

Impact of Unit Level Nurse Workload on Patient Safety

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Supported by AHRQ Grant R01 # HS11954



Strategic Context---The CaINOC Database Project

The California Nursing Outcomes Coalition (CaINOC) Database Project is a **collaborative initiative engaging a diverse team** of staff nurses, advanced practice clinicians, educators, researchers, administrators and leaders in nursing **in attaining a shared vision of designing, systematically implementing, and evaluating a statewide nursing outcomes database.**



Sources of CalNOC Funding

- **ANA Grants 1996; 1998; 1999**
- **Kaiser Permanente Grants**
- **UniHealth Grants 1995 & 1996**
- **Calif. Health Care Foundation 2000**
- **AHRQ Conference Grant 2000**
- **Direct & Indirect funding from ANA\IC**
- **Direct & Indirect funding from ACNL**
- **Direct & Indirect funding from UCSF School of Nursing--1996-1997; 1999 to now.**
- **Generous donations of support and in-kind services from CalNOC sites and Members of the CalNOC Steering Committee**



CaINOC Mission

CaINOC advances improvements in patient care quality, safety, and effectiveness by...

- Building and sustaining a valid and reliable statewide outcomes database
- **Conducting research to advance evidence-based interventions to achieve quality**
- Synthesizing and disseminating data to shape public policy, practice, and education



CaINOC Indicators

Structural Indicators:

- **Hours per Patient Day**
- **Skill Mix**
- **Ratios**
- **Use of Contract Staff**
- **Nurse Education--highest degree**



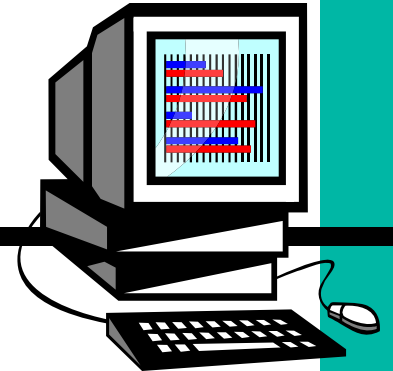
CaINOC Indicators

Process Indicators:

- Falls--Risk and Consequential
- Pressure Ulcers (prevalence)
- Restraint Use (prevalence)



Unit of Analysis



- Patient Level data (de-identified) aggregated to unit level
- Unit Level--Critical Care, Step-Down and Med-Surg unit level data
- Divisional Level
- Hospital Level
- System Level--Multiple hospitals within a corporate system



17 Quarter Data Update

**2nd Quarter 1998
through**

2nd Quarter 2002

112 Hospitals Reporting Data

712 Units:

180 Critical Care

392 Medical/Surgical

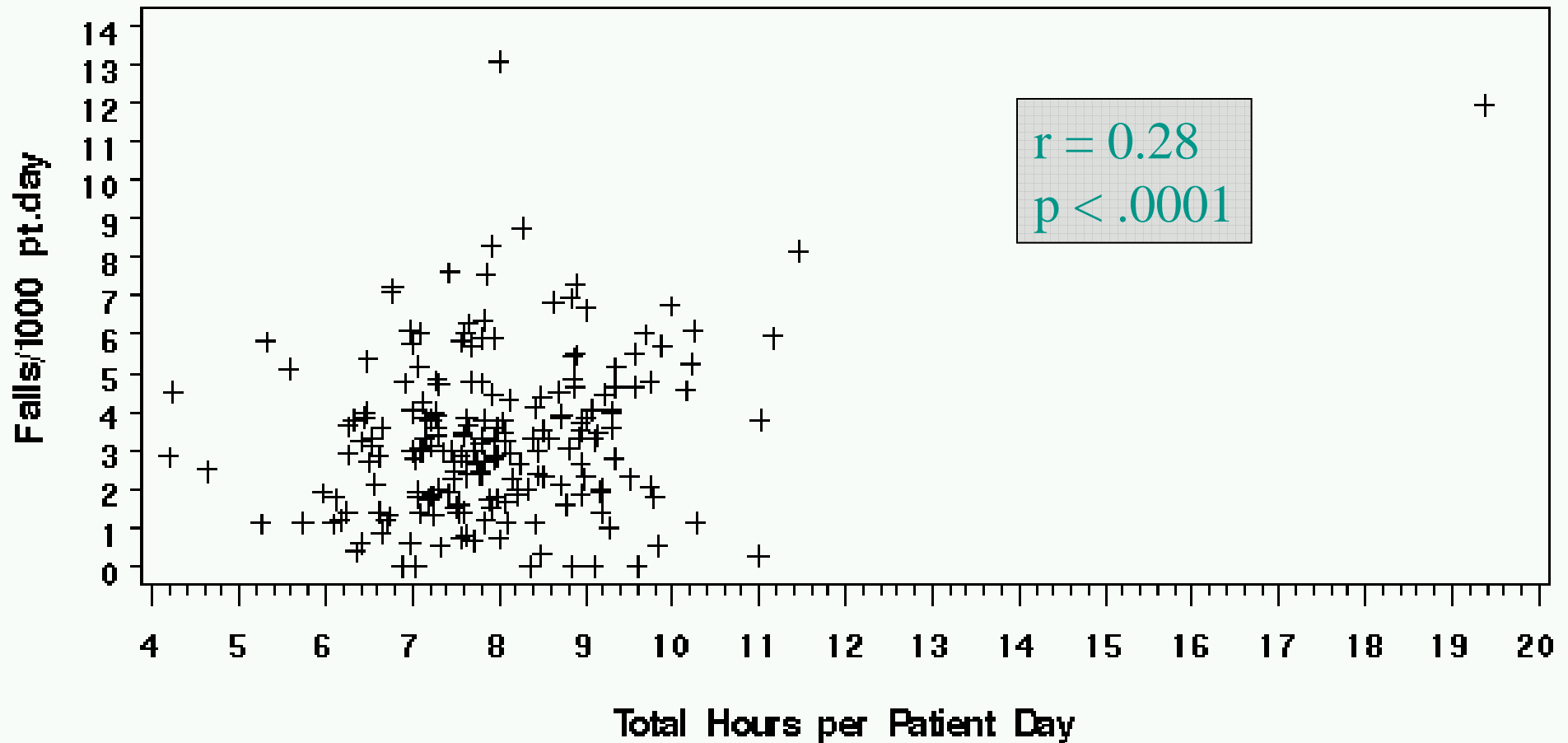
140 Step Down



Plot of Total Hours per Patient Day & Falls per 1000 Patient Days

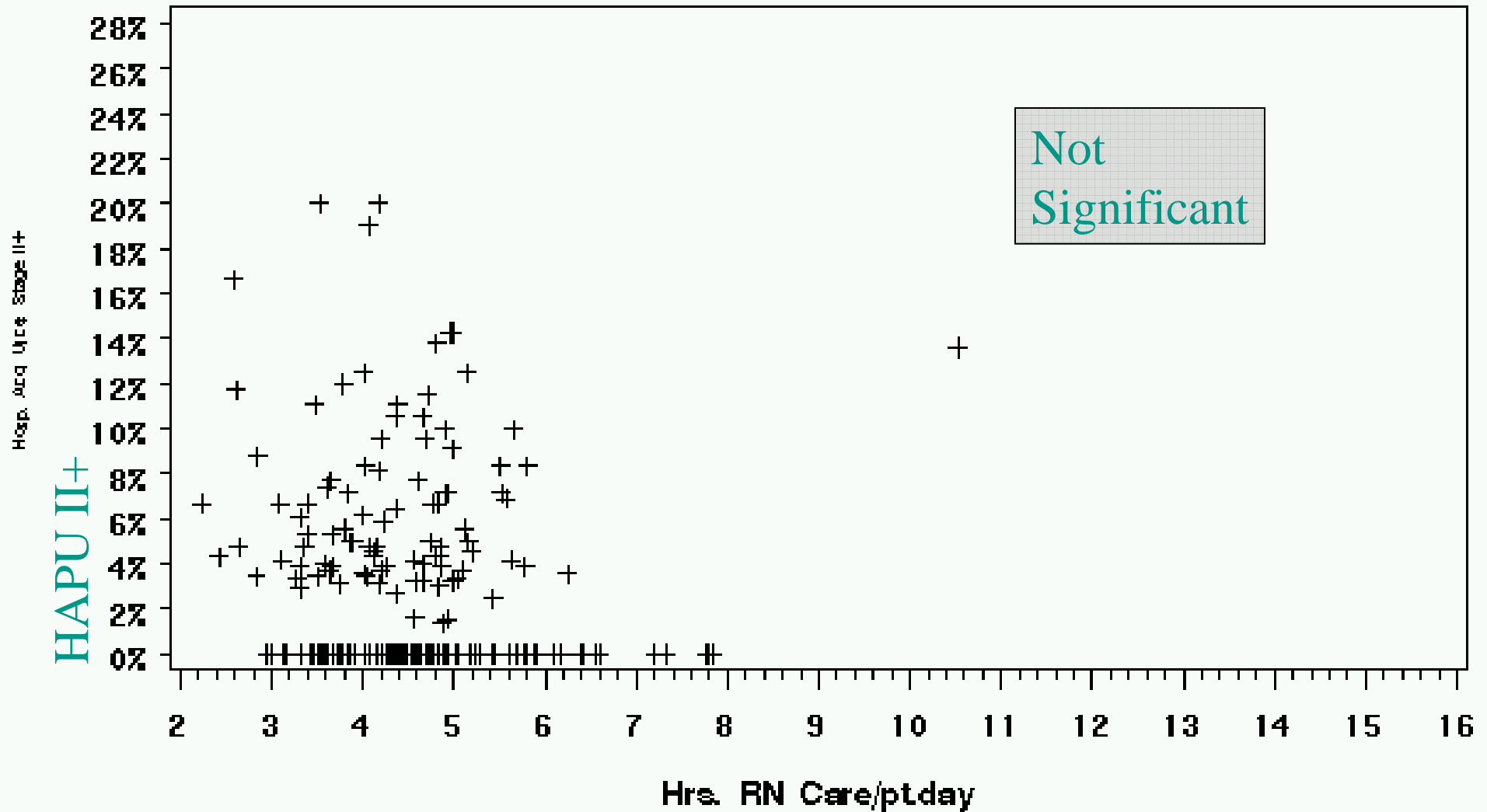
All Medical/Surgical Units

Annual Average: 2001



Plot of Hosp. Acq. Ulcer Stage II+ with Hrs. RN Care/pt.day

Most Recent Prevalence Study
Unit type=medsurg





Agency for Healthcare Research and Quality

Quality Research for Quality Healthcare

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Study Purpose

- To understand whether more sensitive measures of staffing and workload have an impact on patient safety when variance in these factors exceeds a unit-specific margin of safety. This study will break new ground in tracing **daily** staffing in approximately **100 medical surgical patient care units** over a two (2) month period.



Study Aims

- To examine associations between the structure of staffing and patient safety and outcome indicators such as falls, pressure ulcers, restraint prevalence and significant clinical events.
- To examine the effect of a new nurse workload indicator (patient turnover) and nurse staffing



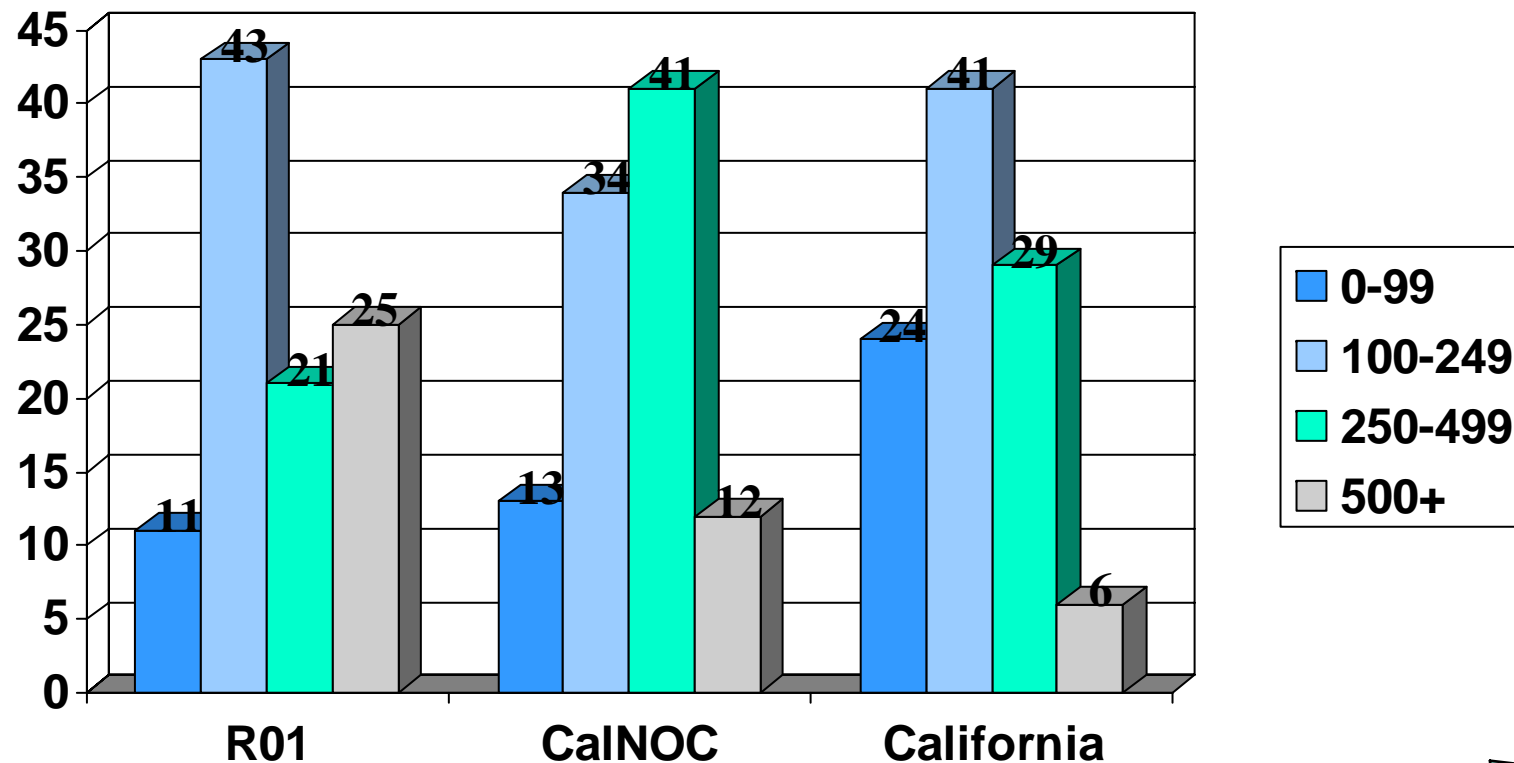
Setting & Sample

- Acute Care Hospitals in California who are currently enrolled in CaNOC Project
- Voluntary and convenience sample of CaNOC hospitals (n=30)
- 100 Medical-Surgical Units selected by participating hospitals (from 1-12 units per hospital)



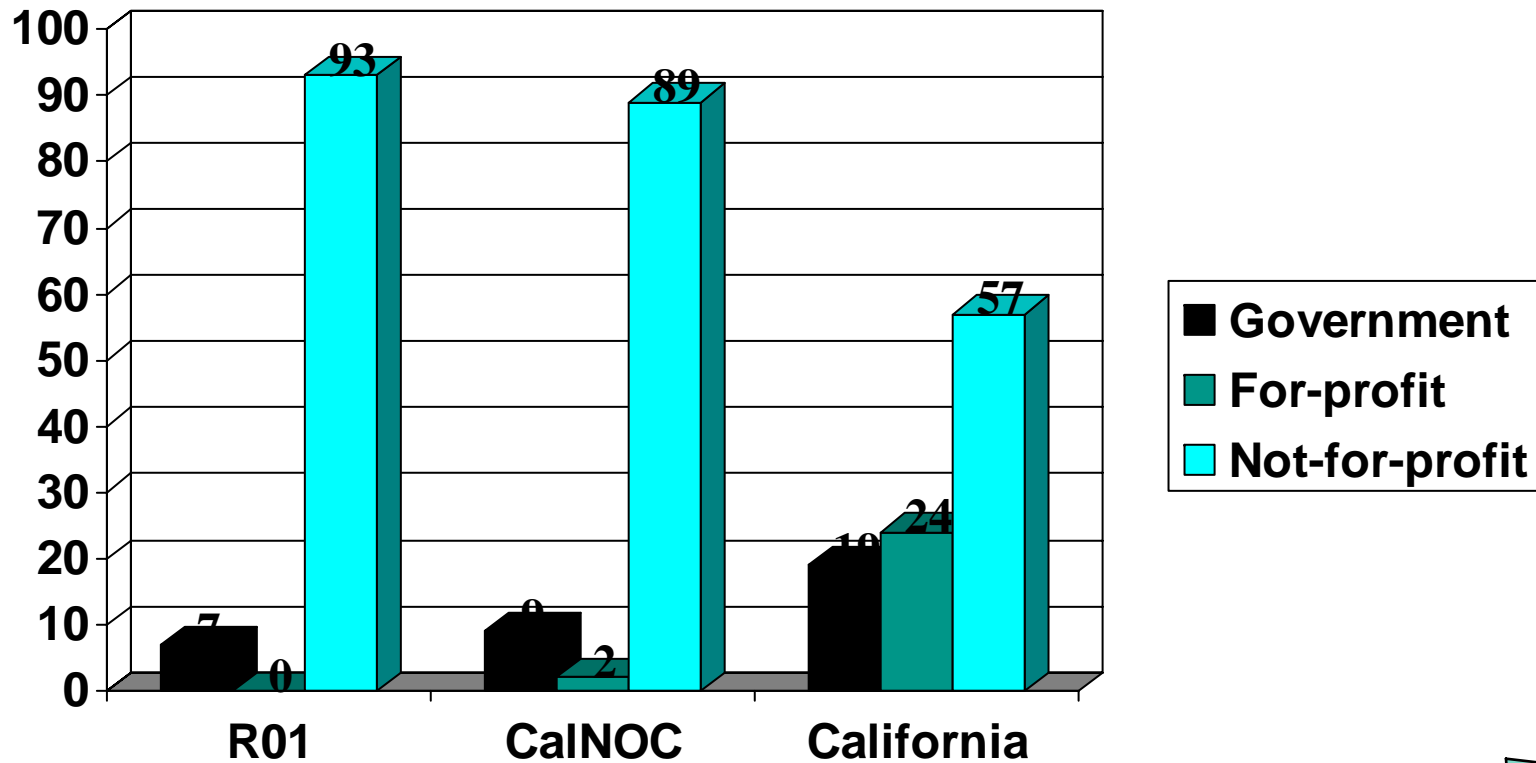
CaINOC Sites--A *voluntary convenience* sample

Percentage of Hospitals by Licensed Bed Category– N=30



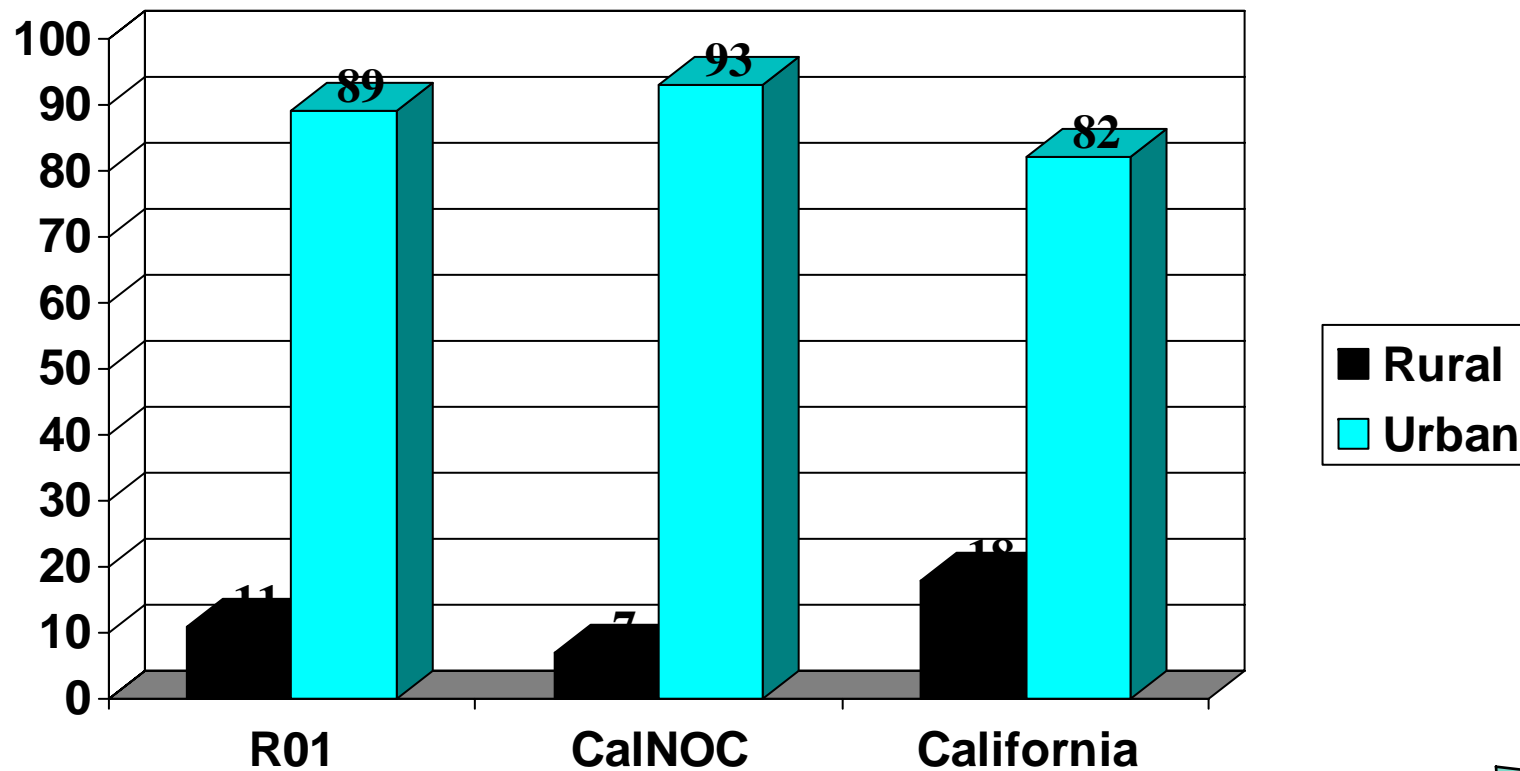
CaINOC Sites--A *voluntary convenience* sample

Percentage of Hospitals by Ownership Type



CaINOC Sites--A *voluntary convenience* sample

Percentage of Hospitals Urban/Rural



Staffing & Workload Variables

The *staffing measures* to be studied include:

- Hours of direct nursing care per patient day
- Hours of care per unit of service
- Nursing skill mix, percent of contacted or
■ agency nursing staff
- Admissions, Discharges & Transfer per unit/shift
- Ratio of required to actual hours of care
- RN years of education & post-licensure experience.



Patient Variables

Prospective hospital generated data gleaned from critical incident data systems and prevalence studies using CalNOC standardized methods:

- Falls Risk and incidence/injuries per unit per day
- Hospital Acquired Pressure Ulcer Risk & Prevalence
- Restraint Use Prevalence
- Other “significant events” per unit per day



Data Collection Timeline

- Data Collection “Run-In” period—Sept. 2002 or January 2003
- Begin 60 days continuous data collection October 1 through November 30, 2002 or February 1 through March 30, 2003
- Data is captured daily and submitted weekly or biweekly using electronic data entry and transmission or scannable forms.



Site Leadership Commitment

- Collect medical surgical unit level, daily staffing data over a 90 day period (30 days of “run in” or practice data, then 60 days of study data) .
- Collect daily data and selected “adverse event” data for those medical surgical units participating in the study.
- Conduct a pressure ulcer and restraint use prevalence study, only on the study units each month during the 60 days of the daily staffing data collection (after the “run in” practice period).
- Conduct RN Education Survey per unit during data collection period.

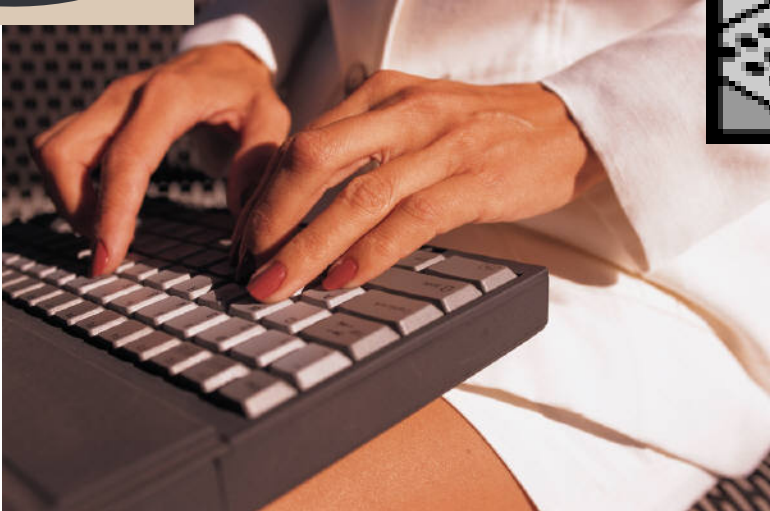
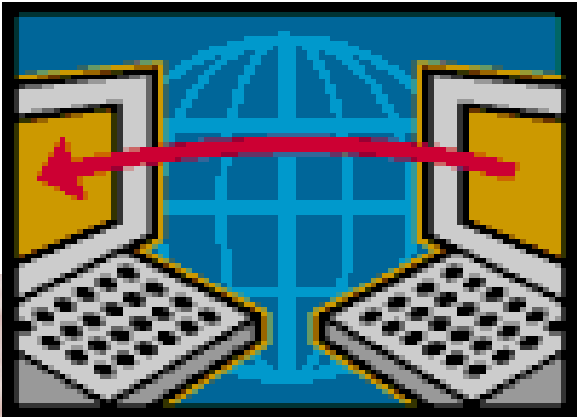
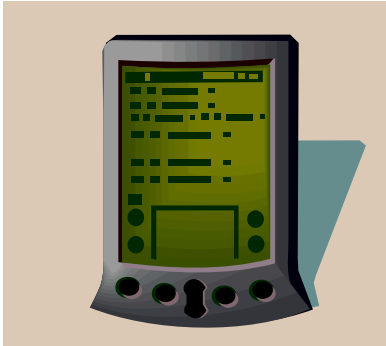


Confidentiality Procedures

- All current CalNOC practices that ensure the security, integrity, confidentiality and anonymity of CalNOC data will be used for this study.
- Hospitals have filed Institutional Assurances of Protection for Human Subjects, as required for Federal wide Assurance of Protection for Human Subjects (FWA), with U.S. HHS Office for Human Research Protections (OHRP)
- Hospitals have obtained IRB approval.



Improving Data Integrity through the Use of Technology to Submit Data to CalNOC



Automated Excel Spreadsheets

Validate Data Entry (catch errors)

Microsoft Excel - Skills V100.xls

File Edit View Insert Format Tools Data Window Help

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A1 = Facility Code Number (fcn)

	A	B	C	D	E	F	G	H	I	J	K	L
	Facility Code Number (fcn)	month (01-12)	yr (for example: 01,02)	Unit Numeric Code (unit_code)	Total RN Hours (TotalRNHours)	Total Contracted RN Hours only	Total LVN Hours (TotalLVNHours)	Total Contracted LVN Hours only	Total Non-RN/LVN Hours (TotalNonRN/LVNHours)	Total Contracted Non-RN/LVN Hours	Total Patient Days for Month (TotalNum)	ERROR
1												
2	2	1	1	1	1	1	1	1	1	1	1	
3	76	1	1	1	200	1	1	1	1	1	1	
4	76	13	1	1	200	1	1	1	1	1	1	ERROR
5	2	1	1	1	1	1	1	1	1	1	1	
6	22	1	1	1	1	1	1	1	1	1	1	
7	32	1	1	1	1	1	1	1	1	1	1	
8												
9												
10												
11												
12												
13												
14												
15												

Month cannot be Blank, and value must be between 1 and 12

Advancing Patient Care

