

# A Review of Dashboards for Data Analytics in Nursing

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# Disclosures and Conflict of Interest

- Author has no actual or potential conflict of interest in this presentation.
- No funding received for this work.

# Learning Objectives

- Describe the five basic properties of dashboards for data analytics
- Identify the limitations of using dashboards in the clinical setting

# What are Dashboards?



Data driven clinical decision support using graphical interface

Rapid, intuitive interpretation of large datasets using a visual graphical display

# Basic Properties of Dashboards

- ❑ Database integration
- ❑ Visual Properties
- ❑ Purpose
- ❑ Time focus
- ❑ Type of process measured



# Database Integration

- Standardized terminology needed
- Automation requires database integration
  - Manual retrieval of data can limit usefulness
- Multiple proprietary EHRs in an organization can limit the full potential of dashboards.

# Visual Properties

- Simple graphical formats for quick, intuitive interpretation
- Color coded  
(with standardized coding system)
- Traffic light coding system
- Engage all stakeholders in determining visual properties





# Purpose

- Benchmarking performance
- Notifications and warnings
- Predicting performance
- Performance feedback for CDS

Key Performance Indicators (KPI) often define the purpose.



# Time Focus

Past

Retrospective data analysis

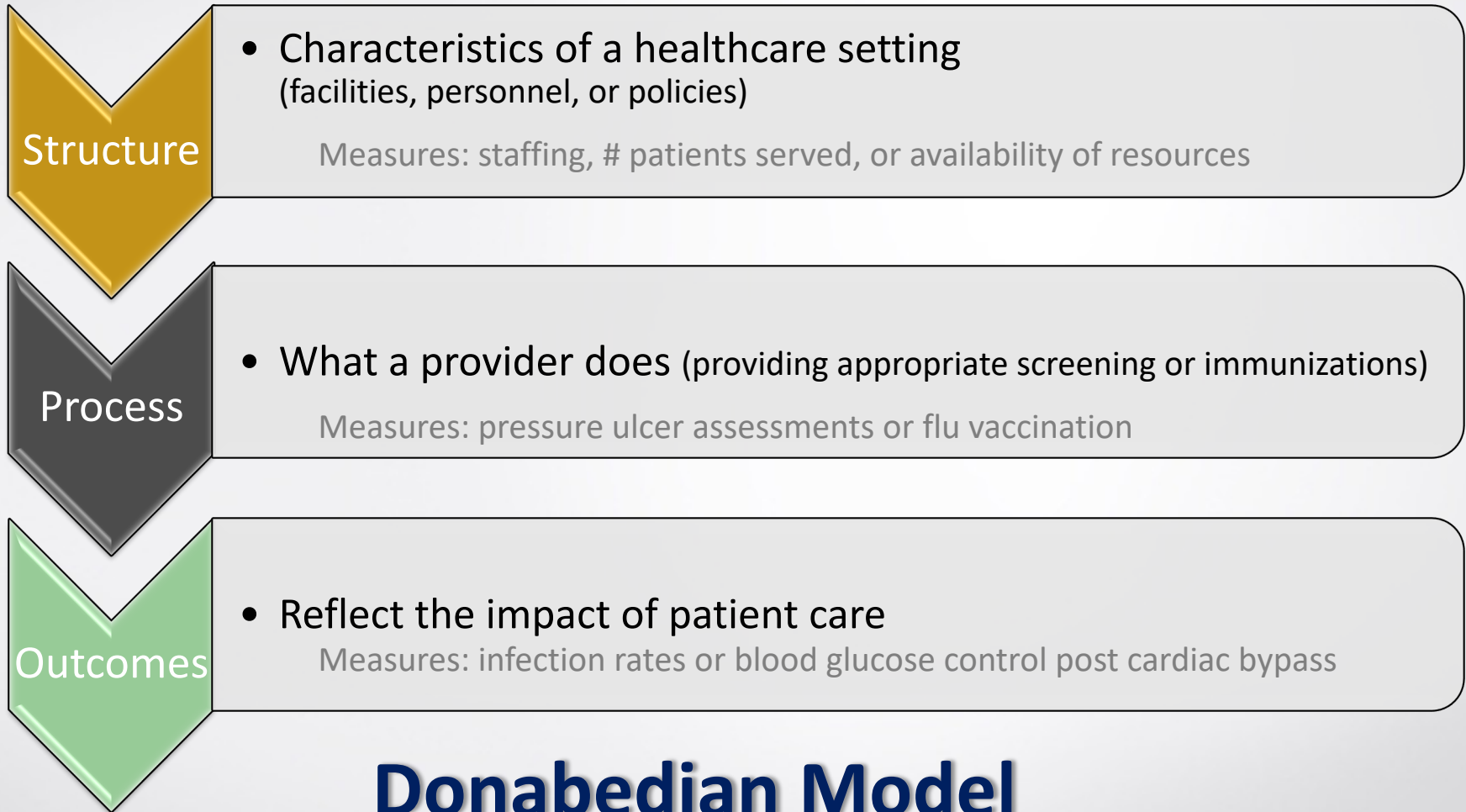
Present

Real-time notifications

Future

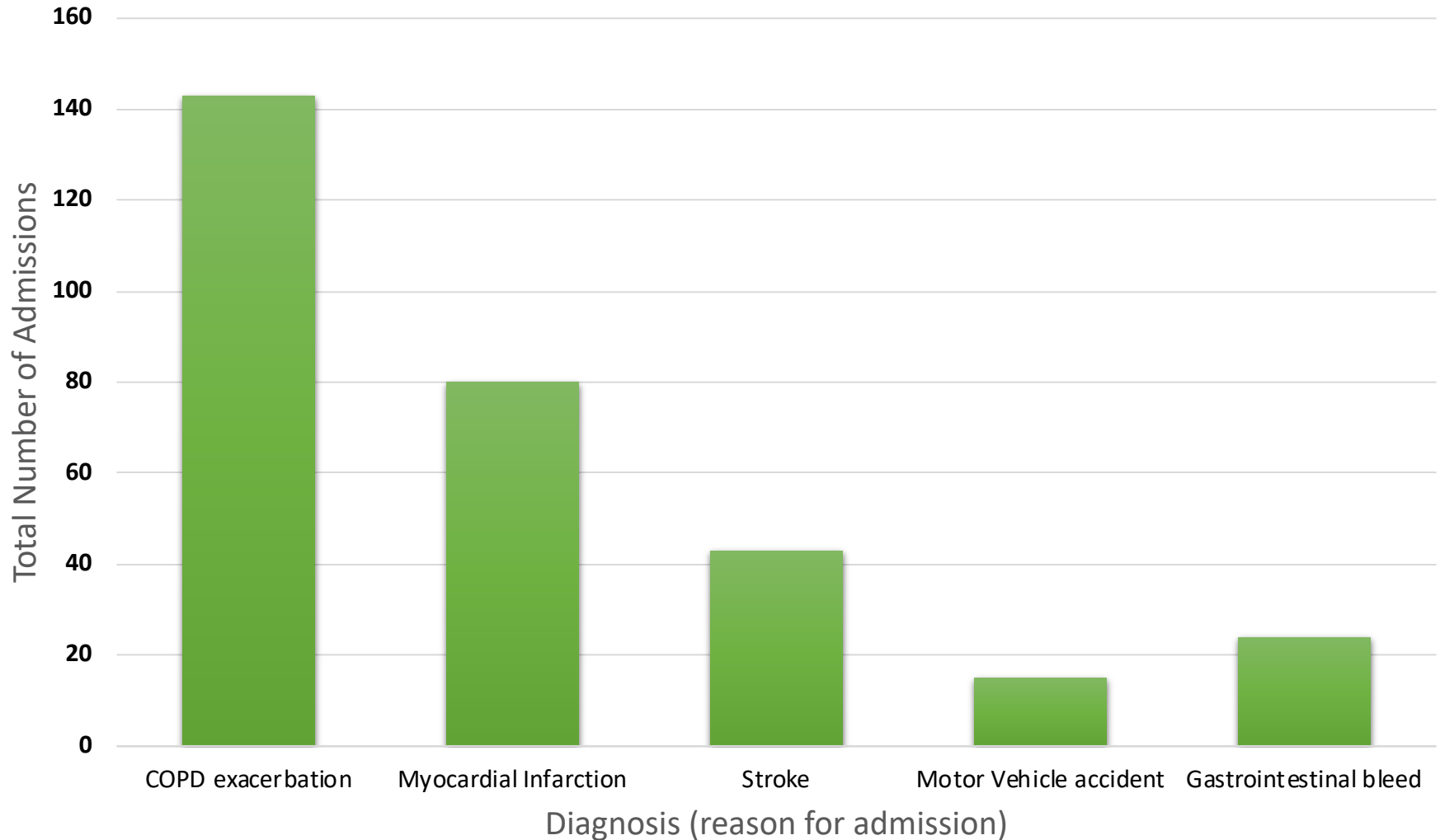
Predicting future performance

# Type of Processes Measured (QI)



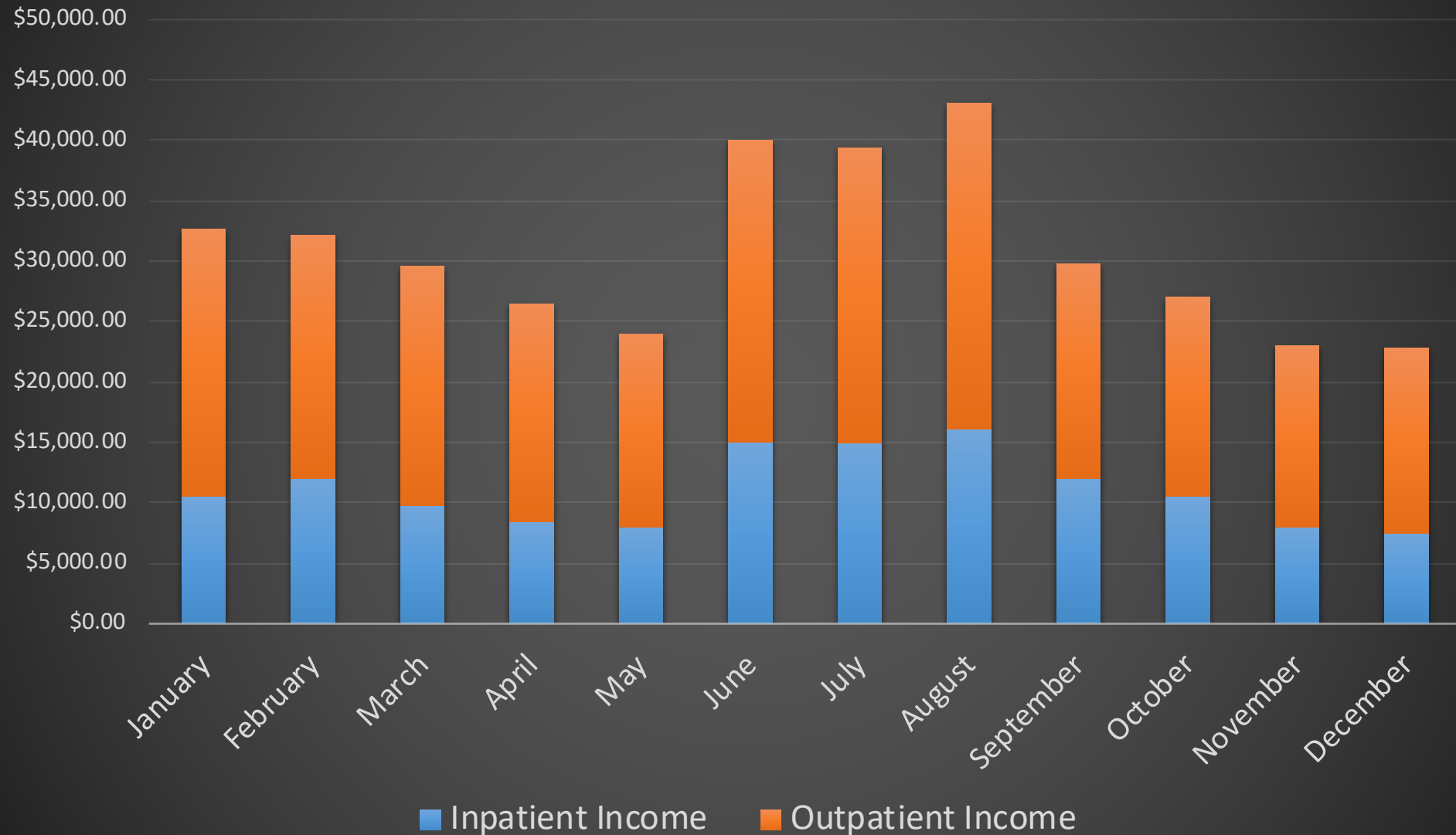
# Column Graph

## Number of Inpatient Admissions from Emergency Room



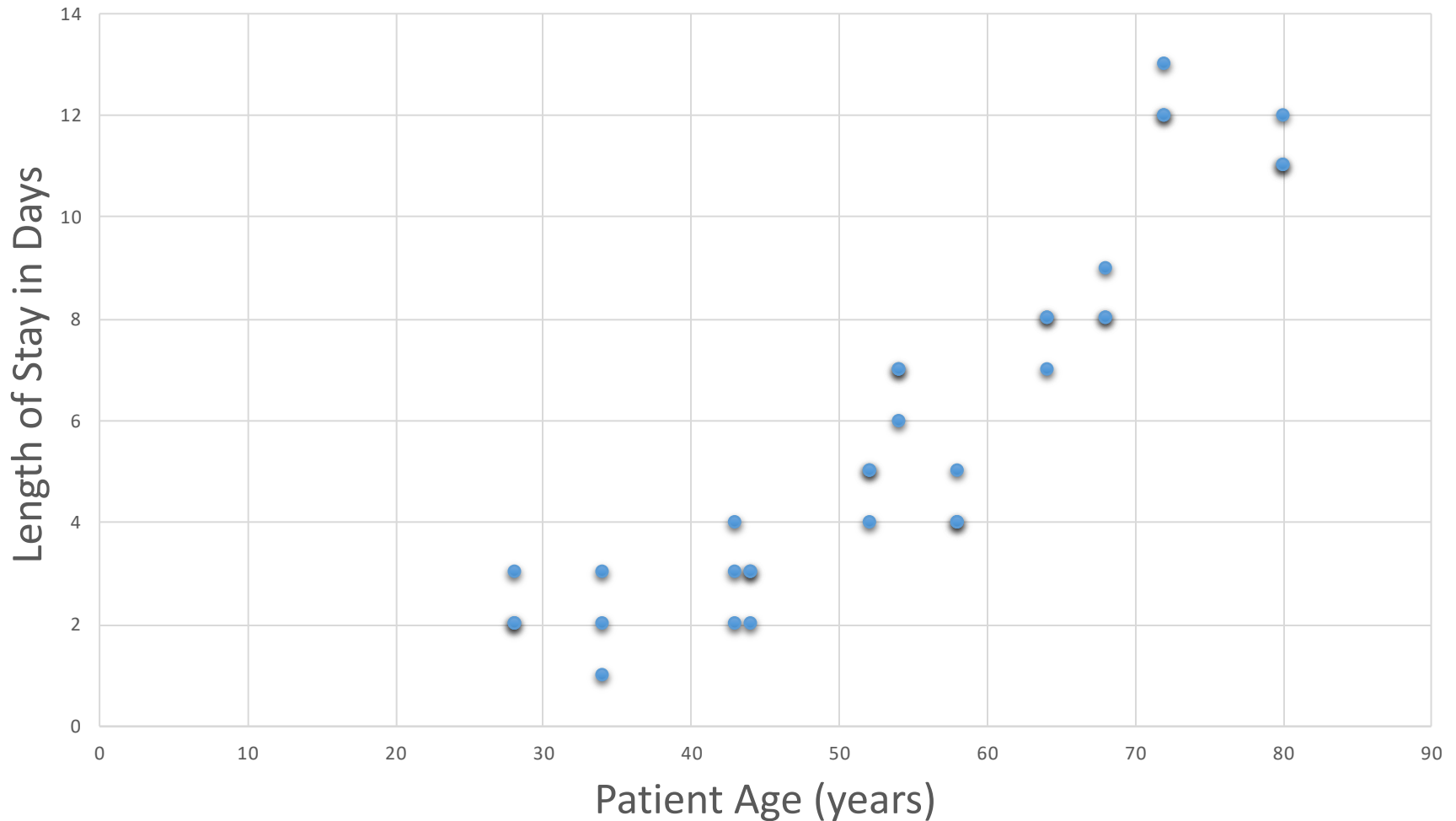
# Stacked Column Graph

## Inpatient & Outpatient Revenue



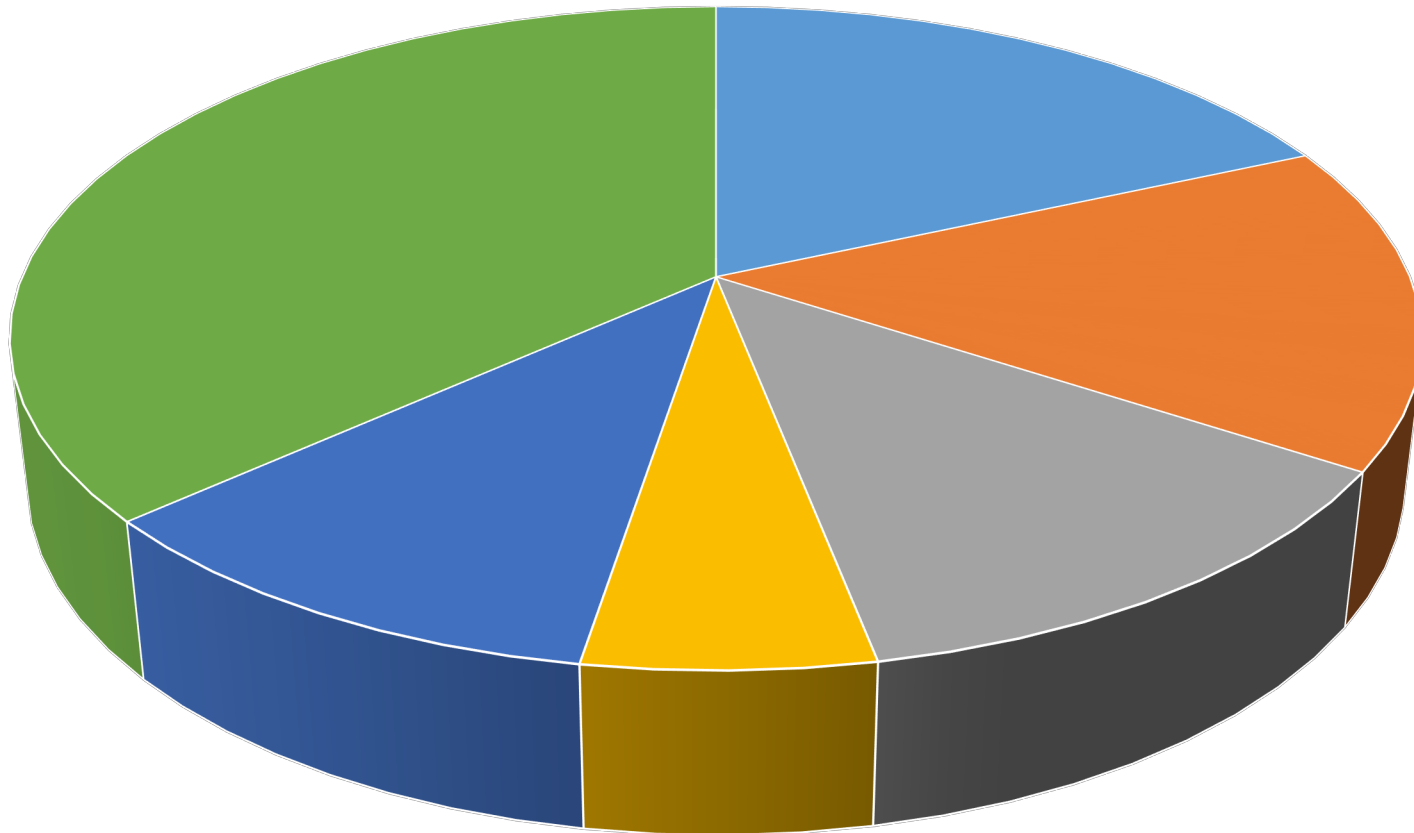
# Scatterplot Graph

Length of Hospitalization for Pneumonia



# Pie Graph

Number of Catheter Associated Urinary Tract Infections (CAUTI) for 2018



■ Medical Intensive Care Unit

■ Surgical Intensive Care Unit

■ Neurological Intensive Care Unit

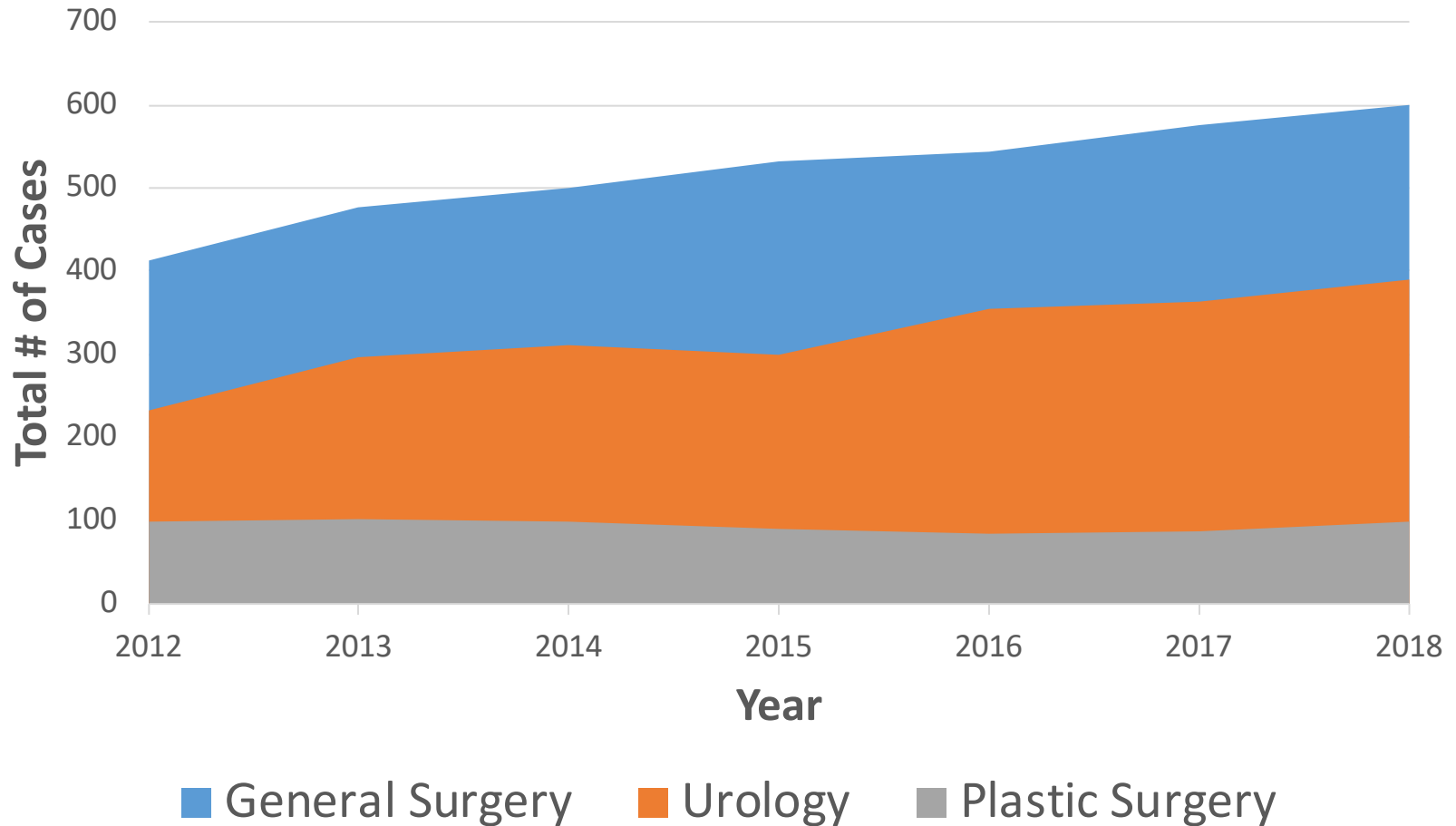
■ Pediatric Intensive Care Unit

■ Coronary Care Unit

■ Cardiovascular Intensive Care Unit

# Area Graph

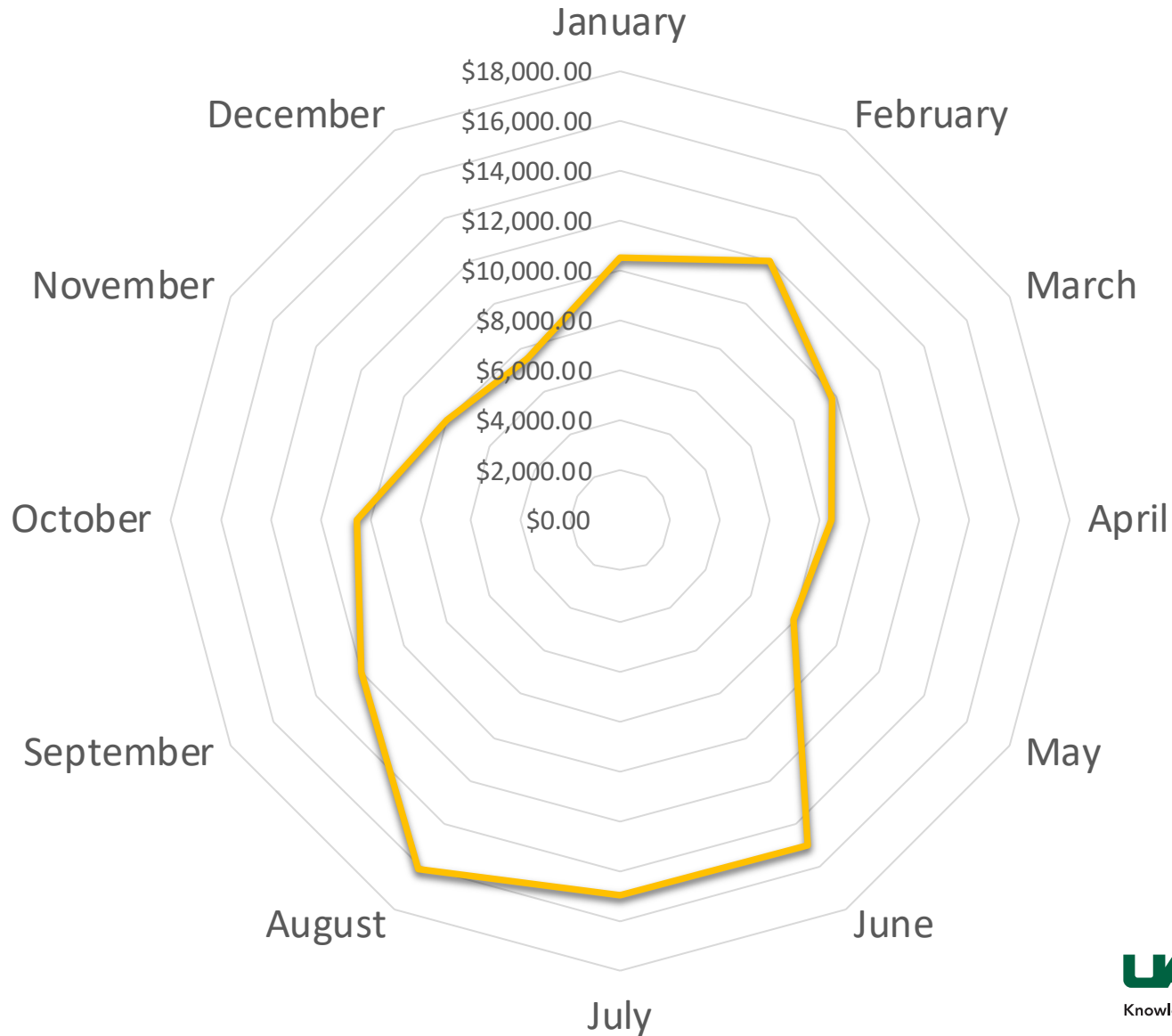
## Surgical Case Volume by Specialty





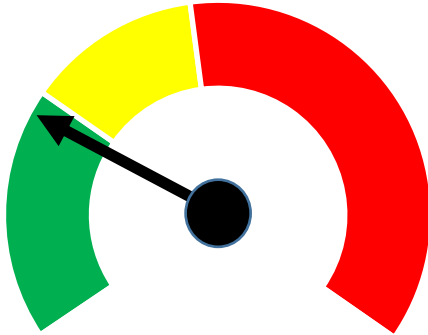
# Radar Graph

## Inpatient Revenue

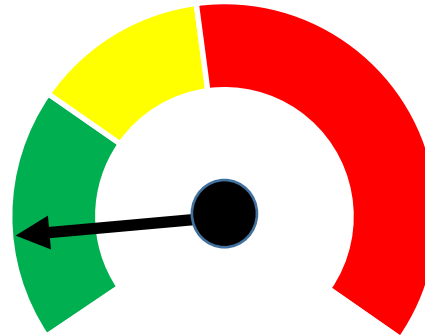


# Gauge Style Graph

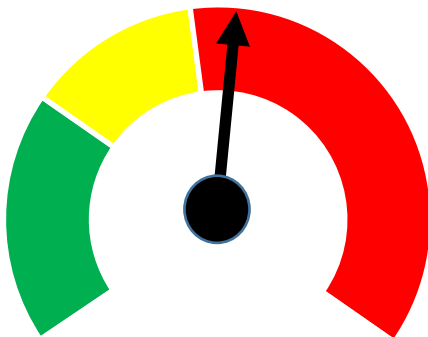
Family Practice



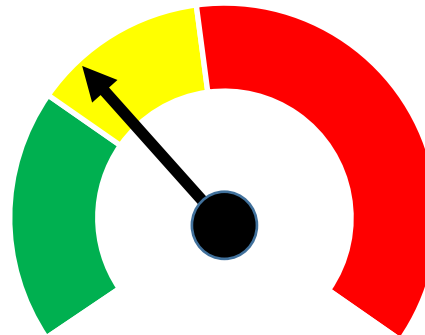
Oncology



Medical-Surgical

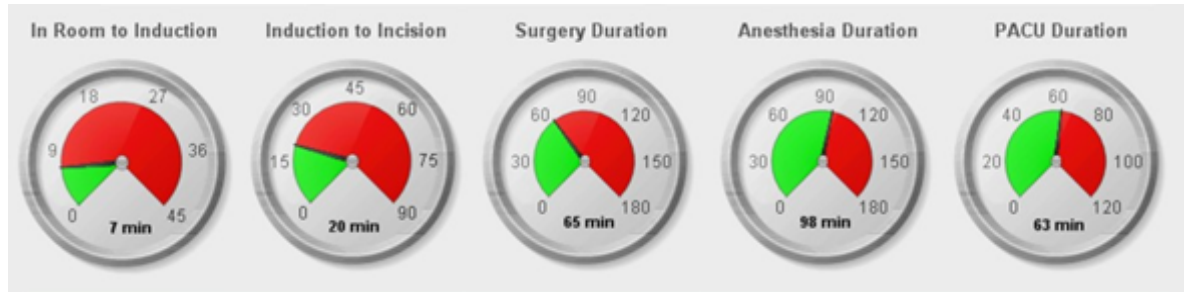


Respiratory Care



Central Line Infection Rates by Nursing Unit

# Gauge Graph & Dashboard Benefits



## Benefits of dashboards in general:

Quick visualization of key performance indicators

Customizable to organizational benchmarks/goals

Can be used at managerial or individual clinician levels

Can be used daily, weekly, monthly, or yearly intervals

Supports data driven decision making

# Limitations of Dashboards

## Sociocultural factors

- Clinician anxiety about being monitored
- Information overload
- Selection of KPIs that clinicians believe they can not change

## Organizational factors

- Metrics may differ across settings
- No administrative support
- Human and financial resources are needed

# Limitations of Dashboards

## Technical factors

- Lack of standardized terminologies
- Lack of universal definitions for KPIs
- Data in EHR may not be captured in meaningful manner
- Lack of EHR integration across locations
- Real-time dashboards are dependent on timely documentation
- KPIs are not beneficial on rare events or small facilities

# Questions

1. Are you using Dash boards today? If so can you specify the solution vendor, or home grown, as well as the data ?
2. What did you think of the major identified themes used in this research? Where there any missing from your perspective or that needed to be modified?
3. What dashboard properties have the most value? The least value?
4. In your practice , clinical or leadership, where is the greatest need for dashboards today?