

# Improving Patient Access for an Outpatient Endocrinology Clinic

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CENTER FOR  
HEALTHCARE ENGINEERING & PATIENT SAFETY  
UNIVERSITY OF MICHIGAN

# My Collaborators

- Research Team

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# Presentation Outline

- Motivation
- Database
- Simulation
- Conclusions
- Future Work

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# Weight Management Program (WMP)

- Clinical and research program
  - Restricted medical admittance
- Identify strategies for long-term weight management for obese individuals



# WMP Description

- Referred by Physician
- New visit followed by return visits
- Must adhere to schedule

Timeline	Frequency
0 – 3 mo	3 wks
3 – 24 mo	3 mo



# Problem

- Current scheduling process and utilization
- Medical staff overworked
- Clinic overtime
- Affects research
- Apply IE skills to analyze
  - Database
  - Simulation



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# Database

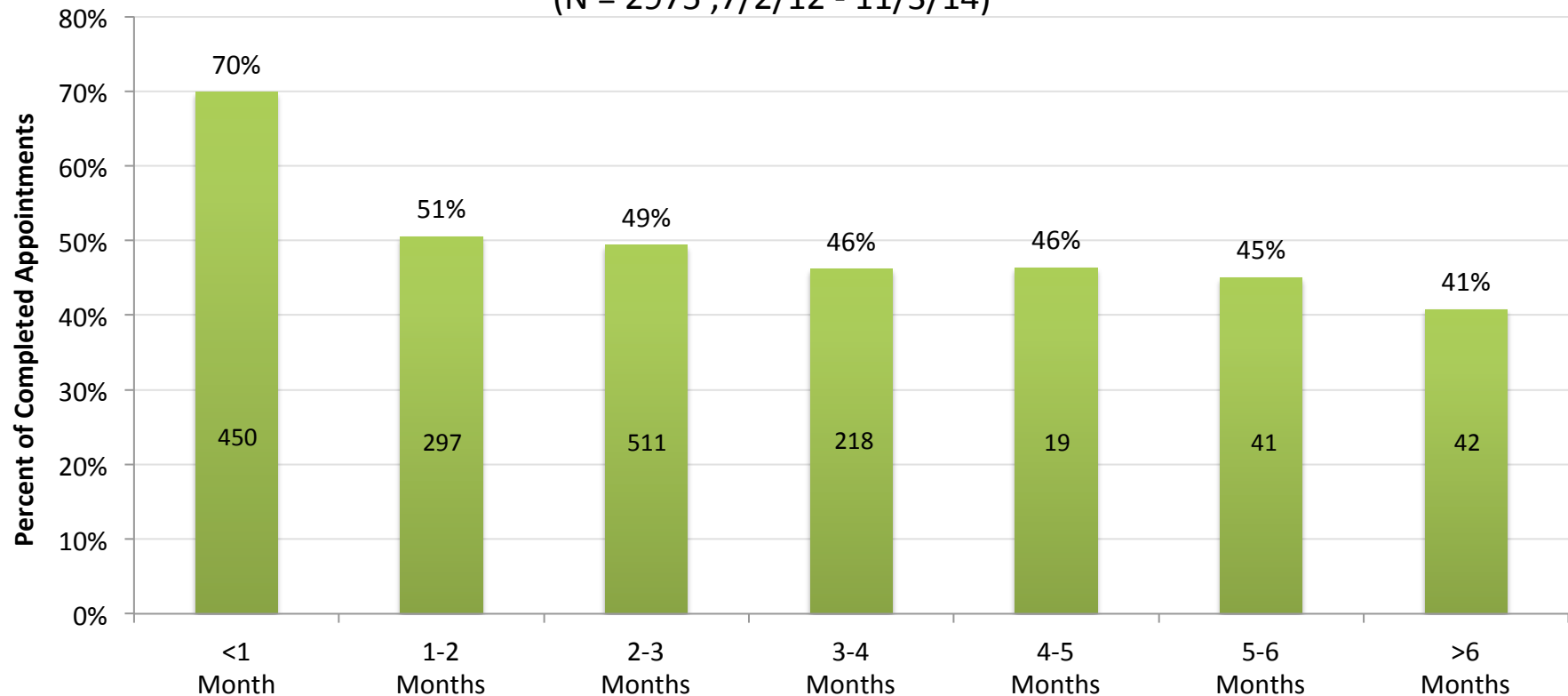
- Daily, year-long future reports
  - Create date
  - Appointment date
- See how the schedule evolves
- Challenges
  - Data
    - Obtaining the data
    - Patient, provider, and time perspective
  - Design
    - Future and past
- Still in progress



# What is the probability of keeping an appointment based on when it was scheduled?

## Percentage of Completed Appointments Based on Scheduled Date

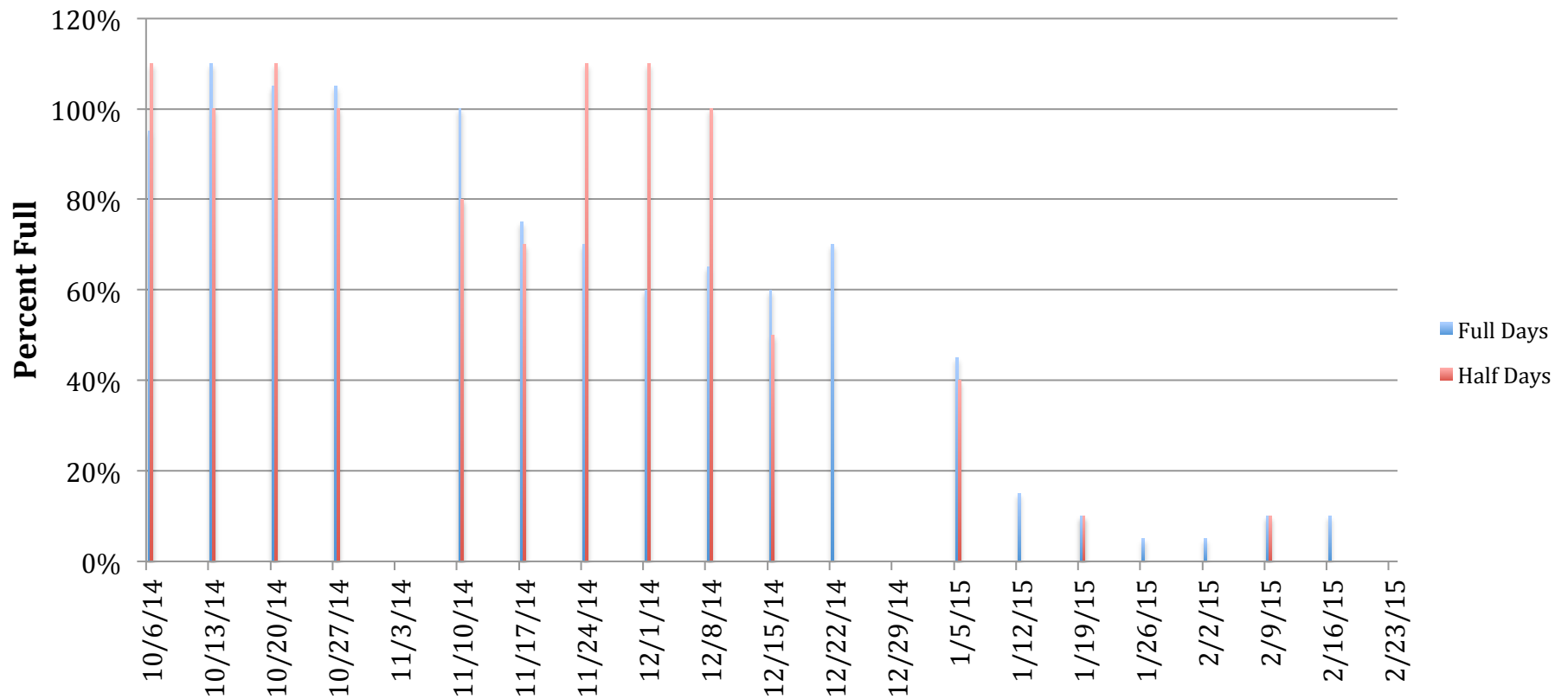
(N = 2975 , 7/2/12 - 11/3/14)



# What is the capacity as of today?

## Capacity as of October 6, 2014

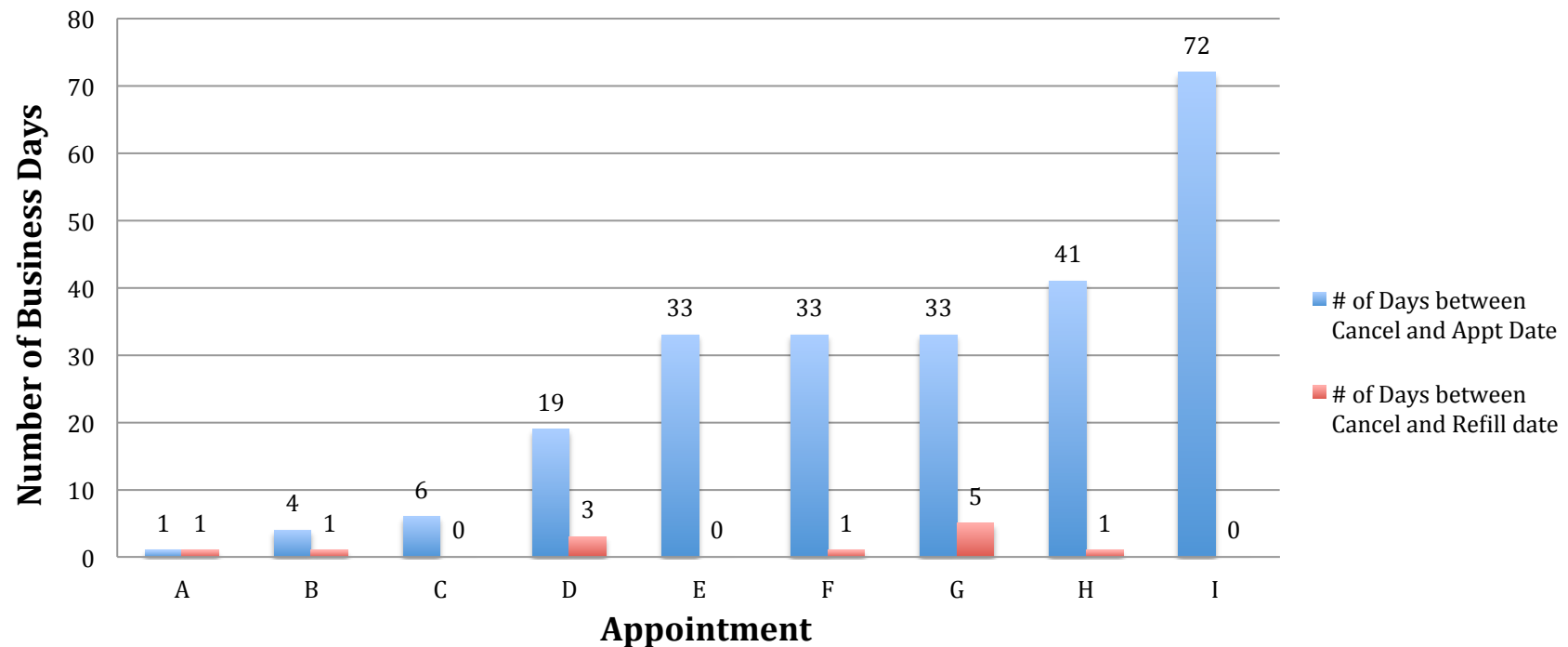
N = 51 Days



# How often is a canceled slot refilled?

Number of Cancellations	Number of Cancellations without Refill	Number of Cancellations with Refill
24	15	9

## Cancellation Refill Rate



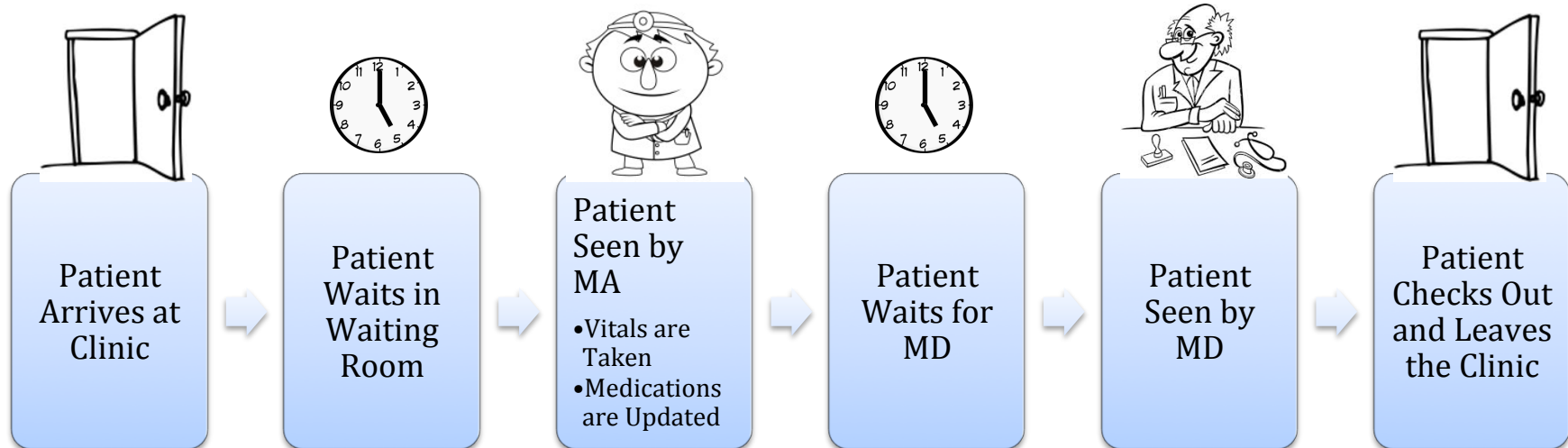


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# Process



# Simulation

Address the order in which patients are seen



# Scheduling Scenarios

<b>First Come First Service</b>	<ul style="list-style-type: none"><li>• Determined by arrival time</li></ul>
<b>First Scheduled First Serviced</b>	<ul style="list-style-type: none"><li>• Determined by scheduled time</li><li>• No-show if 30 minutes late</li></ul>
<b>Hybrid</b>	<ul style="list-style-type: none"><li>• Determined by scheduled time unless late</li><li>• Protected threshold</li></ul>



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# Conclusion

- Weight Management Program
- Ability to look into the past and the future
- Observed patterns in WMP

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# Future Work

- Database
  - phpMyAdmin
  - Larger scale analyses
  - Changes over time
- Optimal Scheduling procedures
  - Actual vs. requirements
    - Double booking
    - Distribution of slots
    - Reminder system
- Waitlist
  - Procedure
  - Refill canceled slots



# Acknowledgements

- Center for Healthcare Engineering and Patient Safety (CHEPS)
- The University of Michigan Metabolism, Endocrinology, and Diabetes (MEND) Clinic
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- The Doctors Company Foundation

# CHEPS and the HEPS Master's Program

- **CHEPS:** The Center for Healthcare Engineering and Patient Safety
- **HEPS:** Industrial and Operations Engineering (IOE) Master's Concentration in Healthcare Engineering and Patient Safety offered by CHEPS
- CHEPS and HEPS offer unique multidisciplinary teams from engineering, medicine, public health, nursing, and more collaborating with healthcare professionals to better provide and care for patients
- For more information, contact Amy Cohn at [amycohn@umich.edu](mailto:amycohn@umich.edu) or visit the CHEPS website at: <https://www.cheps.engin.umich.edu>



# Feedback and Questions

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