearly)

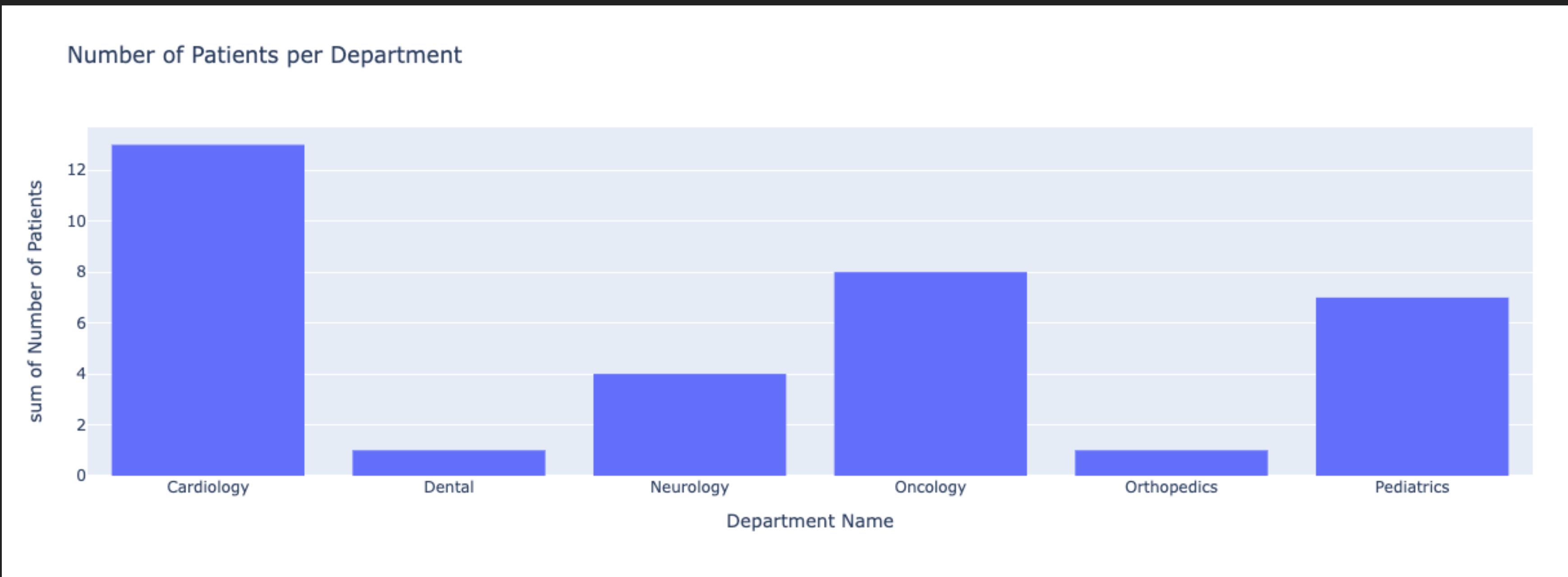
- ▶ Line graph showing daily/monthly/yearly patient volume
- ▶ Identifies peak times and trends to optimize staffing and resources



ANALYTICS & INSIGHTS

Department workload distribution

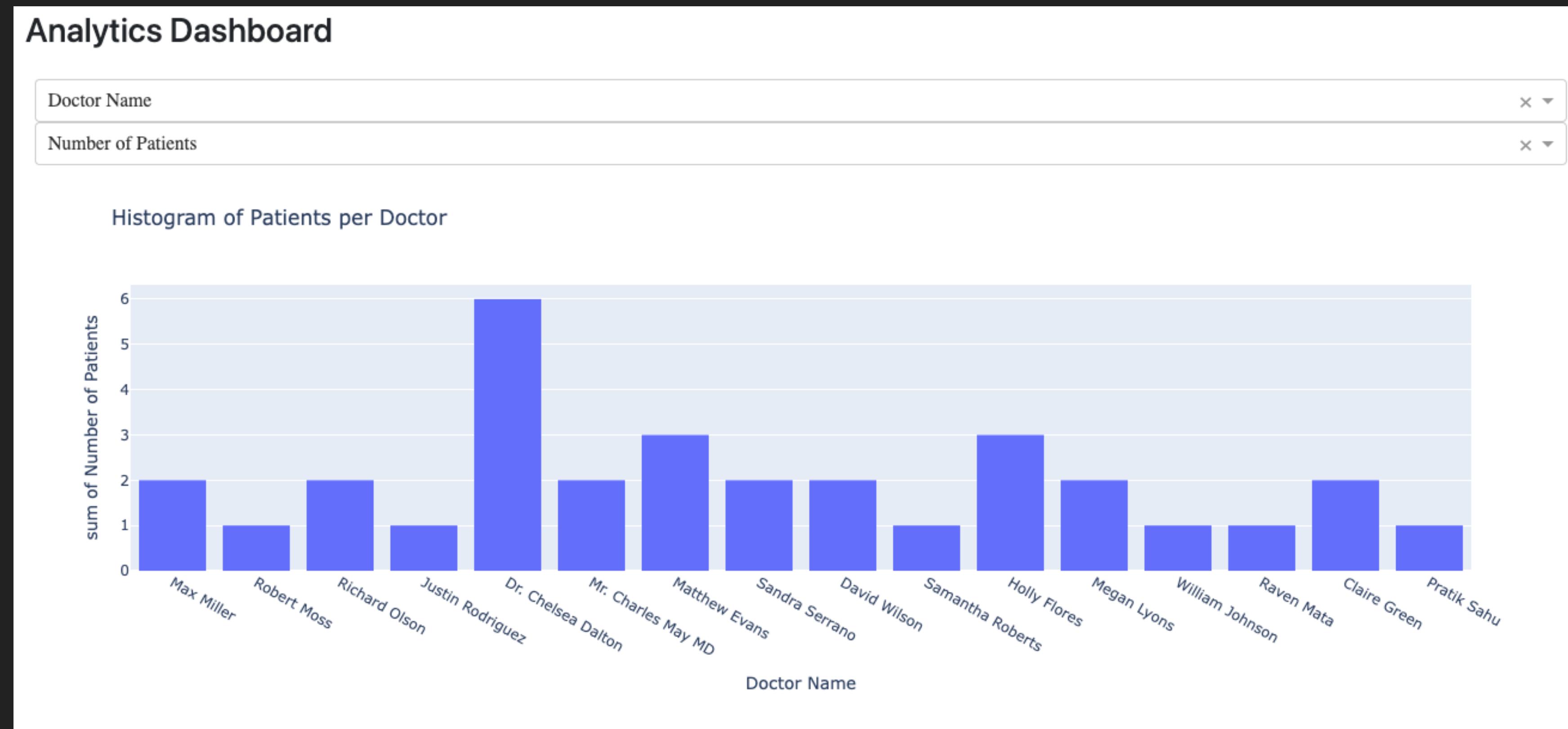
- ▶ Histogram displaying patient distribution across departments
- ▶ Highlights busiest areas and potential resource allocation needs



ANALYTICS & INSIGHTS

Doctor workload distribution

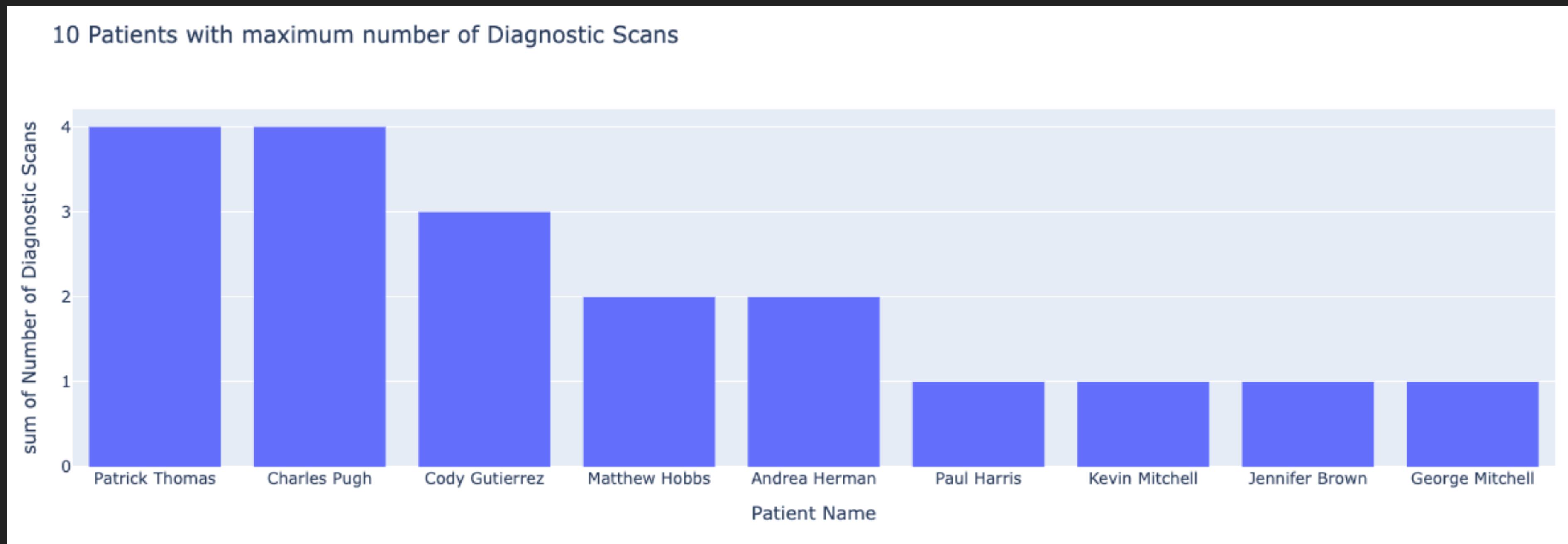
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- ▶ Highlights busiest areas and potential resource allocation needs



ANALYTICS & INSIGHTS

Diagnostic Trends

- ▶ Histogram of patients with most frequent diagnostics
- ▶ Helps identify common health issues and high-need patients



REFERENCES

- ▶ <https://flask.palletsprojects.com/en/3.0.x/>
- ▶ <https://hackersandslackers.com/plotly-dash-with-flask/>
- ▶ <https://getbootstrap.com/docs/5.3/getting-started/introduction/>
- ▶ <https://flask-sqlalchemy.palletsprojects.com/en/3.1.x/>



HAPPY TO
ANSWER
ANY
QUESTIONS

TANK
YOU!

