

Driving Healthcare Efficiency

Cabrini and St Andrews Time & Motion Study

ABF Conference 2016



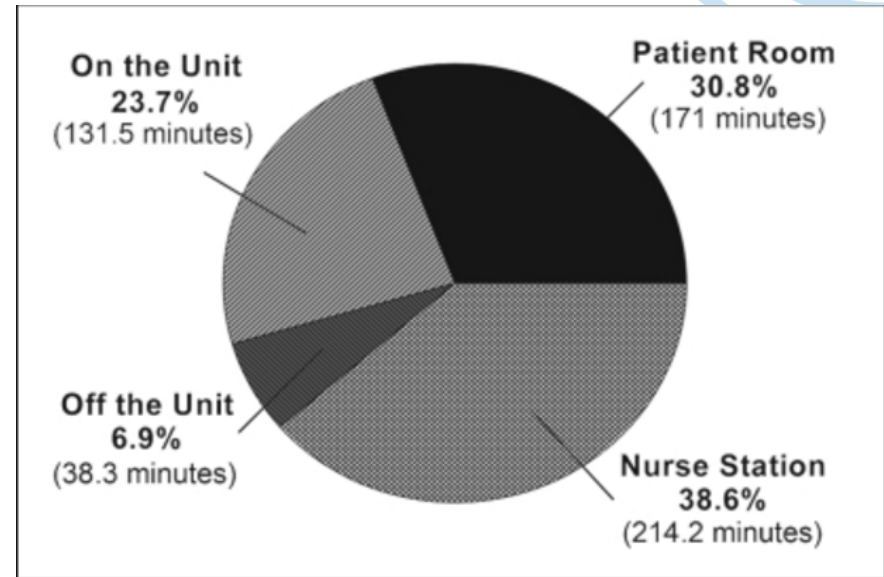
Nursing Time at the Bedside



- % of nursing time spent at the patient bedside?

Nursing Time at the Bedside*

- % of nursing time spent at the bedside?
 - Total of 767 nurses participated
 - More than three-quarters of all reported time was devoted to nursing practice.
 - Three subcategories accounted for most of nursing practice time:
 - Documentation (35.3%; 147.5 minutes)
 - Medication administration (17.2%; 72 minutes)
 - Care coordination (20.6%; 86 minutes)
 - Patient care activities accounted for 19.3% (81 minutes) of nursing practice time
 - Only 7.2% (31 minutes) of nursing practice time was considered to be used for patient assessment and reading of vital signs.



* <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3037121>

Cabrini Brighton

Cabrini Brighton is a Private not for profit Catholic Health Service located in bayside Melbourne.

- 141 Beds
- 5 State of the art operating theatres
- 3 stage post anaesthetic care unit
- Day of Surgery Admission unit (DOSA)
- Endoscopy
- Medical Imaging (MRI – May 16)
- 4 Bed Close Observation Unit
- Day Oncology Unit (24 Chairs)
- Respiratory & Sleep Centre
- Hospital Pharmacy
- Chemotherapy Compounding Facility
- Pathology Collection Centre
- Three wards comprised of 91 beds
- Consulting Suites



St Andrews Hospital

- SA's largest independent private hospital with 207 beds
- A not-for-profit organisation affiliated with the Uniting Church
- Acute medical & surgical with a wide range of specialties
- 27,500 admissions per annum
- 50,000 + bed days per annum
- 13,500 operating procedures per annum
- 6,000 day procedures/scopes
- 1,400 cath lab procedures per annum
- 9 operating theatres/ 2 cath labs (1 Hybrid)/ 2 procedure rooms
- Emergency Service (0800 - 2200)
- Critical Care Unit (14 beds)
- Day Procedure Suite / Chemotherapy suite
- 2 MRI's / 2 CT Scans
- 3 Linear Accelerators
- 600 staff (300FTE)



PowerHealth Solutions

- Established 1995
- ISO 9001:2008 certified
- Dedicated exclusively to health
 - Patient Costing
 - Patient Billing
 - Incident Management
 - Healthcare Budgeting
 - Hospital Navigation



Driving Healthcare Efficiency

The Problem

- Salaries and Wages account for the largest costs in acute care
- Clinical salaries and wages tend to be allocated on unweighted bed hours nationally
- There are exceptions:
 - Nurse Dependency Systems where available and accurate
- National default of bed hours assumes
 - Similar patients in a ward
 - Time spent by clinical staff is comparable across patients



Time and Motion Study

- Two hospitals, two wards, one week, three shifts per day
- Cabrini
 - 31 bed Surgical Ward
 - Orthopaedic / Urology
- St Andrews
 - 50 bed Surgical Ward
 - Specialties include Orthopaedics, ENT, Vascular & Gynaecology
- Collect clinical staff time in direct contact with patients
- Private hospitals so no physician data

The App

- PowerNav
 - Navigation system to guide patients efficiently through the hospital
 - Realised the technology could also be used for Time and Motion studies
 - No integration required to hospital systems = simple to perform T&M studies




The App cont...

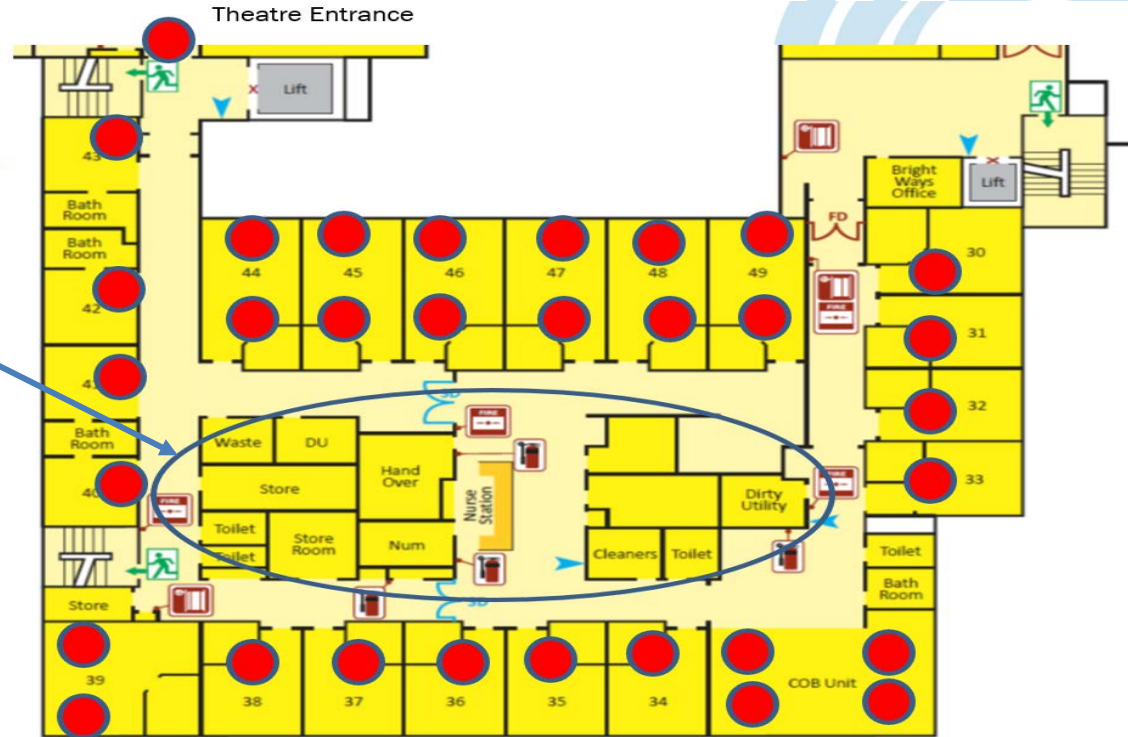
- PowerPerformance Manager (PPM) Mobile
 - Device placed behind every bed
 - Mobile devices (phones) loaded with app and carried by clinical staff
 - Tracks staff time at the patient bedside
 - No patient or staff identifiers
 - No impact on staff or patients
 - Fully integrated to PPM



Location of Devices

Main activity area not covered by devices

 Location of devices - at Bedside only



The Data

- Raw Data from PPM Mobile

Study, Role, StartDateTime, EndDateTime, Beacon, DurationInSeconds

Cabrini Health Pilot Study, Allied Health, 2016-04-19 09:20:39.000, 2016-04-19 09:20:42.000, Bed 34P, 28

Cabrini Health Pilot Study, Allied Health, 2016-04-19 09:20:44.000, 2016-04-19 09:20:46.000, Bed 34P, 19

Cabrini Health Pilot Study, ANUM, 2016-04-22 13:59:40.000, 2016-04-22 13:59:48.000, Bed 34P, 71

Cabrini Health Pilot Study, ANUM, 2016-04-22 14:01:21.000, 2016-04-22 14:04:37.000, Bed 34P, 195

Cabrini Health Pilot Study, Domestic Staff, 2016-04-19 08:24:55.000, 2016-04-19 08:25:00.000, Bed 49x, 40

Cabrini Health Pilot Study, Domestic Staff, 2016-04-19 08:56:06.000, 2016-04-19 08:56:10.000, Bed 34P, 44

Cabrini Health Pilot Study, EN, 2016-04-20 22:33:13.000, 2016-04-20 22:36:58.000, Bed 43P, 225

Cabrini Health Pilot Study, EN, 2016-04-20 22:37:17.000, 2016-04-20 22:38:00.000, Bed 42P, 42

Cabrini Health Pilot Study, GNP, 2016-04-18 14:36:08.000, 2016-04-18 14:39:01.000, Bed 42P, 172

Cabrini Health Pilot Study, GNP, 2016-04-18 14:41:17.000, 2016-04-18 14:43:25.000, Bed 42P, 127

Cabrini Health Pilot Study, Nurse Bank, 2016-04-18 22:08:32.000, 2016-04-18 22:13:17.000, Bed 40P, 284


Cabrini Health Pilot Study, Nurse Bank, 2016-04-18 22:13:22.000, 2016-04-18 22:14:24.000, Bed 39x, 61

Cabrini Health Pilot Study, Nurse Manager, 2016-04-20 14:29:46.000, 2016-04-20 14:29:52.000, Bed 335, 67

Cabrini Health Pilot Study, Nurse Manager, 2016-04-20 14:45:29.000, 2016-04-20 14:45:56.000, Bed 333, 27

Cabrini Health Pilot Study, RN, 2016-04-18 14:01:27.000, 2016-04-18 14:01:34.000, Bed 335, 65

Cabrini Health Pilot Study, RN, 2016-04-18 14:07:36.000, 2016-04-18 14:08:07.000, Bed 36P, 30



The Data cont...

- Cabrini
 - 10,648 records in 1 week
- St Andrews
 - 16,314 records in 1 week

The Data cont...

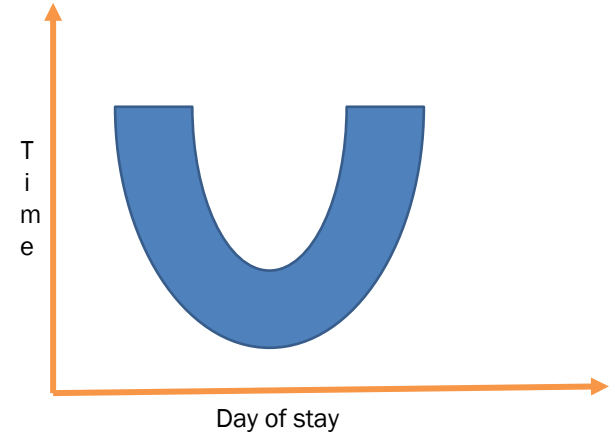
- Raw data is transformed by PPM into service codes (cost drivers)

Cost Type Date of Service Time

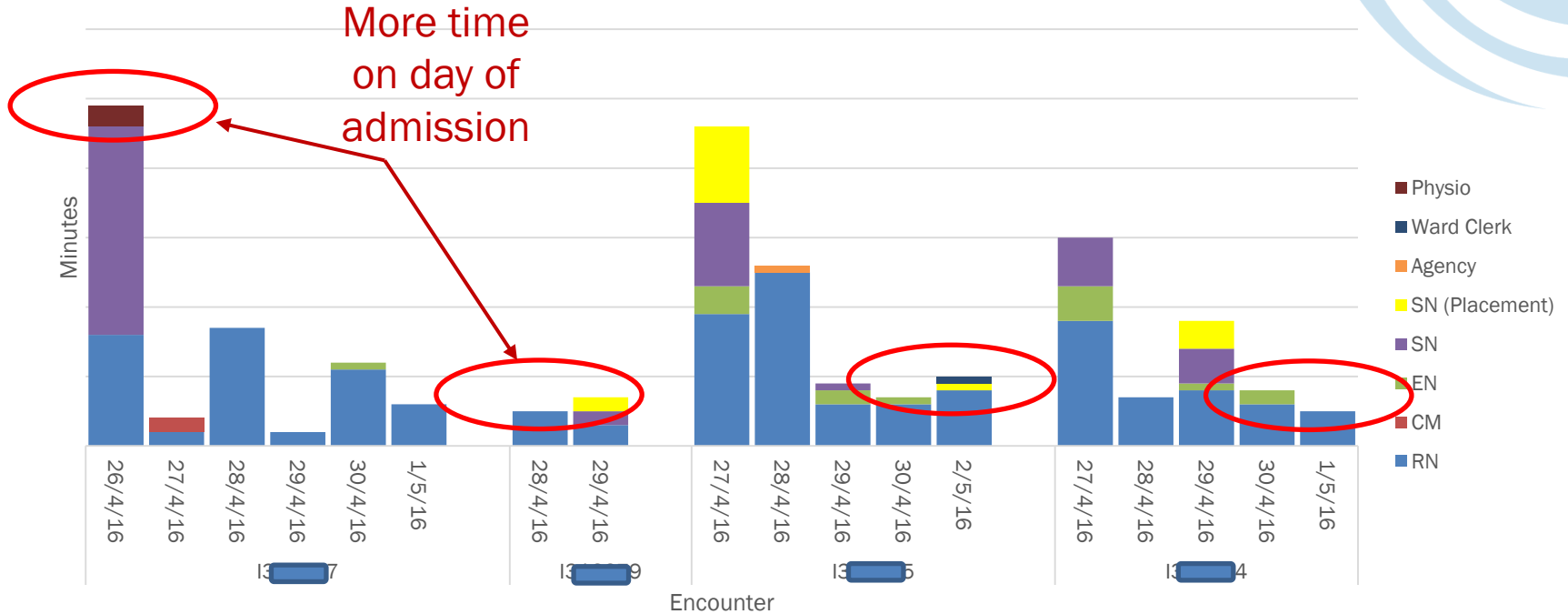
```
PatientNumber,EncounterNumber,ServiceCode,Quantity,StartDateTime,Duration
0 5,2 1,PPMMobile-30P-Allied Health,1,2016-04-20 10:23:14.000,2280
0 5,2 1,PPMMobile-30P-ANUM,1,2016-04-21 20:20:10.000,256
0 5,2 1,PPMMobile-30P-Domestic Staff,1,2016-04-22 09:54:09.000,60
0 5,2 1,PPMMobile-30P-GNP,1,2016-04-22 12:01:08.000,37
0 5,2 1,PPMMobile-30P-Nurse Manager,1,2016-04-20 08:30:08.000,114
0 5,2 1,PPMMobile-30P-RN,1,2016-04-19 14:50:05.000,9638
0 5,2 1,PPMMobile-30P-Student Nurse,1,2016-04-20 07:22:33.000,4013
0 5,2 1,PPMMobile-30P-WA,1,2016-04-20 13:57:53.000,146
```

The Results

- Expected a U shaped curve
 - More time on admission and discharge
 - Not reflected in the data
 - One site not at all
 - One site on admission only
 - Reflects the study only capturing time at the bedside



The Results cont...

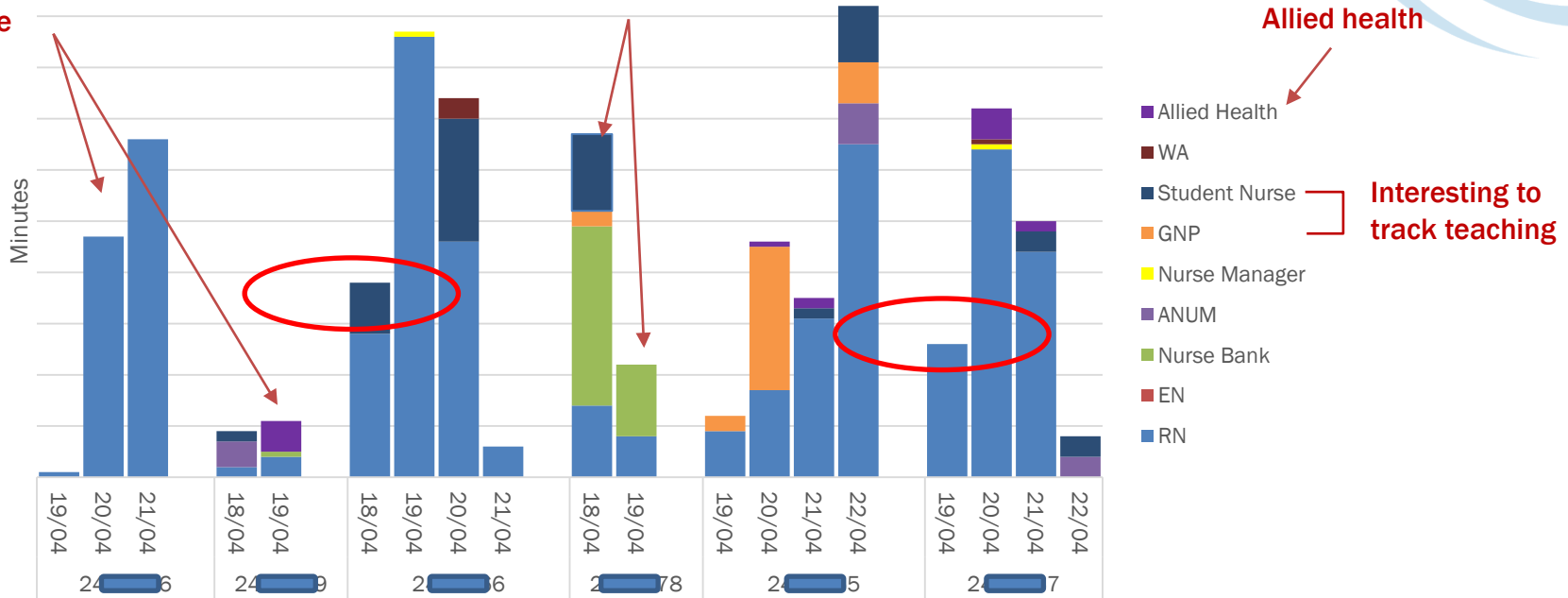


The Results cont...

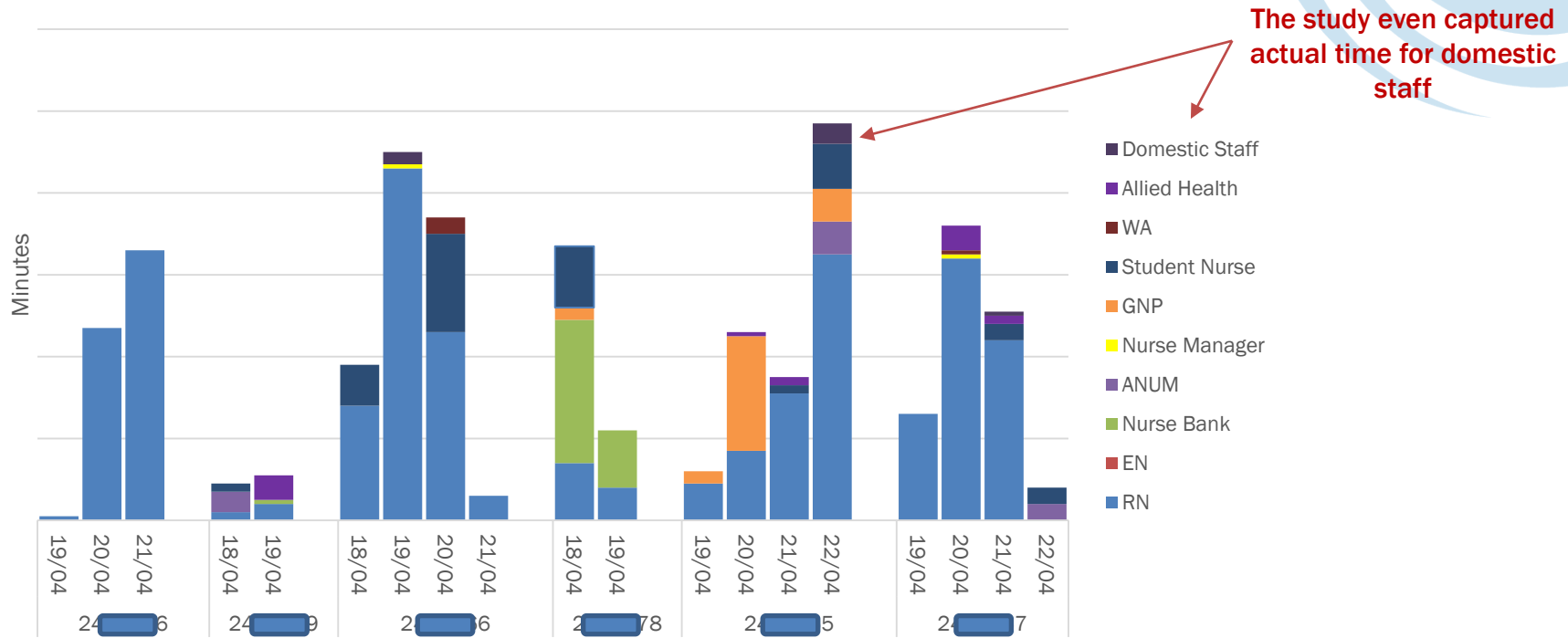
Patients are not similar - various levels of clinical care

Minutes by clinical role by day

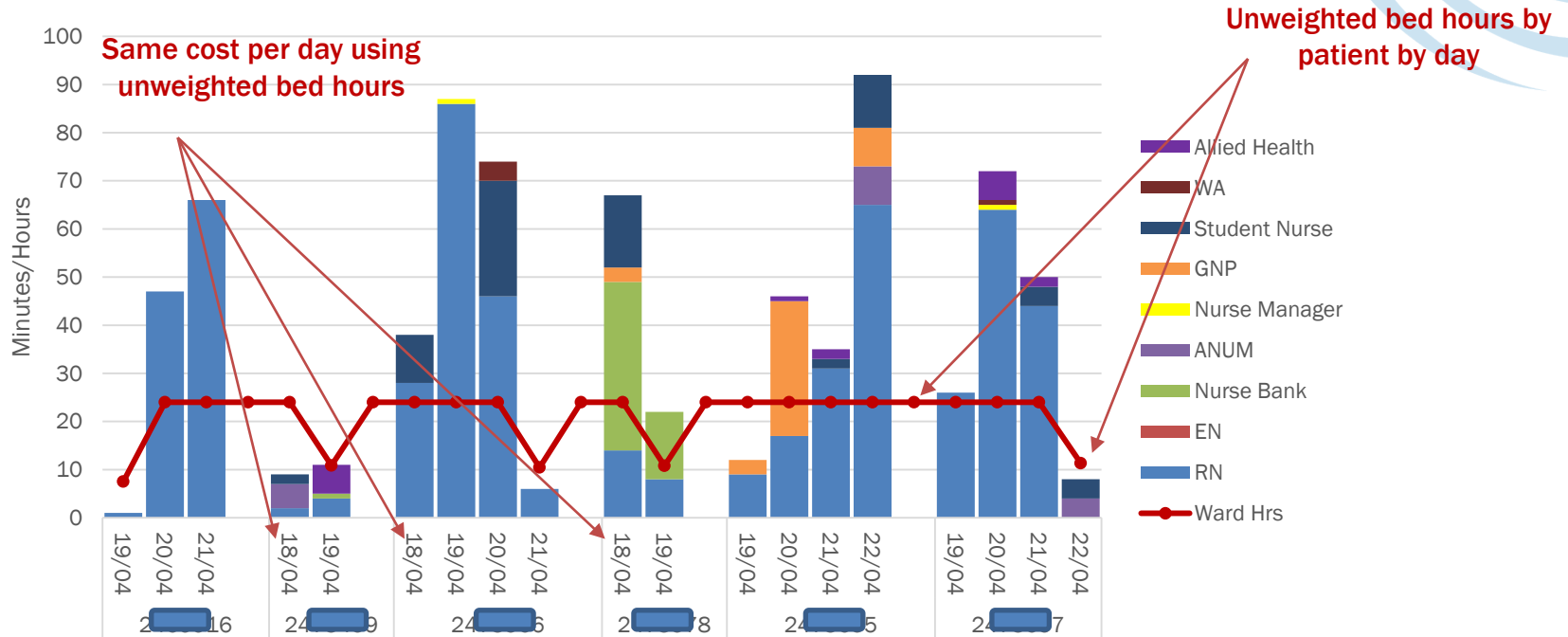
Captured actual time for very hard to track components such as Allied health



The Results cont...

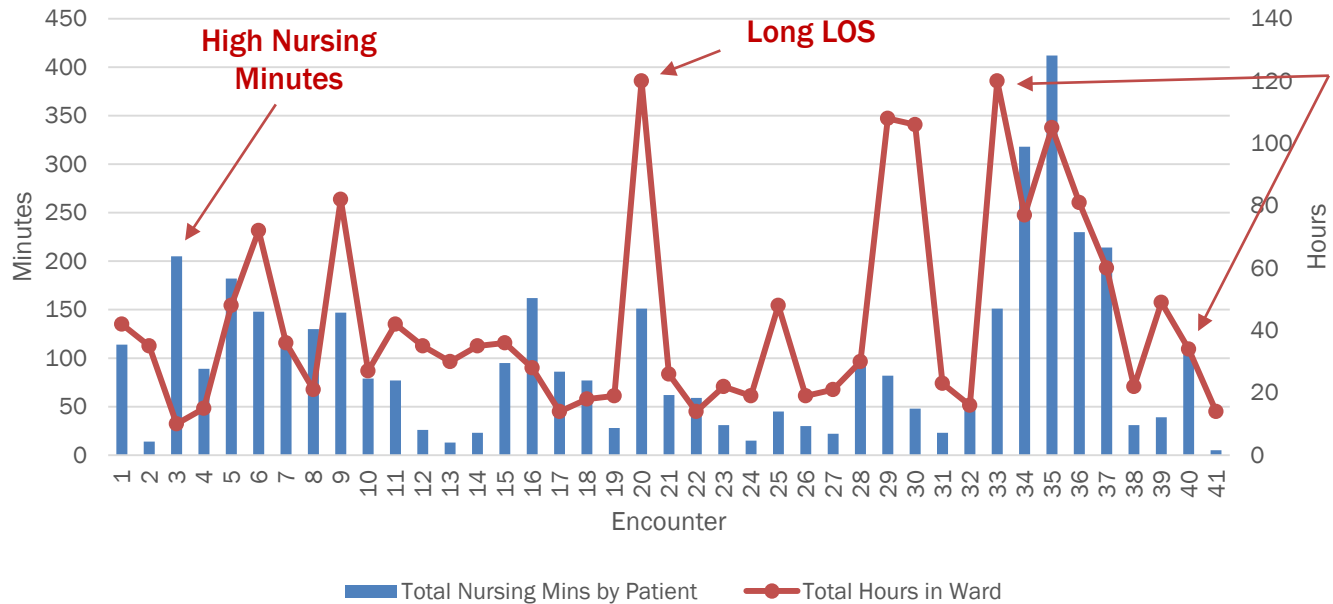


The Results cont...



The Results cont...

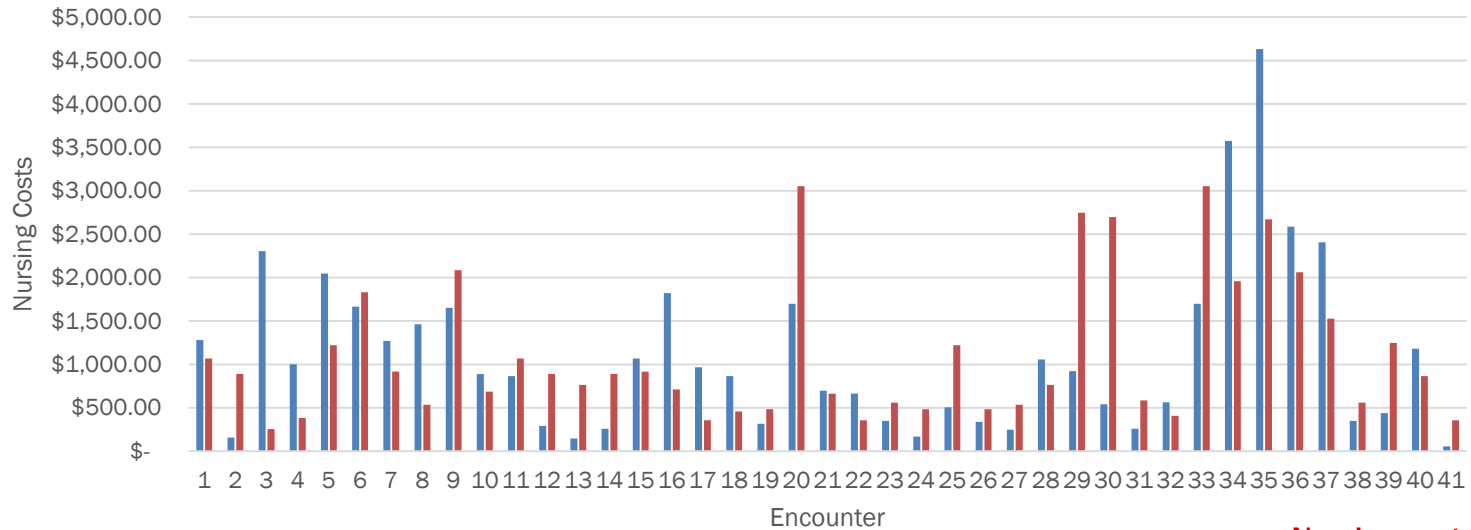
Actual Nursing Time vs Hours in a Bed



Some of the total times are very close but others are far apart

The Results cont...

Nursing \$ Comparison
By Patient vs Bed Hours



■ Nursing \$ by Direct Contact ■ Nursing \$ by Bed Hours

Nursing costs vary significantly between the two cost drivers

Conclusion

- The de-identification of staff complicates the idea
 - Original idea was for staff to have the app on their phone
 - However reports are by role not user
 - complicates knowing who is not using the app
 - How to gauge the quality (completeness) of the data
 - Easier to manage in a controlled ‘study’ type exercise vs in an ‘everyday’ business practice

Conclusion cont...

- Costing is at a turning point thanks to mobile technology
 - Across both patients and staff
 - Technology is simple to deploy with minimal impact on patients and staff
 - Improve historically hard to identify costs, e.g.
 - Teaching, Medical salaries, Porters and Orderlies, etc
- For ex:
 - Patients who use PowerNav and by default PPM Mobile
 - We can collect various times for them
 - In reception
 - In OP consultation
 - In Ancillary services, e.g. Radiology
 - Data passed to PPM as service codes (cost drivers)
 - Logic setup around creating standards from actual data for patients not using the app
 - Hospital in the Home
 - Nurse Dependency Systems
 - Use the data to periodically update the underlying ND workload assumptions
 - Which then feeds into PPM as ND cost drivers

Any Questions?

