

Safe Nurse Staffing and Skill-Mix: From Policy to Research to Practice in Medical, Surgical and Specialist Settings



Feidhmeannacht na Seirbhíse Sláinte
Health Service Executive



UCC

University College Cork, Ireland
Coláiste na hOllscoile Corcaigh

Liz Roche
Area Director Nursing
& Midwifery Planning
& Development
Dublin-Mid Leinster

Jonathan Drennan
Professor of Nursing and
Health Services Research
School of Nursing &
Midwifery,
University College Cork



An Roinn Sláinte
Department of Health

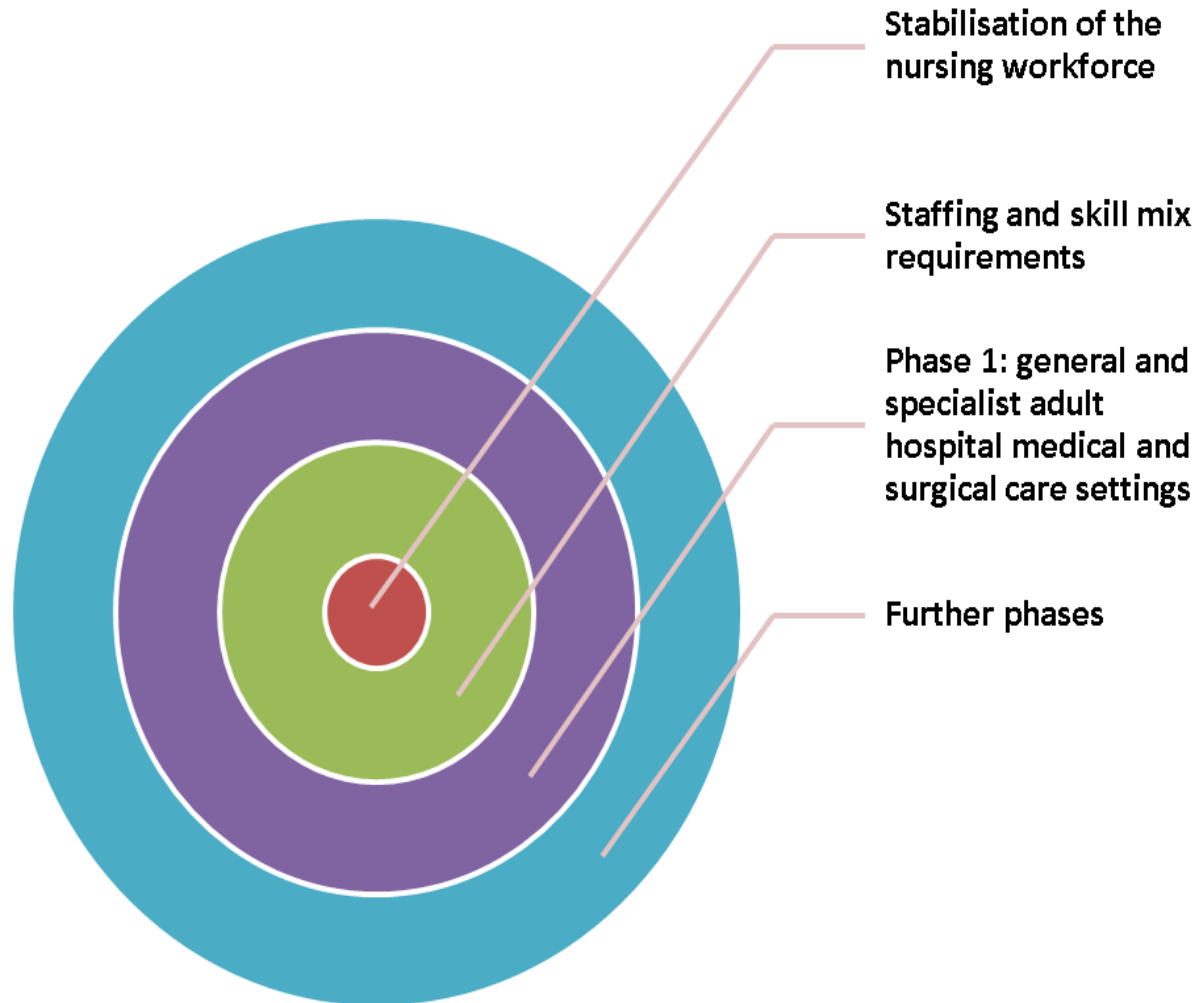
Overview

- Taskforce on Staffing and Skill Mix
- Framework
- IT System for measuring patient acuity/dependency and
- Determination of safe staffing

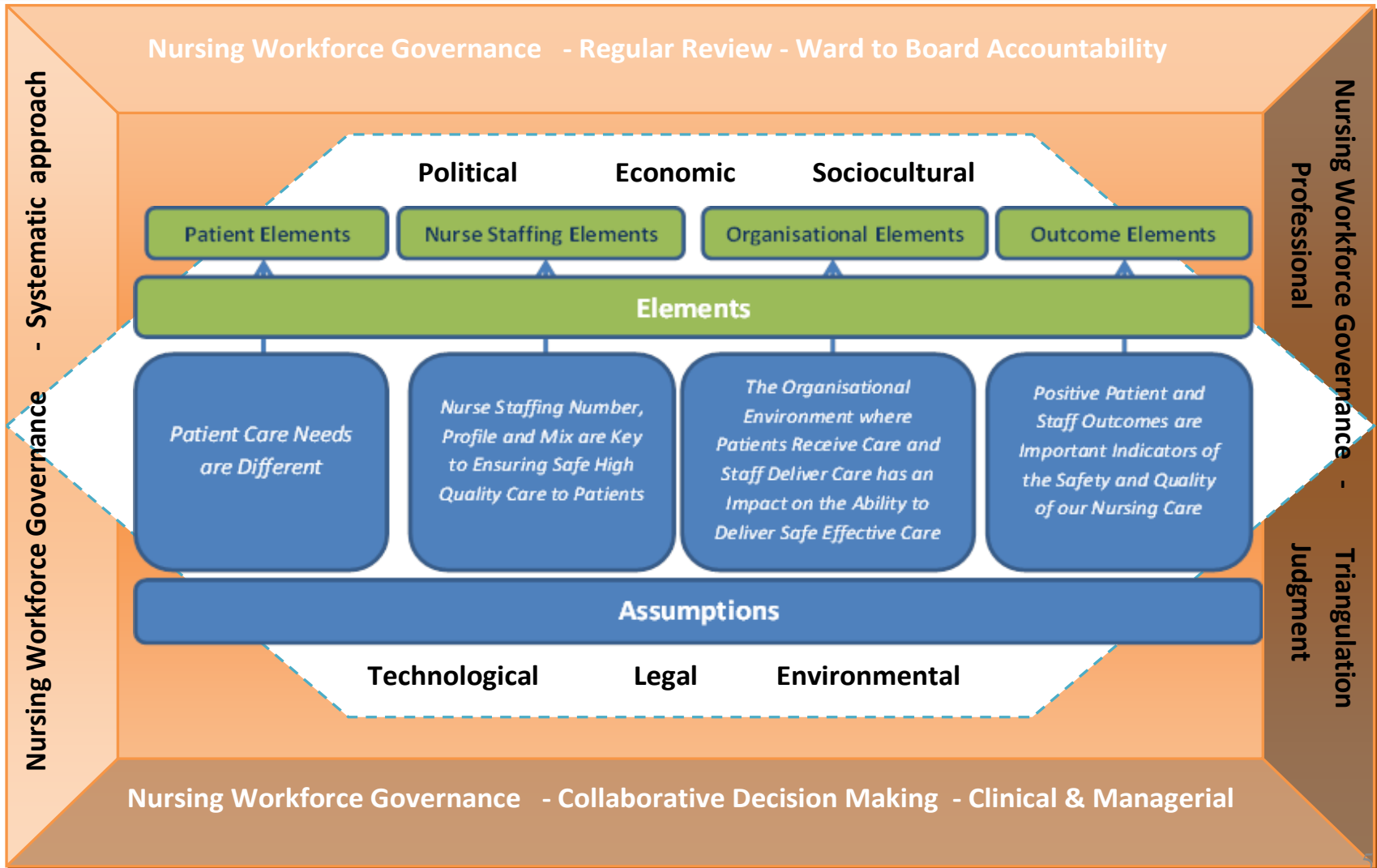
The Taskforce on Staffing and Skill Mix for Nursing



The aims of the Taskforce



Overarching Framework



Assumption 1 – Patients (patient centred care)

Activity	Measurement	Who
Patient Dependency & Acuity	Measures patient dependency and acuity (1-3 times daily for all patients) using nursing hours per patient day.	Individual allocated nurse/ CNM/ Shift leader
Bed occupancy and utilisation	Data is collected from the patient information management system.	IT System and Researchers
Assessment of ward specialities	The acuity and dependency system will record patient specialty	Individual allocated nurse/CNM/Shift leader

Assumption 2 – Staff

Activity	Measurement	Who
Ward profile	Staff education, qualifications, skills, competencies etc. Captured via the HRM ICT system and daily roster.	CNM with staff input +/- HR. All staff (nursing and HCA) + others locally determined
Nurse/HCA grade mix (80/20)	The proportion of registered nurses and healthcare assistants on duty. Calculated daily and overall. Captured through the ICT system and daily roster.	CNM/Shift leaders +/- HR + others locally determined
Planned and unplanned absence (20%)	Record of all leave planned and unplanned.	CNM/Shift leaders +/- HR + others locally determined
Safe Care Tipping Point	Integration of shift nurse to patient ratio and Safety CLUE reports. Captured via the ICT system.	Calculated by the ICT system and CNM/Shift leaders others locally determined
Recruitment	Timely recruitment processes to avoid undue delays	DoN, HR, Nursing Management

Assumption 3 – Environment

Activity	Measurement	Who
Organisational Culture	Organisational culture survey	Researchers in conjunction with CNM and staff + others locally determined
Ward leadership	Supernumerary CNM 2. Monitoring of the impact of a supernumerary CNM2.	Researchers in conjunction with CNM and staff + others locally determined
Care processes and models of care delivery	Capture of care delivery processes at ward level – e.g. productive ward etc.	Researchers in conjunction with CNM and staff + others locally determined
Geographical layout	Assessment of the geographical ward layout. For example number of single rooms etc.	Researchers in conjunction with CNM and staff + others locally determined

Assumption 4 – Outcomes

Activity	Measurement	Who
Patient outcomes measures	Measure the incidence of falls and pressure ulcers, along with the process for falls and pressure ulcer prevention (where available for e.g. nursing metrics). Measurement of patient experience.	Researchers in conjunction with CNM and staff + others locally determined
Staff outcomes measures	Measurement of staff experience	Researchers in conjunction with CNM and staff + others locally determined
Safety CLUEs Care Left Undone Events	<p>Measurement of the following indicators;</p> <ol style="list-style-type: none"> 1. Inability to provide adequate patient surveillance – e.g. post-operative or post procedure or patients who are disoriented/ at risk of fall; 2. Inability to carry out vital observations in accordance with the parameters set out by the National Early Warning Score; 3. Delay or unplanned omission in providing patient medications; 4. A delay or unplanned omission in supporting patients with necessary physical needs such as toileting, washing, mobilising/repositioning, eating and drinking; 5. Missed meal breaks by staff; 6. Delay or omission in recording clinical practice/developing and updating care plans. 	Researchers in conjunction with CNM and staff + others locally determined

Measuring patient acuity and dependency

- IT System used in this project - Trendcare
(other IT solutions for NHPPD may be available)

Ward: **Respiratory** Shift: DAY - Wed 18/04/2018 EVENING - Wed 18/04/2018 NIGHT - Wed 18/04/2018 DAY - Thu 19/04/2018

Phase: **Actual** Bed: **02** Patient: Diet:
 Diag:
 LOS: **13 days** EDOD: **01/01** P Ethnicity: Legal Status:

Patient Details | Diet Reqs | **Acuity** | Care | Assessments

Patient Type: Options: Upd. Acuity?

Mobility	Self	Part Assist	Total Assist/ Bedfast
	Total Assist (3-4 staff and 2-3 hrly)	Total Assist (5-6 staff and 2-3 hrly)	
Hygiene	Self or N/A	Part Assist	Total Assist
Nutrition	Self or N/A	Part Assist	Total Assist
Continance State	Incontinent (1 episode)	Frq.Incontinent (2 - 4)	Frq.Incontinent (5 or more)
Thought Processes	Minor Impact	Moderate Impact	Severe Impact
Behaviour	Non Compliant/ Uncooperative	Intrusive/Disruptive	Aggressive/Violent
Communication	Communication Problem		
Respiratory Assistance	Oxygen Dependent	Oxygen Dependent With Humidifier	
Observations	Hourly or more frq		
Early Warning Alert	Score of 1 (for any observation)	Score of 2 (for any observation)	Score of 3 (for any observation)
Medications	1st Involved Medication (1-1.5)	2nd Involved Medication (2-4.5)	3rd Involved Medication (5 or more)
Central Line Access	Access Only	Parenteral Nutrition	Pressure Monitoring
Treatments	Extensive Treatments (30 min)	Extensive Treatments (60 min)	2hr Extensive Treatments
Teaching/Emotional Support	Routine	30 min Extensive for Pt/Relative	60 min Extensive for Pt/Relative
Case Conference	Extensive (30 min)	Complex (60 min)	
Isolation	Cohort Isolation	Protective Isolation	Contact Precautions
	Droplet Precautions	Airborne Precautions	Extreme Precautions
One on One Care	2 Hours	4 Hours	6 Hours
	8 Hours	9 Hours	10 Hours
Admission Assessment	Assessed via Pre Admission	1 to 3 Assessments	4 or more Assessments
Discharge Planning	Routine	Extensive (30 min)	Complex (60 min)
Transfer Out	Transfer Required		
Medical Emergency	Deterioration Req Nr Intervention (1 hr)	Deterioration Req Nr Intervention (2 hr)	Resuscitation Req Nr Intervention (3 hr)
Absconded	1hr Searching/ Documenting/ Notifying	2hr Searching/ Documenting/ Notifying	3hr Searching/ Documenting/ Notifying
Boarder Baby	Boarder Baby Present		

Bed Name
02 MCGINN

Add New Patient
Finish

Patient Name:
 Details Diagnosis: {Ca Lung}

Assessment Actions

Assessment: Safety CLUEs DAY Shift Details..
 Obtained From: Patient Change

Heading				Item
Were any necessary activities LEFT UNDONE?	Yes	No	N/A	Adequate patient surveillance
	Yes	No	N/A	Vital sign observations
	Yes	No	N/A	Administering medications
	Yes	No	N/A	Supporting patients with necessary physical needs
	Yes	No	N/A	Meal break taken by staff member
	Yes	No	N/A	Recording, developing and updating documentation
	Yes	No	N/A	Comforting, reassuring patient / relatives
	Yes	No	N/A	Educating patients and/or family
	Yes	No	N/A	Pain management
	Yes	No	N/A	Planning care
	Yes	No	N/A	Preparing patients for discharge
	Yes	No	N/A	Skin care
	Yes	No	N/A	Undertaking treatments/procedures
Were any necessary activities DELAYED?	Yes	No	N/A	Adequate patient surveillance
	Yes	No	N/A	Vital sign observations
	Yes	No	N/A	Administering patient medications
	Yes	No	N/A	Supporting patients with necessary physical needs
	Yes	No	N/A	Staff meal break
	Yes	No	N/A	Recording, developing and updating documentation
	Yes	No	N/A	Comforting / reassuring patient / relatives
	Yes	No	N/A	Educating patient and / or relatives
	Yes	No	N/A	Pain management
	Yes	No	N/A	Planning care
	Yes	No	N/A	Preparing patients and families for discharge
	Yes	No	N/A	Skin care
	Yes	No	N/A	Undertaking treatments / procedures

History Assessments

Risk Assessments

Outcome Assessments

Safety CLUEs DAY Shift
 Safety CLUEs NIGHT Shift

Completed Not Started
 Not Completed

Comment Score Ranges

Risk Score

Select Print

Finish

Ward/ Dept:

Shift to Show: **DAY - Tue** 17/04/2018 | **EVENING - Tue** 17/04/2018 | **NIGHT - Tue** 17/04/2018 | **DAY - Wed** 18/04/2018

Current Shift: **Evening Shift, Wednesday**
**** Key all times in either hh:mm or hh.mm format.**

POSITION	STAFF MEMBER	WS	Total Hours	Start Time	B	I/C	Over Time	TOIL	Clinical In Dept	Clinical Admin	A/H Coord.	Escort	X-Ray	Ext. Xray	Phleb.	Pat. Displ.	Environ	Clerical	Sick	Paid Matern.	Comments	
NM CNM2		FT	7.48	7:30																	7.48	
RN		FT	7:30	7:30					7:30													
RN		FT	8:00	7:30						8:00												
RN		FT	7:30	7:30					7:30													
RN		FT	7:30	7:30					7:30													
RN		FT	7.48	7:30																7.48		
RN		FT	7:30	7:30					7:30													
RN		FT	7:30	7:30					7:30													
HCA		AG	8:00	7:00					8:00													1:1
HCA		FT	7:30	7:30					5:30								2:00					1:1
HCA		FT	7:30	7:30					5:30								2:00					axel replacing
CLP		FT	7:00	8:00														7:00				

Inpatient Variances | Patient Breakdown | Clinical Profile | **Staff Summary** | Night Shift Adjust

	Hours	FTE	Var	Var FTE	Var per FTE
Available Clinical Hours	56:30	7.06			
Acuity Requirement	72:10	9.02	-15.40	-1.96	-2.13

- Select Staff
- Get Roster
- Shift Notes
- Workloads
- Additional

Staffing Areas

Short List

Export List

Sort By Name

Refresh Exit

Ward Acuity HPPD per Patient Type

Printed: 20/09/2016
11:15:02

Date Range: 15 July 2016 to 19 September 2016

Ward:

By Patient Days

Patient Type	Average Patient Days with % of days	'Actual' Hours Required by Acuity	'Actual' HPPD Required by Acuity	1:1 Hours for Part of Shift Included in 'Actual'
MED Medical	1275.33 (71.9%)	5547:52	4.35	10:00
- 1:1 Care	1.00 (.1%)	29:00	29.00	
MDG Medical - Gerontology	409.00 (23.1%)	2065:44	5.05	1:00
PCU Medical - Palliative Care	57.33 (3.2%)	280:35	4.89	
RHS Rehabilitation - Slow Stream	16.00 (.9%)	53:55	3.37	
MOD Day Only - Medical	7.00 (.4%)	28:30	4.07	
CAR Medical - Cardiology	5.67 (.3%)	19:00	3.35	
STR Medical - Stroke/CVA	1.00 (.1%)	2:40	2.67	
SUR Surgical	0.67 (.0%)	1:45	2.63	
TOTALS:	1773.00	8029:01	4.53	11:00

** Number of Patients Not Categorised for the Period: 0

Page

1 of 1

Zoom

- Whole Page
- Two Pages
- 80%
- 90%
- 100%
- 125%
- 150%
- 200%

Print (Adv.)

Print

Save As..

Email

Finished

Staffing formula from Framework

- **Ward hppd, Beds (occupancy)**
- **Indirect care hours (5.6hrs)**
- **Days of the year (365)**
- **Replacement factor (annual, sick and study leaves) – 20%**
- **Maternity leave (Nursing % for hospital)**

Total direct clinical WTE required

- **Skill mix 80:20**

RN and HCA direct clinical WTE required



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Jonathan Drennan
Professor of Nursing and Health Services Research
University College Cork

A TRADITION OF
INDEPENDENT
THINKING



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University College Cork, Ireland
Coláiste na hOllscoile Corcaigh

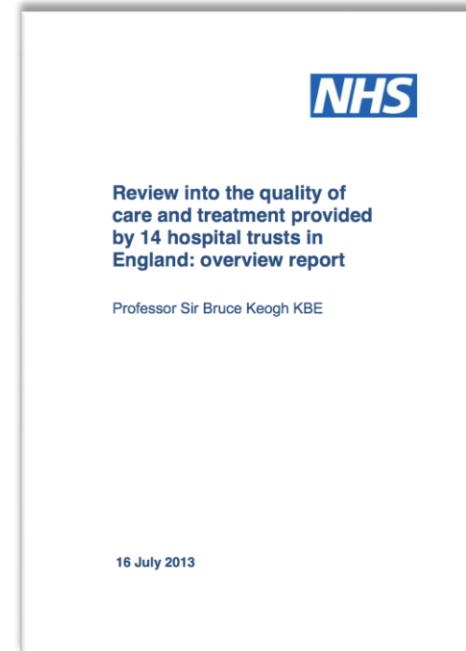
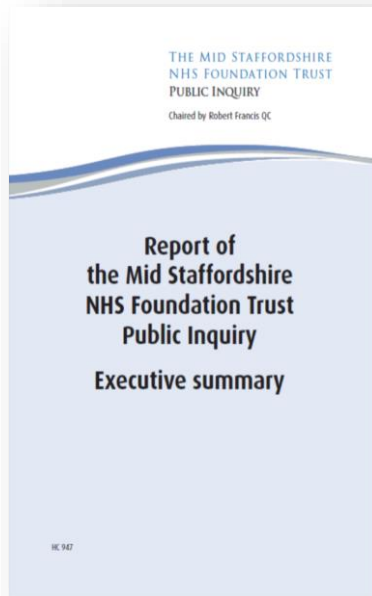
Collaborative Research Team



An Roinn Sláinte
Department of Health



Why this Research Now?



Why this research now?

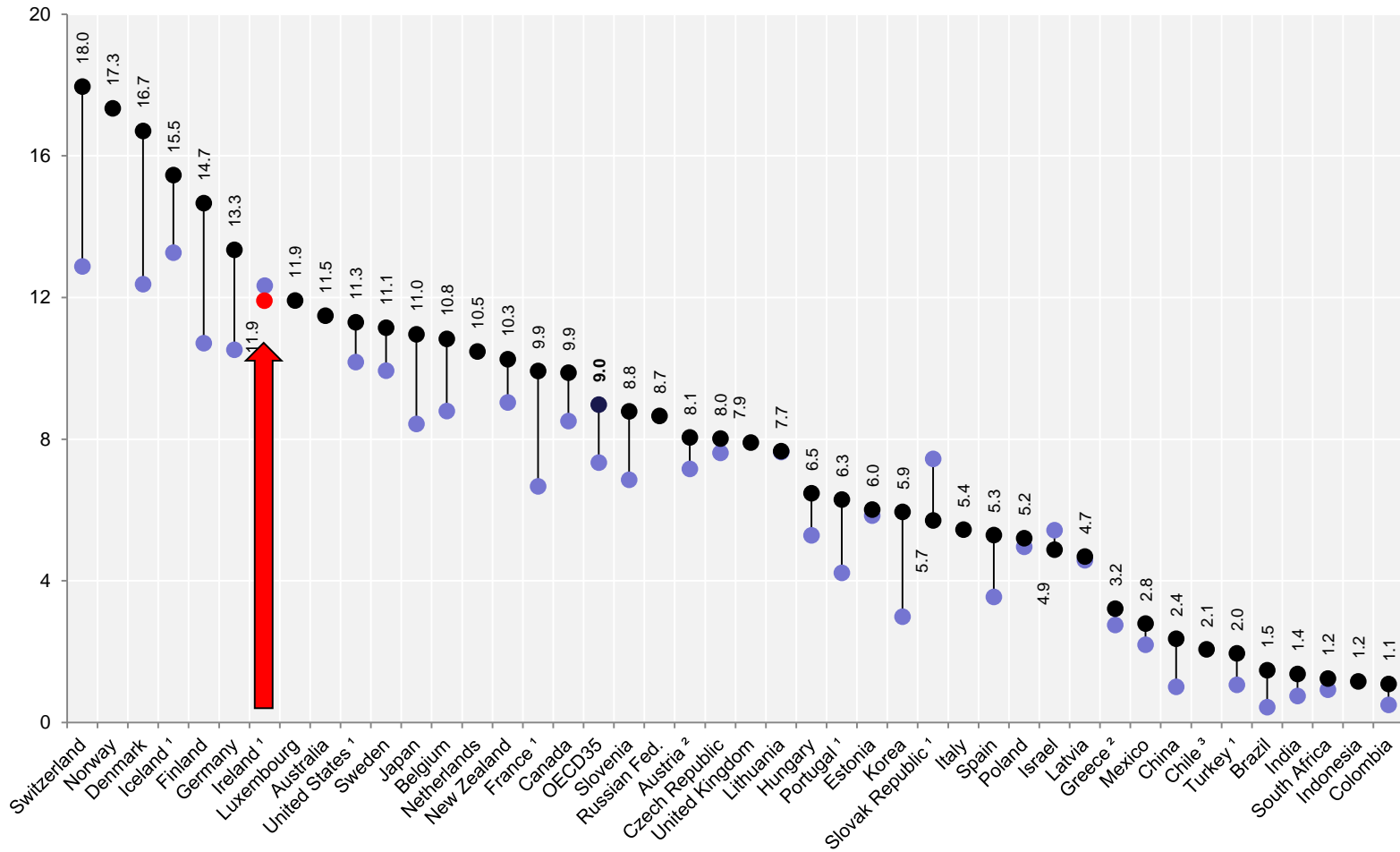
- Between 2008 and 2016 there was a reduction of 4.8% in the public-sector nursing workforce, largely as a consequence of employment control frameworks implemented during the economic recession.
- There has been some recovery in numbers with a 1.2% increase in the nursing workforce recorded between the years 2016 and 2017 (Department of Health 2017).

The Nursing Workforce in Ireland (OECD 2017)

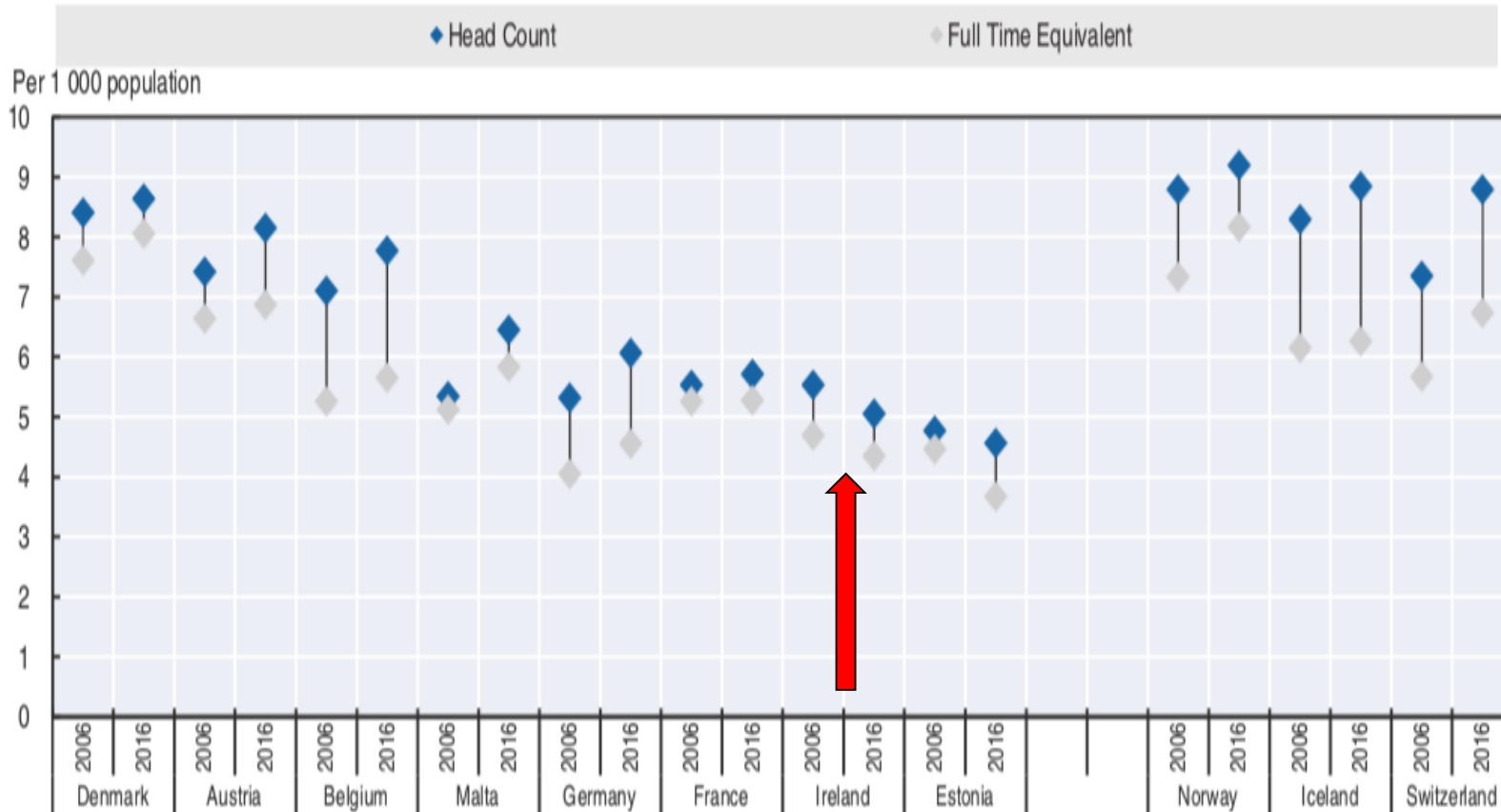
Per 1 000 population

● 2000

● 2015



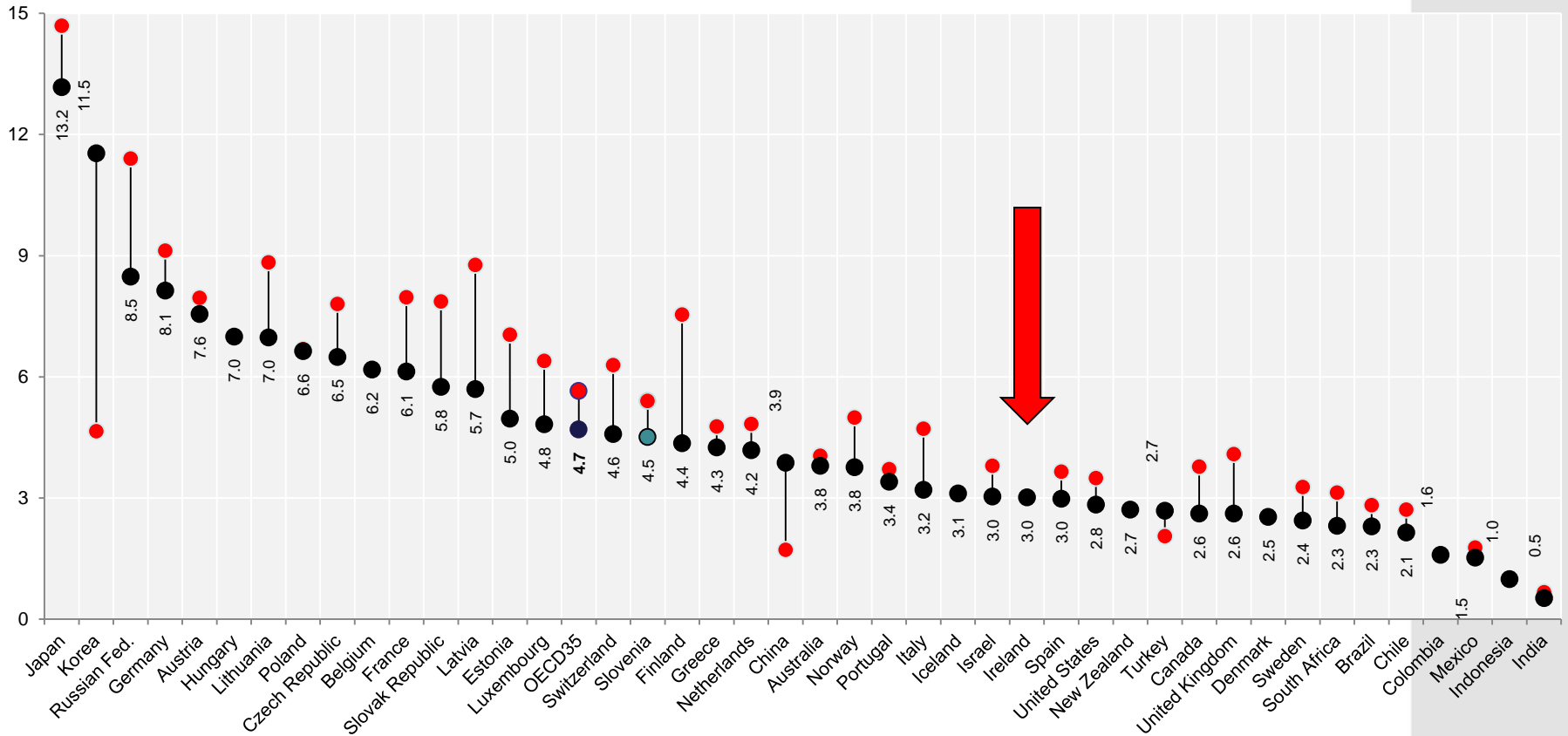
Nurses working in Hospital, Head Count vs FTE, 2006 and 2016 (OECD 2018)



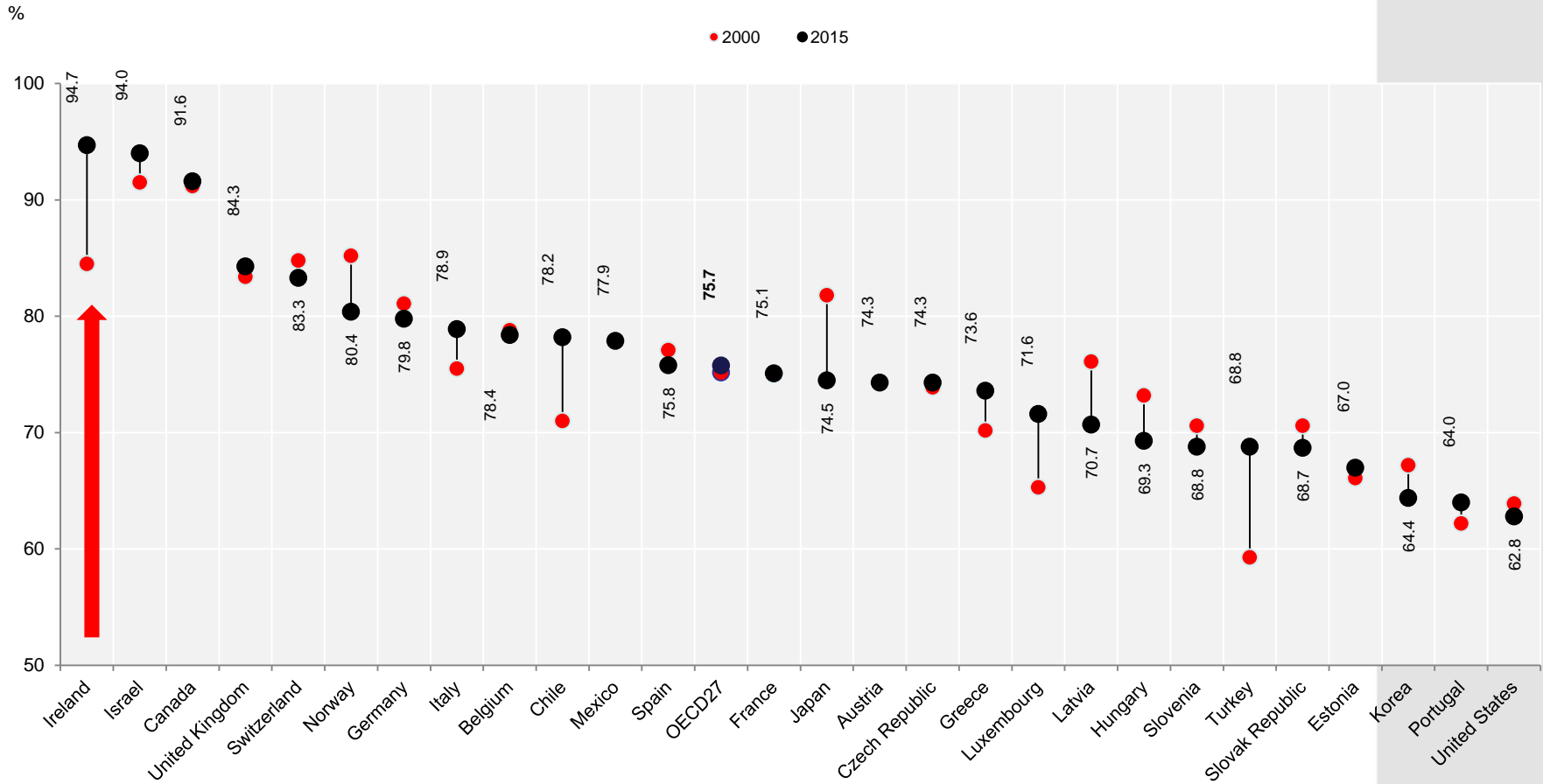
Number of Hospital Beds in Ireland 2015 (OECD 2017)

Per 1 000 population

● 2000 ● 2015



Bed Occupancy Rates – Ireland 2000-2015 (OECD 2017)



Why this research now?

- Retention of nurses in Ireland has been highlighted as an issue with a turnover rate of 7.3% amongst staff nurses; this is higher than the overall national health workforce turnover rate of 6.5% (HSE 2017).
- Resignation accounts for 73% of turnover compared to 63%* for all healthcare employees (HSE 2017).

Methodological Debates

- Griffiths *et al.* (2016) identified several design limitations in studies that explored the relationship between nurse staffing and patient, nurse and organisational outcomes; not least that the vast majority of research in this area emanates from studies that are predominantly observational in design.
- This issue has also been highlighted by others who conclude that there are limited studies published that measured outcomes following a planned change in nurse staffing (Shekelle 2013).

Methodological Debates

- Shekelle (2013) has recommended that the methodological weaknesses outlined should be addressed by time series designs or before and after studies that examine the outcomes associated with intentional changes in staffing.

Design

- Longitudinal, multimethod approach to evaluate the impact that planned changes in nurse staffing and skill-mix have on wards in three pilot hospitals.
- The design allowed comparisons to be made pre the implementation of the recommendations, during transition and post-implementation.

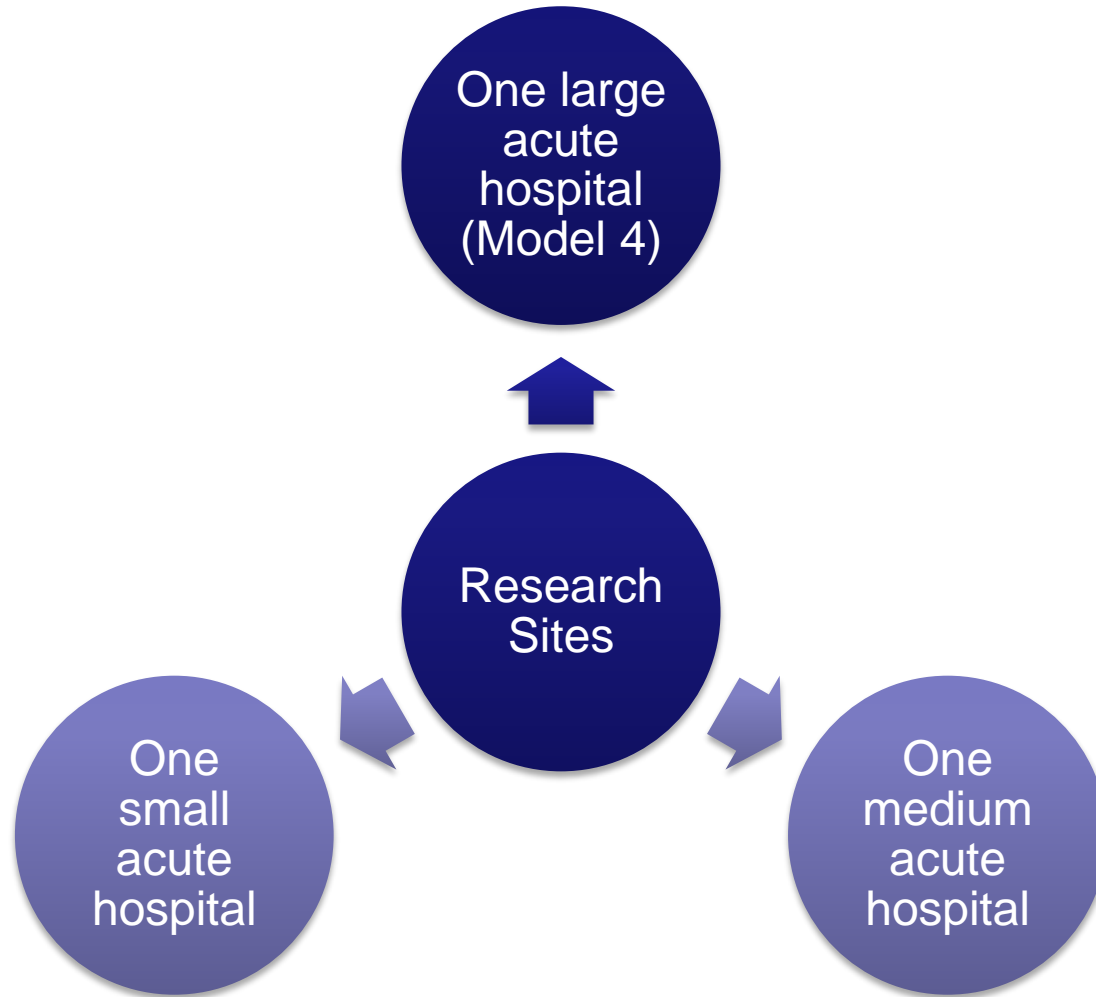
Aims

- Measure the impact of implementing the pilot of the Framework (specifically NHPPD) on nurse-sensitive patient outcomes measures, staff outcome measures and organisational factors;
- Measure the economic impact of implementing the Framework using appropriate economic evaluation techniques.

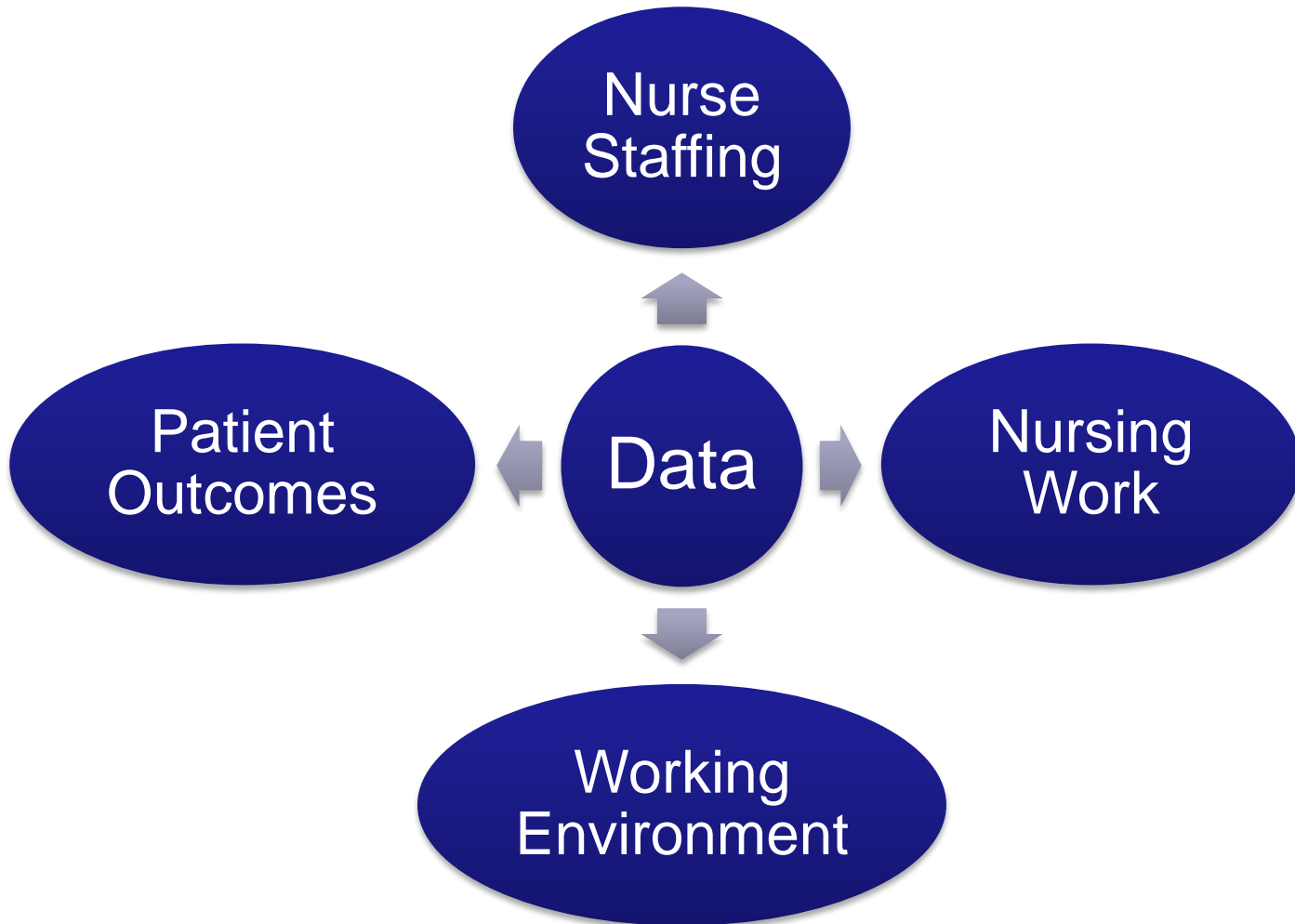
Principal Interventions Measured

- A systematic, evidence based approach was introduced to determine nurse/HCA staffing requirements based on patient acuity and dependency levels (Nursing Hours per Patient Day)
- The skill mix put in place was 80% RN, 20% HCA.
- The CNM 2 role was to be 100% supervisory.

Sites



Data Collection



Results



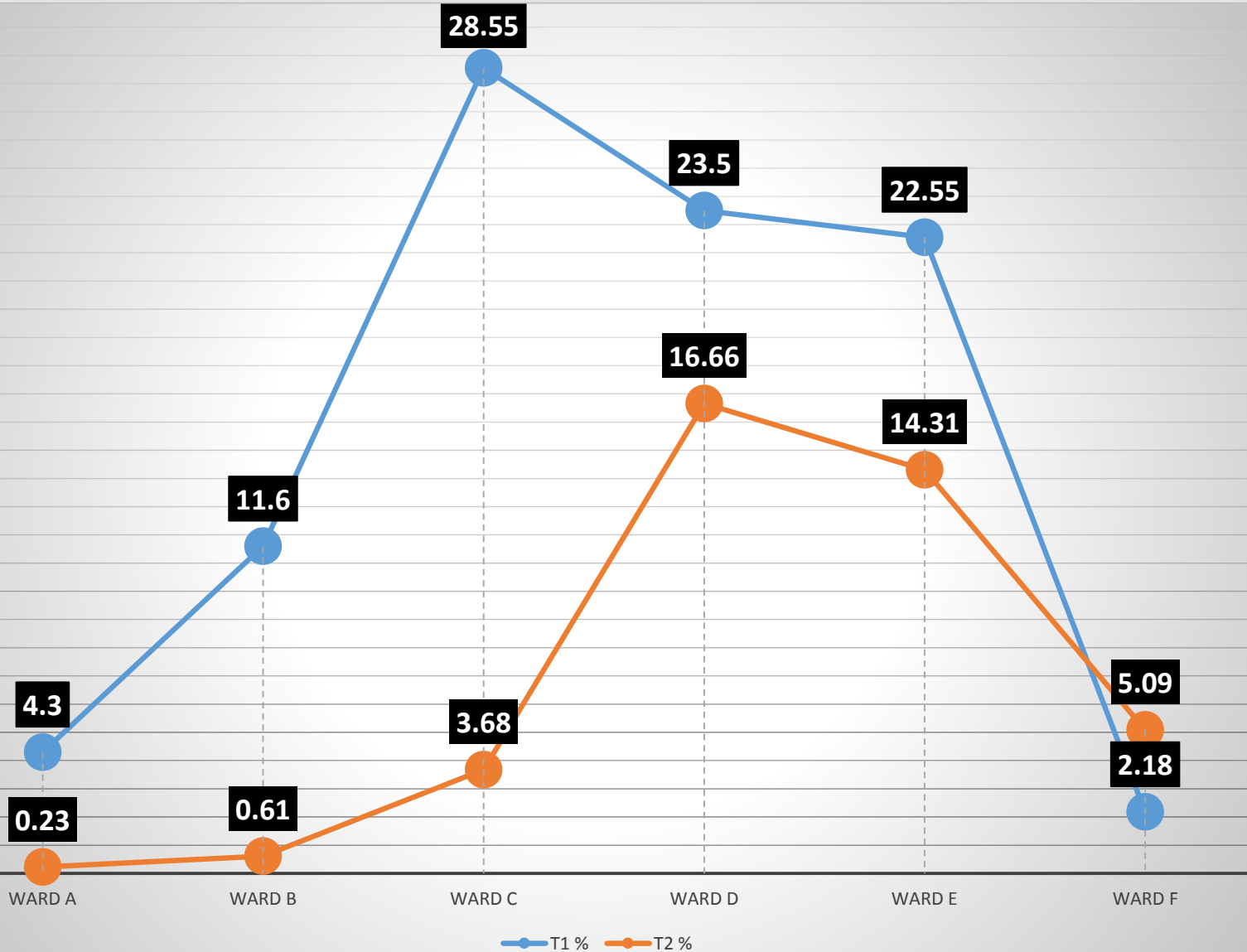
Changes to Staffing

- Changes in staffing ranged from an uplift of 3.5 WTE to 12.7 WTE; this was based on measured patient acuity and dependency. This reduced the variance between actual and required staffing.
- Rostered skill-mix reached 80% RN to 20% HCA in all wards.
- The majority of wards are reaching 100% supervisory status for CNM 2 roles.

Agency Staffing

- In many wards, there was a substantial reduction in the use of agency staff as a consequence of the implementation of the recommendations in the *Framework*.

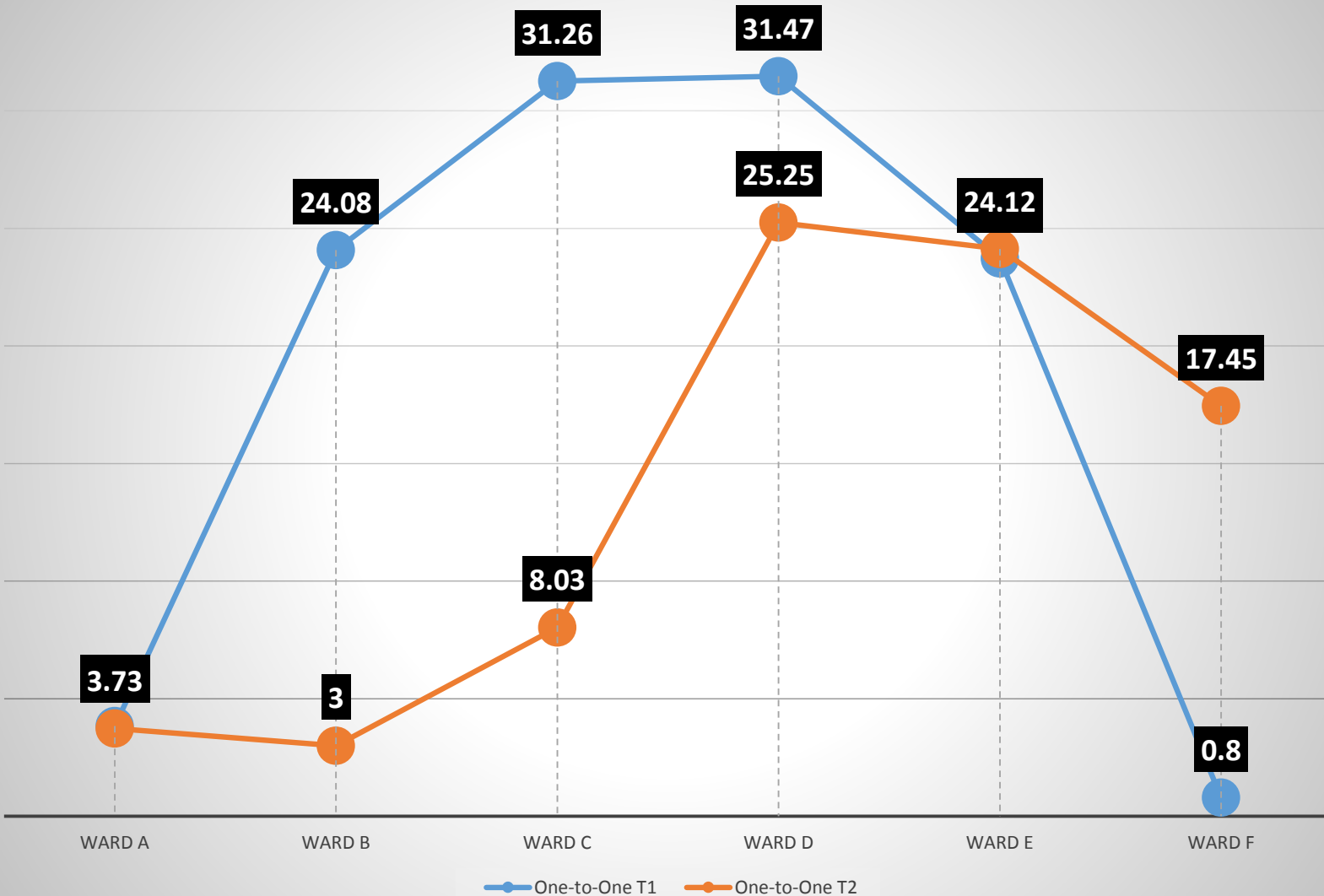
Agency Staffing



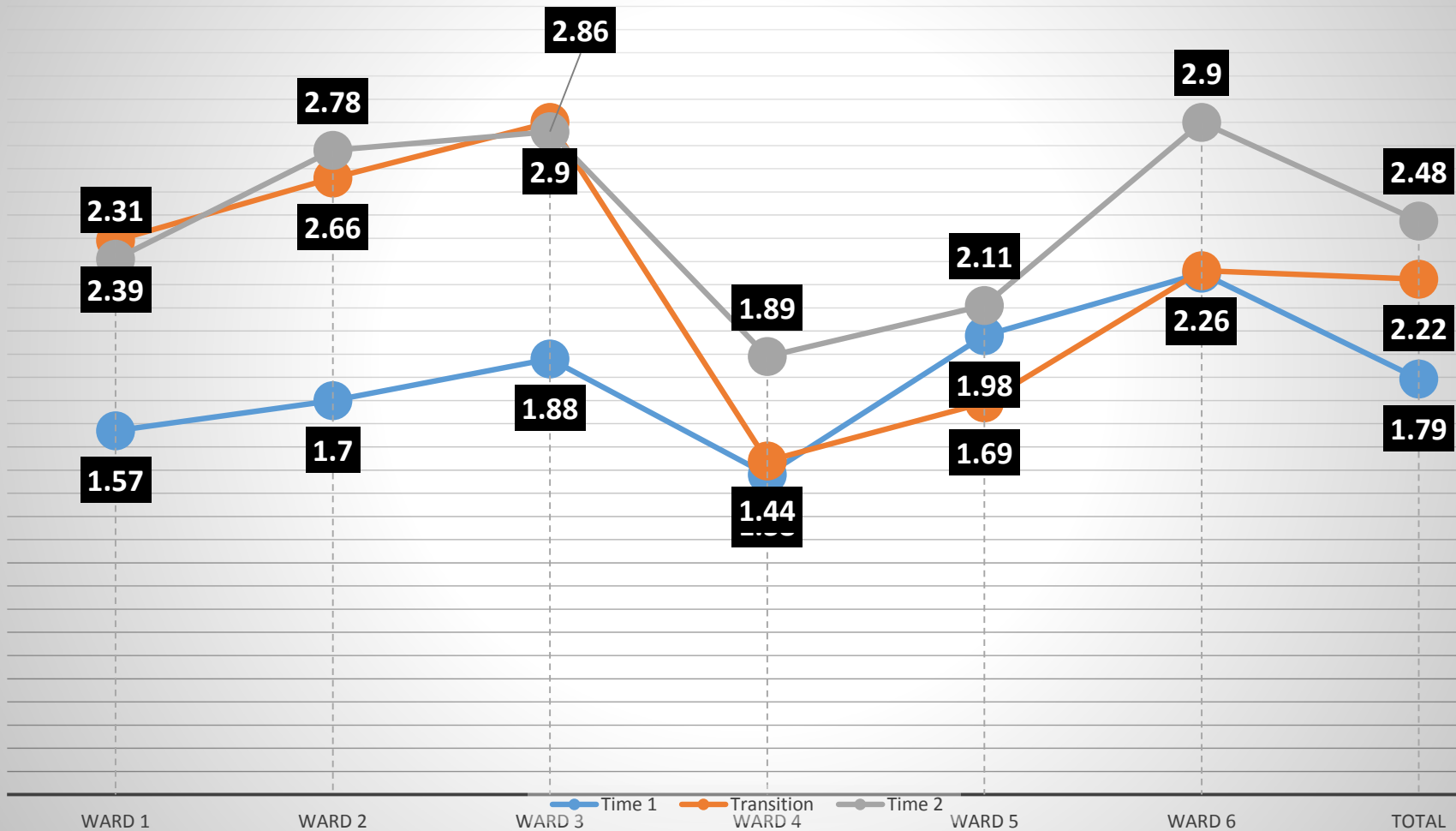
One-to-One Specialling

- The implementation of the recommendations has led to a general reduction in 1:1 specialling; that is, wards that are better staffed, regardless of patient acuity and dependency, require fewer hours dedicated to one-to-one specialling as staff have increased time available for patient surveillance.

One-to-One Specialling

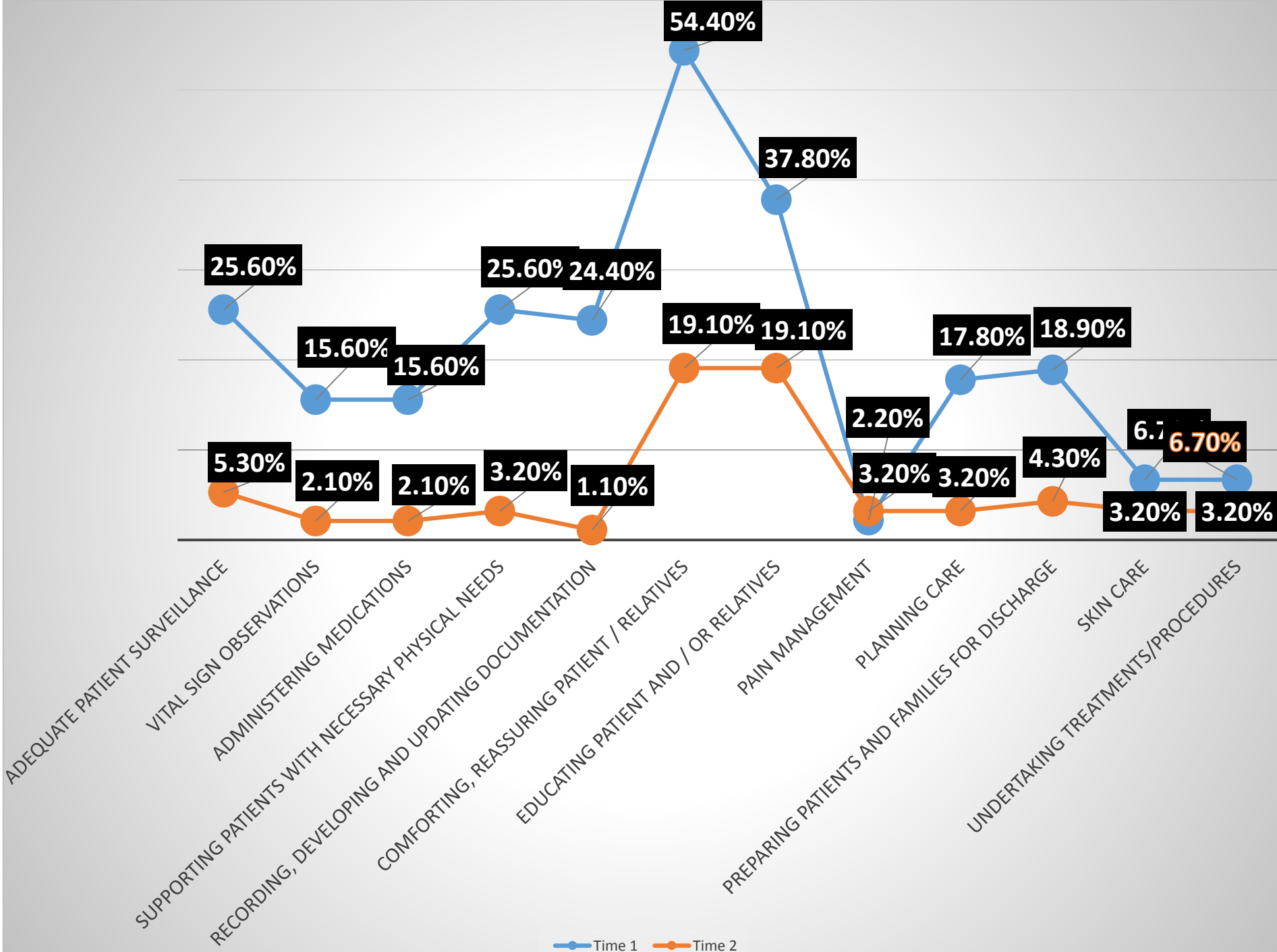


Staffing and Resource Adequacy

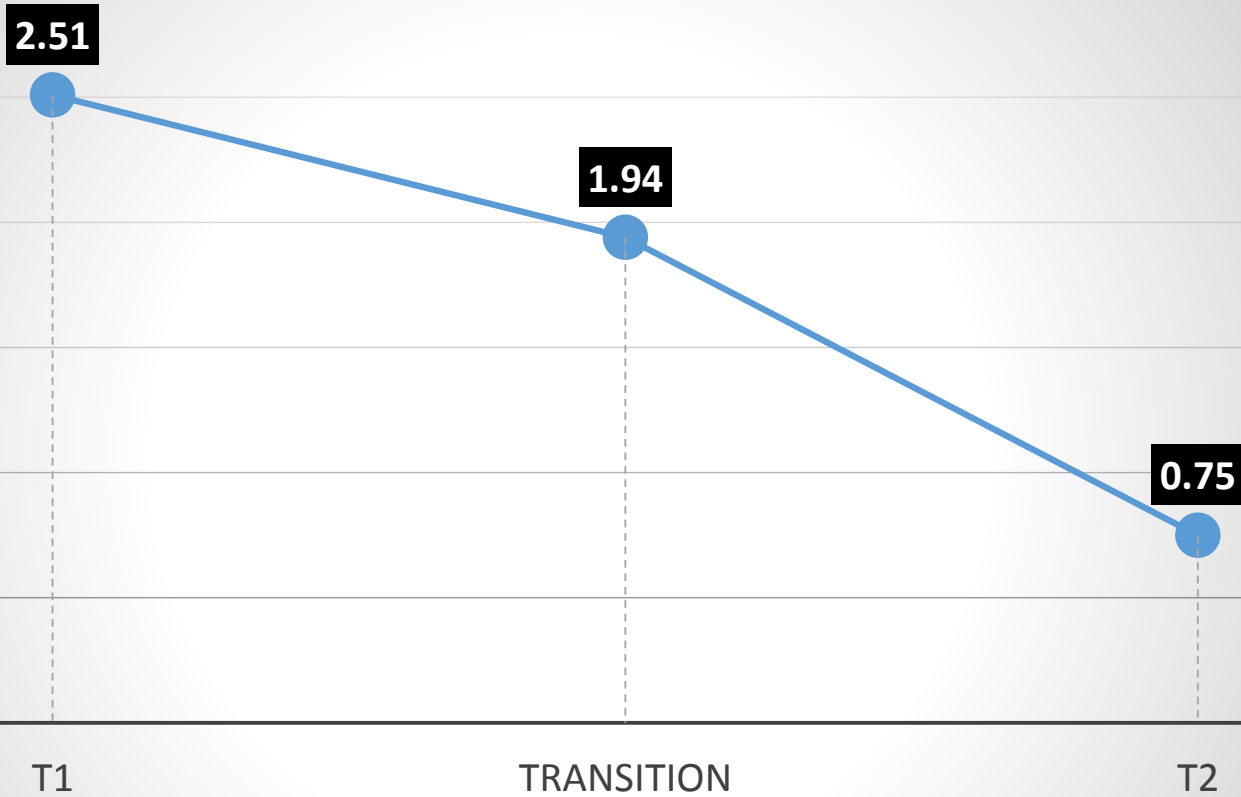


Care Left Undone Events

- Across the three Phases of research, the items of care most frequently reported as undone were comfort/talk with patients and educating patients and/or family. The items least frequently left undone were pain management and undertaking treatments/procedures.
- In Phase I, 75.6% of nurses reported that at least one necessary item of care was left undone due to lack of time on their last shift while 61.9% reported the same in transition, falling to 31.8% following the implementation of the changes to staffing.
- Overall, an average of 2.51 care activities were left undone per shift in Phase I while 1.94 activities, on average, were left undone in transition, falling to 0.75 in Phase 2.



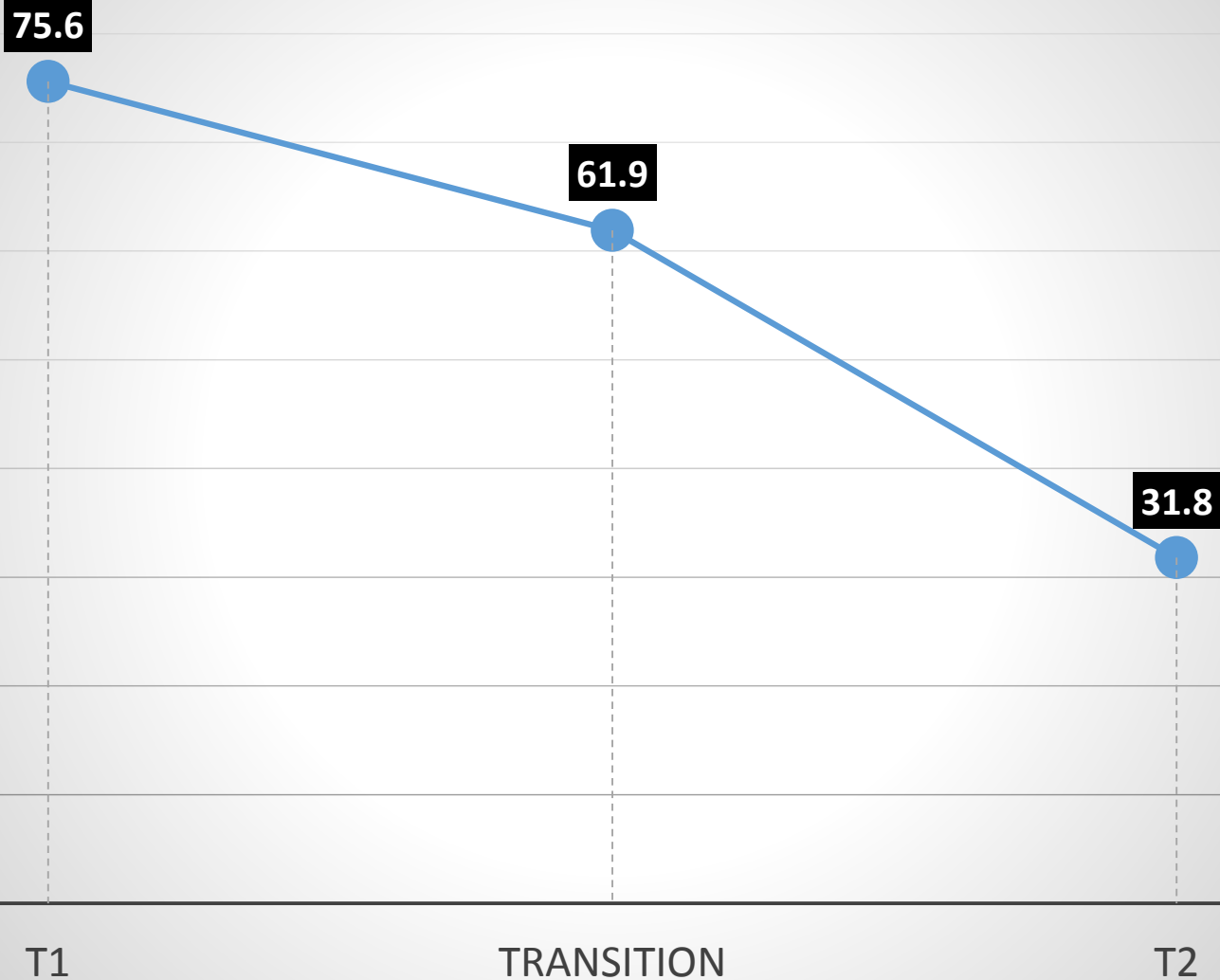
Care Left Undone Events



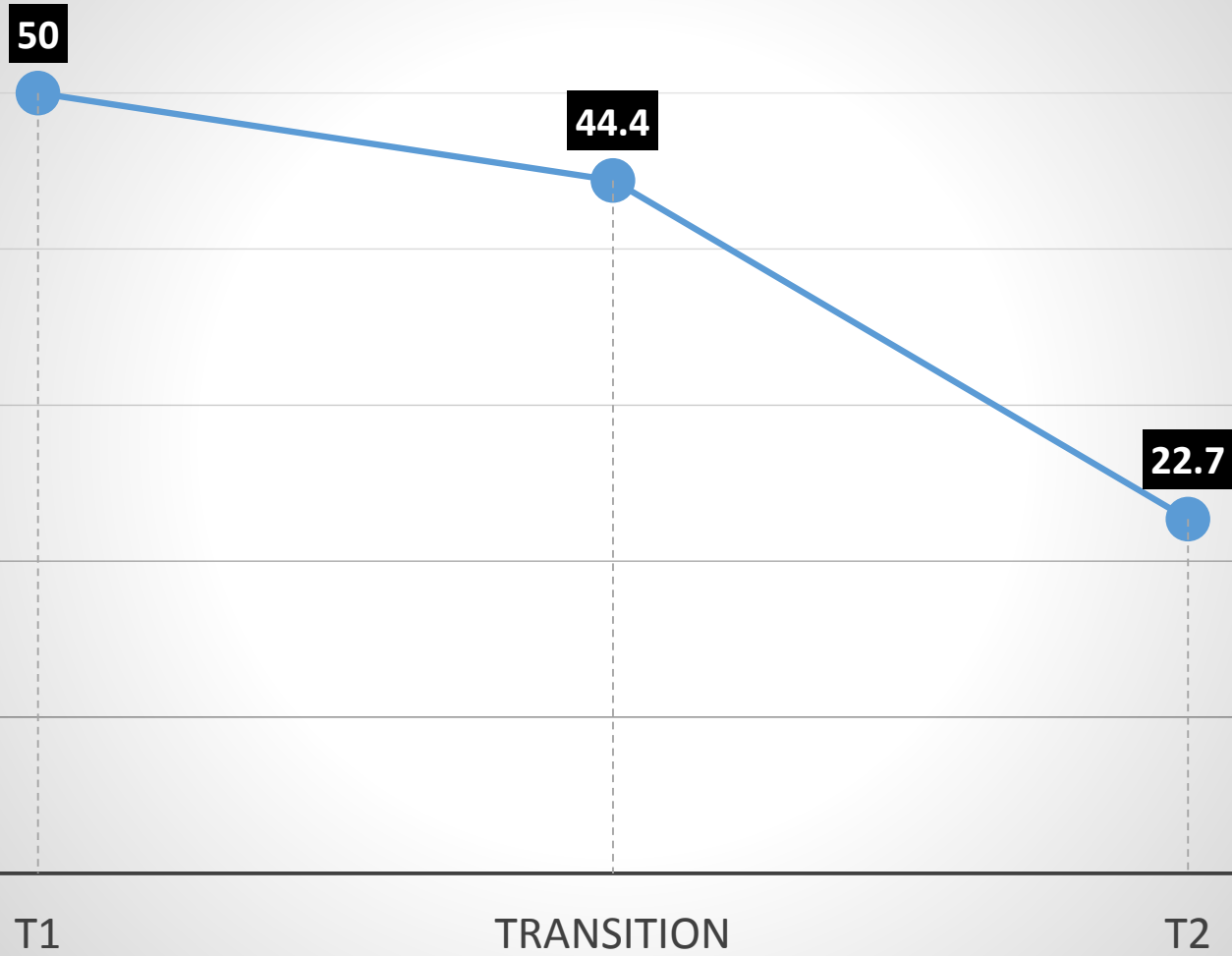
Care Left Undone Events



Shifts with at least one item undone (%)



Missed Meal Breaks



Nurse Sensitive Patient Outcome Measures - HIPE

- Length of stay (LOS)
- Urinary tract infection
- Pressure ulcers
- Hospital-acquired pneumonia
- Shock or cardiac arrest
- Upper gastrointestinal bleeding
- Hospital-acquired sepsis
- Deep venous thrombosis
- Central nervous system complications
- Wound infection
- Pulmonary failure
- Metabolic derangement
- Mortality
- Failure to rescue

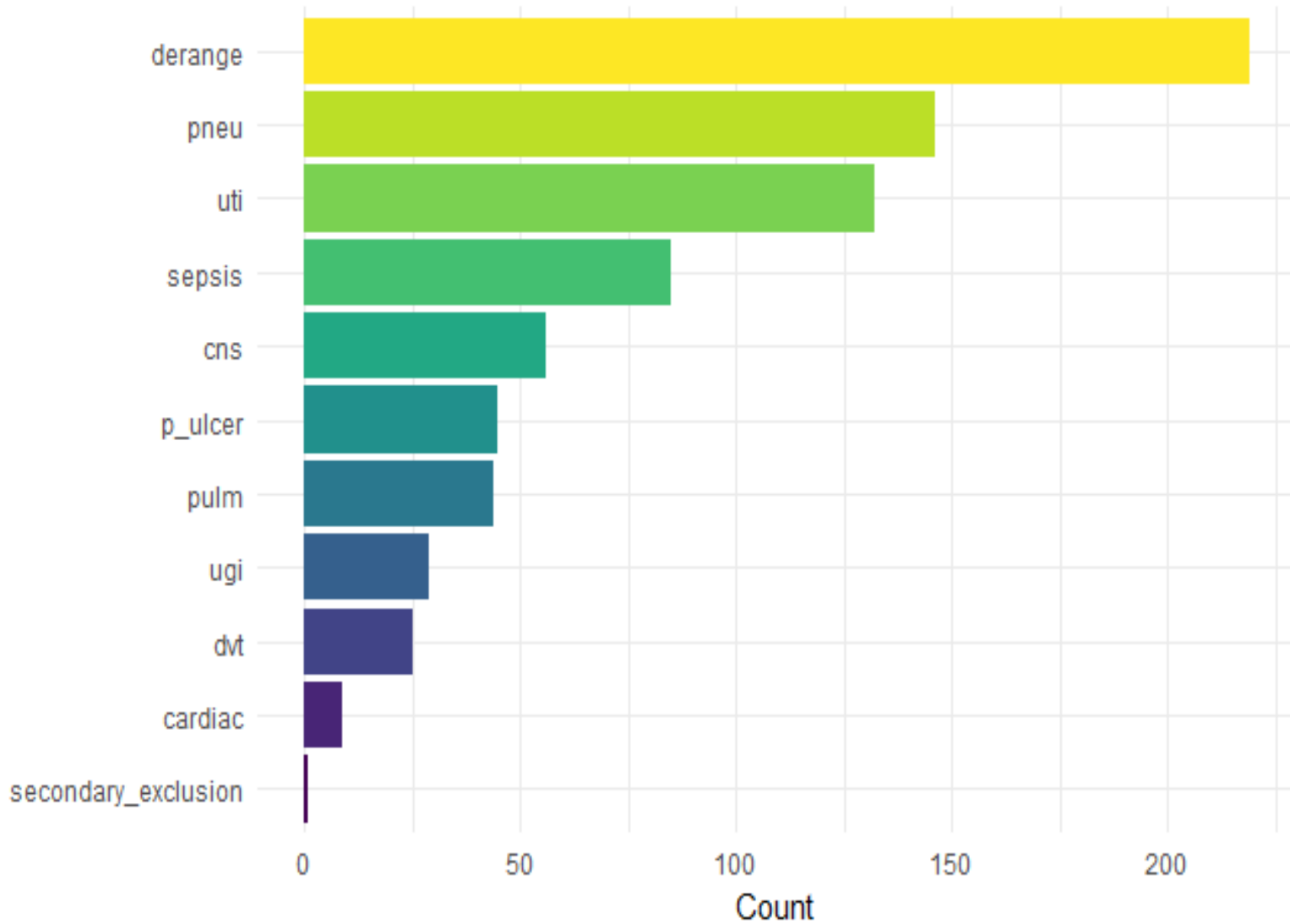
Nurse Sensitive Patient Outcome Measures - HIPE



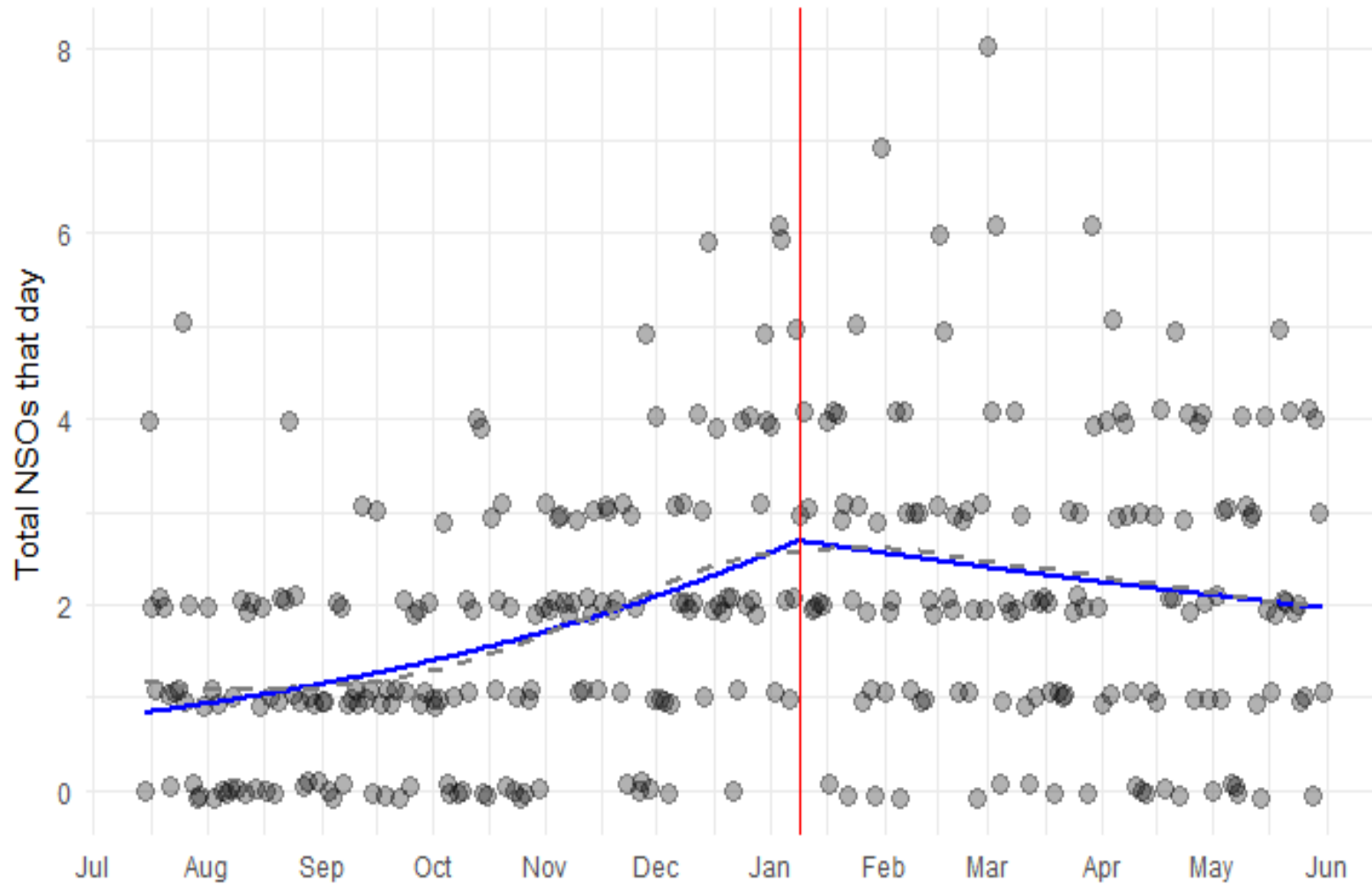
Nurse Sensitive Patient Outcome Measures - HIPE

- Length of Stay –
 - Hospital 1 (Phase 1, mean = 10.19 days; Phase 2, mean = 7.59 days)
 - Hospital 2 (Phase 1, mean = 8.84 days; Phase 2, mean = 6.20 days)
 - Hospital 3 (Phase 1, mean = 12.95 days; Phase 2, mean = 8.50 days)

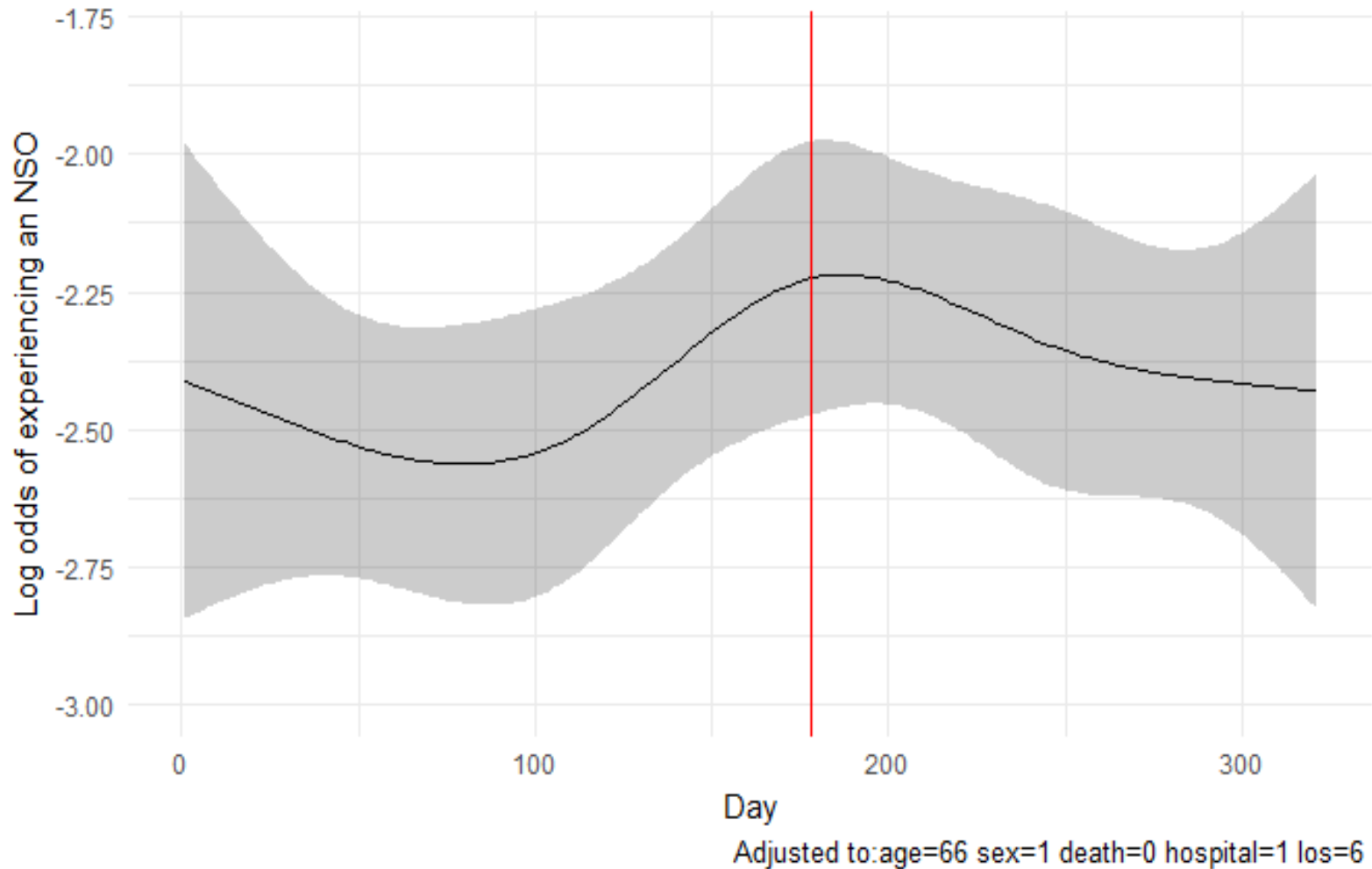
Nuring Sensitive Outcomes



Nuring Sensitive Outcomes



Nuring Sensitive Outcomes



Nursing Sensitive Patient Outcome Indicators

- The time series analysis shows that the count of NSO increased per day by 0.67% in Phase 1 but decreased by 0.88% in Phase 2.
- The regression shows that the odds of developing an NSO began to decline in Phase 2 which was also apparent after adjusting for case mix.
- However, without additional data and over a longer time frame it is difficult to say whether this trend is due to the implementation of the Framework or a naturally occurring pattern due to seasonal variations for example.
- Therefore, while the data looks promising, it should, at this time, be treated with caution.

Discussion

- Prior to the introduction of the recommendations in the *Framework*, 75.6% of nurses reported that at least one necessary item of care was left undone due to lack of time on their last shift; this dropped to 31.8% following the introduction of the recommendations in the *Framework*.
- Similarly, the mean number of items left undone also dropped substantially over the time period with an average of 2.51 care activities reported left undone per shift in Time 1 falling to 0.75 reported undone at Time 2.

Conclusions

- Overall, comparisons of the data in Phase 1 and Phase 2 of the study indicate a richer skill mix (higher proportion of RNs providing care), an increase in the proportion of time allocated to the CNM2 as supernumerary.

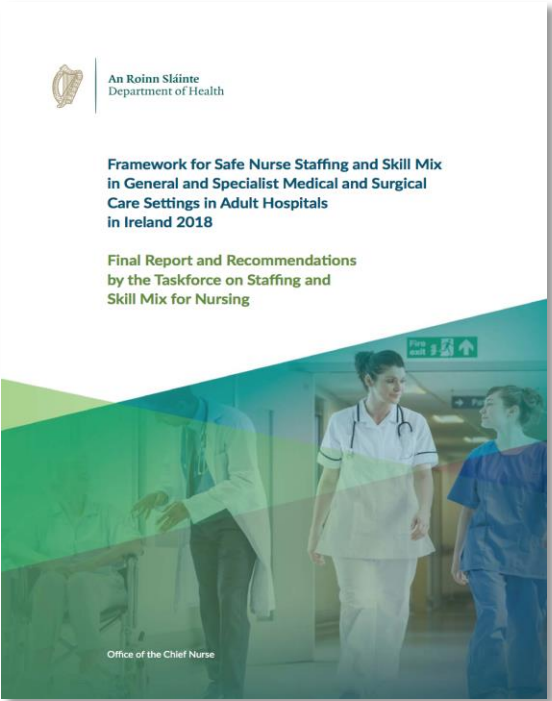
Conclusions

- The effect of the introduction of a policy on safe nurse staffing which incorporates a systematic approach to determining RN and HCA levels has been to stabilise the nursing workforce in the pilot wards; this stabilisation has resulted in a number of improved patient, staff and organisational outcomes including a reduction in missed care and a general increase in staff perceptions that wards are adequately staffed and resourced.

Conclusions

- In conclusion, the introduction of the recommendations in the *Framework*, has resulted in a positive impact on patient, organisational and nurse related outcomes.
- The results of research were used to provide an evidence base for the *Framework for Safe Nurse Staffing and Skill-Mix in Medical and Surgical Care Settings in Adult Hospitals in Ireland*.

Reports



Evaluation of the 'Pilot Implementation of the Framework for Safe Nurse Staffing and Skill-Mix'

April 2018



Protocol | [Full Access](#)

A Protocol to Measure the Impact of Intentional Changes to Nurse Staffing and Skill-Mix in Medical and Surgical Wards

Jonathan Drennan, Christine Duffield, Anne Philomena Scott, Jane Ball, Noeleen M Brady, Aileen Murphy, Darren Dahly, ... [See all authors](#)

First published: 17 July 2018 | <https://doi.org/10.1111/jan.13796>

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This article has been accepted for publication and undergone full peer review but has not been through the copyediting, typesetting, pagination and proofreading process, which may lead to differences between this version and the Version of Record. Please cite this article as doi: 10.1111/jan.13796

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Abstract

Aim

The aim of this research is to measure the impact planned changes to nurse staffing and skill-mix have on patient, nurse and organisational outcomes.

Background

It has been highlighted that there are several design limitations in studies that explore the relationship between nurse staffing and patient, nurse and organisational outcomes; not least that the vast majority of research in this area emanates from studies that are predominantly observational in design. There are limited studies that measure nurse, patient, organisational and economic outcomes using a longitudinal design following a planned change in nurse staffing.

Design

The research will employ a longitudinal, multimethod approach to evaluate the impact that planned changes in nurse staffing and skill-mix have on wards in three pilot hospitals.

Methods

Administrative data collection will take place on a shift-by-shift basis prospectively over a three-year period including the measurement of nursing

Acknowledgements

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An Roinn Sláinte
Department of Health