

**UC Tech Awards 2023 Candidate**

**Category:** OPERATIONAL EXCELLENCE
**Name:** Real Time Beds and Bed Capacity Forecast Team (24)
**Number of people:** (24)
**Location:** UC San Diego Health

1. **Person submitting the application/nomination**
	1. Ronna Gross, Manager, Enterprise Reporting and Analytics, staff
	2. **Email address:** RoGross@health.ucsd.edu
	3. **The name of your organization:** UC San Diego Health
2. **Award category** Operational Excellence
3. **Name of person, name of the team, or name of the project to receive the award** Real Time Beds and Bed Capacity Forecast Team
4. **All project team members - if applicable** Staff:
	1. Jennifer Holland, Director Analytics and Population Health, jaholland@health.ucsd.edu
	2. Ronna Gross, Manager, Enterprise Reporting and Analytics, RoGross@health.ucsd.edu
	3. Eugene Lee, Director Enterprise Systems and Data Integration, ealee@health.ucsd.edu
	4. Joseph Canter, Information Systems Manager, jcanter@ucsd.edu
	5. Calvin Fong, Programmer Analyst, ckfong@ucsd.edu
	6. Roger Borges, Information Systems Analyst, rjborges@ucsd.edu
	7. Leonidas Zuloaga, Data Systems Analyst, lzuloaga@ucsd.edu
	8. Lisa Winckler, Clinical Business Intelligence Specialist IV, lwinckler@ucsd.edu
	9. Richard Nguyen, Clinical Informatics Specialist, rtn002@ucsd.edu
	10. Andy Lucas, Clinical Informatics Supervisor, alucas@ucsd.edu
	11. Catalina Amparano, Clinical Informatics Specialist, camparano@ucsd.edu
	12. Yaoming Sun, Clinical Applications Profl, yas016@ucsd.edu
	13. Paul Benavidez, Business Intelligence Developer, pbenavidez@ucsd.edu
	14. Hiram Cardoza, Senior Data Engineer/ETL Developer, hacardoza@ucsd.edu
	15. Leah Adrid, Assistant Director, Nursing, ladrid@ucsd.edu
	16. Hanna Marro, Clinical Nurse, hmarro@ucsd.edu
	17. Ala Garza, Nurse Manager, abgarza@ucsd.edu
	18. Brooke Sanchez, Nurse Manager, Perinatal, bdadam@ucsd.edu
	19. Amanda Miller, Epic Clinical Systems Analyst, aamiller@ucsd.edu
	20. Jeffery Andrew, Information Services Manager, jandrew@health.ucsd.edu
	21. Evelyn Mandapat, Senior Grand Central Prelude Analyst, emandapat@ucsd.edu
	22. Sharon Muecke, Epic Application Analyst, smuecke@ucsd.edu
	23. Jennifer Leitner, Quality Comp Spec, jleitner@ucsd.edu
	24. Maria (Monny) Slezak, Asst. Dir-Licensing/Reg Compl, mmslezak@ucsd.edu

Faculty:

1. Brian Clay, MD, Associate Chief Medical Officer, Inpatient Care and Hospital Operations, UC San Diego Health, bclay@ucsd.edu
2. **Which location was affected by the work?** (the name(s) of the organization affected)

UC San Diego Health

1. **Summary**: The Patient Flow Bed Occupancy and Bed Capacity Forecast Initiative created near real time data that feed visualizations which precisely display which hospital beds have patients in them and which ones do not. The project allowed us to use this historical data to predict patient surges before they occurred.
2. **Narrative**

The Patient Flow Real Time Beds Initiative set out to clearly visualize precisely what hospital beds have patients in them and which ones do not at UC San Diego Health (UCSDH). Utilizing a novel Extract, Transact, Load (ETL) process of pulling data from EPIC Electronic Health Record (EHR) Chronicles into MSSQL and finally into Tableau where medical staff and leadership have the ability to view the location of any patient in the hospital in near real time. Users with access can view the dashboard from any computer, tablet, or phone connected to the network, whether they are in the hospital or offsite. Issues with bed capacity in one area can be quickly identified and decisions made to transfer staff or patients all within minutes.

With the success of the Bed Occupancy Dashboard, we were able to utilize this data and logic to quickly implement an additional bed forecasting model which allowed us to gain further visibility into bed demands present, past, and 10 days in the future.

The bed forecasting model was developed to have a historical view of midnight census for the high-level departments of Surgical and Procedural, Emergency Room, Direct Admits, Trauma Bay, and Transplant admissions and discharges. The visuals also provide insight into where we are today and what to expect nine days in the future. A 7 a.m. census of our EDIP department was included in these calculations to allow staff to see what will happen if we do not discharge those patients in the next nine days. The Tableau dashboard, called the Bed Capacity Forecast, is now being utilized in the Patient Flow Steering Committee daily huddle as part of standard work and is also distributed via daily emails to 40 key health executives.

This initiative was chosen due to the level of department cooperation and of the real life impact it had on our organization and patients during a time where our facilities were being hit with multiple patient surges. The initiative took place over a period of six months (from July through December of 2022) where the visualizations were released in pieces as they were completed. Focus was applied first to our busiest areas of the Emergency Department and Labor and Delivery. We then released each new area after approval from the department leaders with the accumulation of final department release at the end of December 2022.

We knew we were successful when on March 1, 2023 our UCSDH Incident Command Center (ICC) determined that a Code Orange Level 2 was needed in order to handle in influx of patients walking into the Emergency Room at one of our facilities. The Real Time Beds and forecast allowed the ICC to review current and future metrics to determine they needed to put a hold on any beds being used by other departments, including surgical and procedural, or we would not be able to support the influx of new ED patients. The ICC activated the code Orange one other time that month. As we look to the future, we can see how this can continue to have a huge impact on future surges, anticipated or not.