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Measuring Nursing Workload in Critical Care

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INASnet

Why workload measurement matters

- Increasing demand for ICU-nurses
- Nursing shortages
- Need for objective workload measures
- Need for safe staff decisions



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Can workload be predicted?

- Can workload from my shift tell us something about the next?
- Can objective workload data support staffing decisions?
- Can workload measurement create a common language between nurses and managers?

Hindawi
Journal of Nursing Management
Volume 2024, Article ID 9703289, 9 pages
<https://doi.org/10.1155/2024/9703289>

WILEY |  Hindawi

Research Article

Nursing Workload Prediction for Upcoming Shifts: A Retrospective Observational Exploratory Study in the Postoperative and Intensive Care Unit

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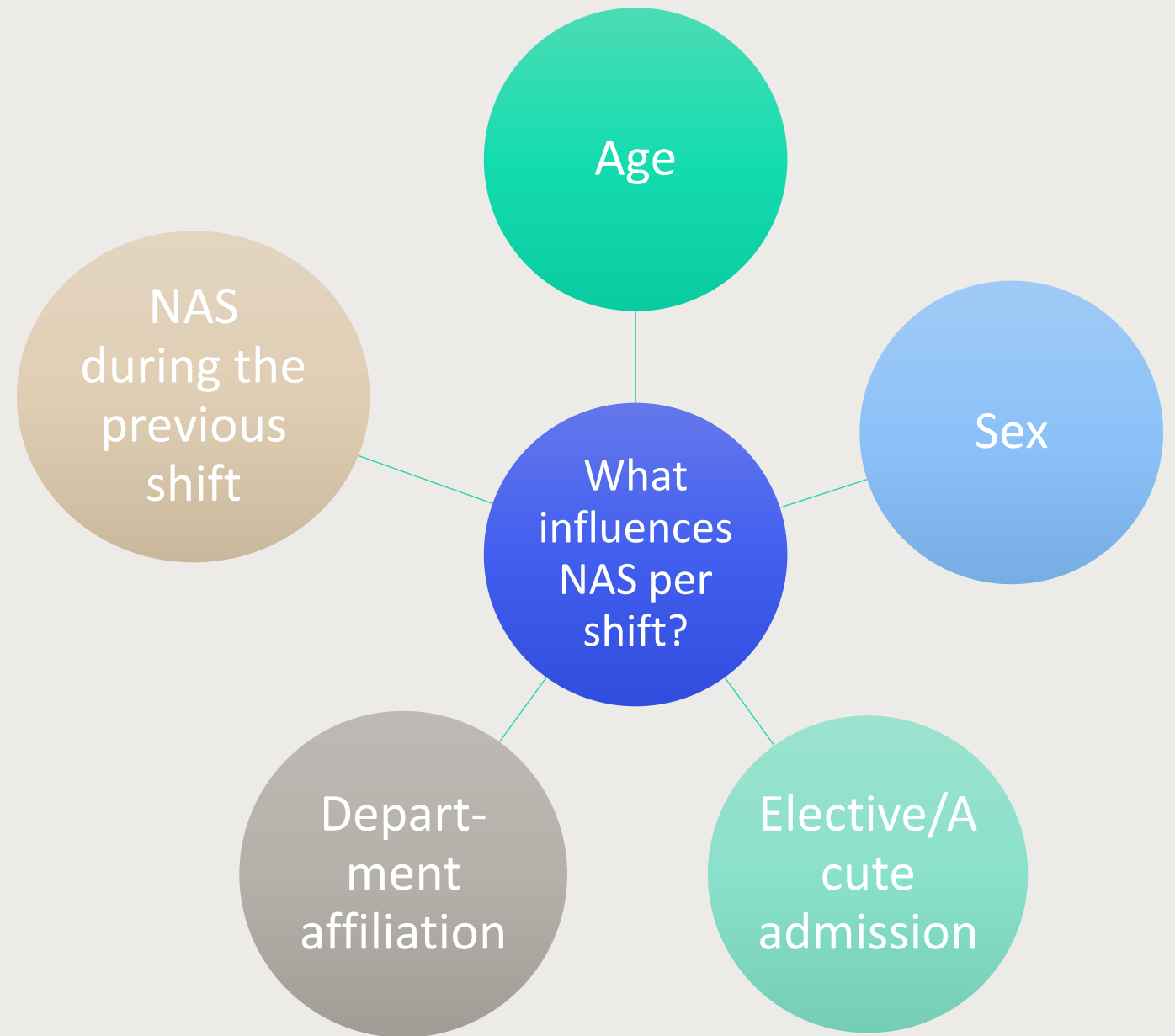
Method

- A quantitative retrospective observational exploratory study
- 1. January – 30. June 2016
- 2695 patients
- 5916 NAS-scorings



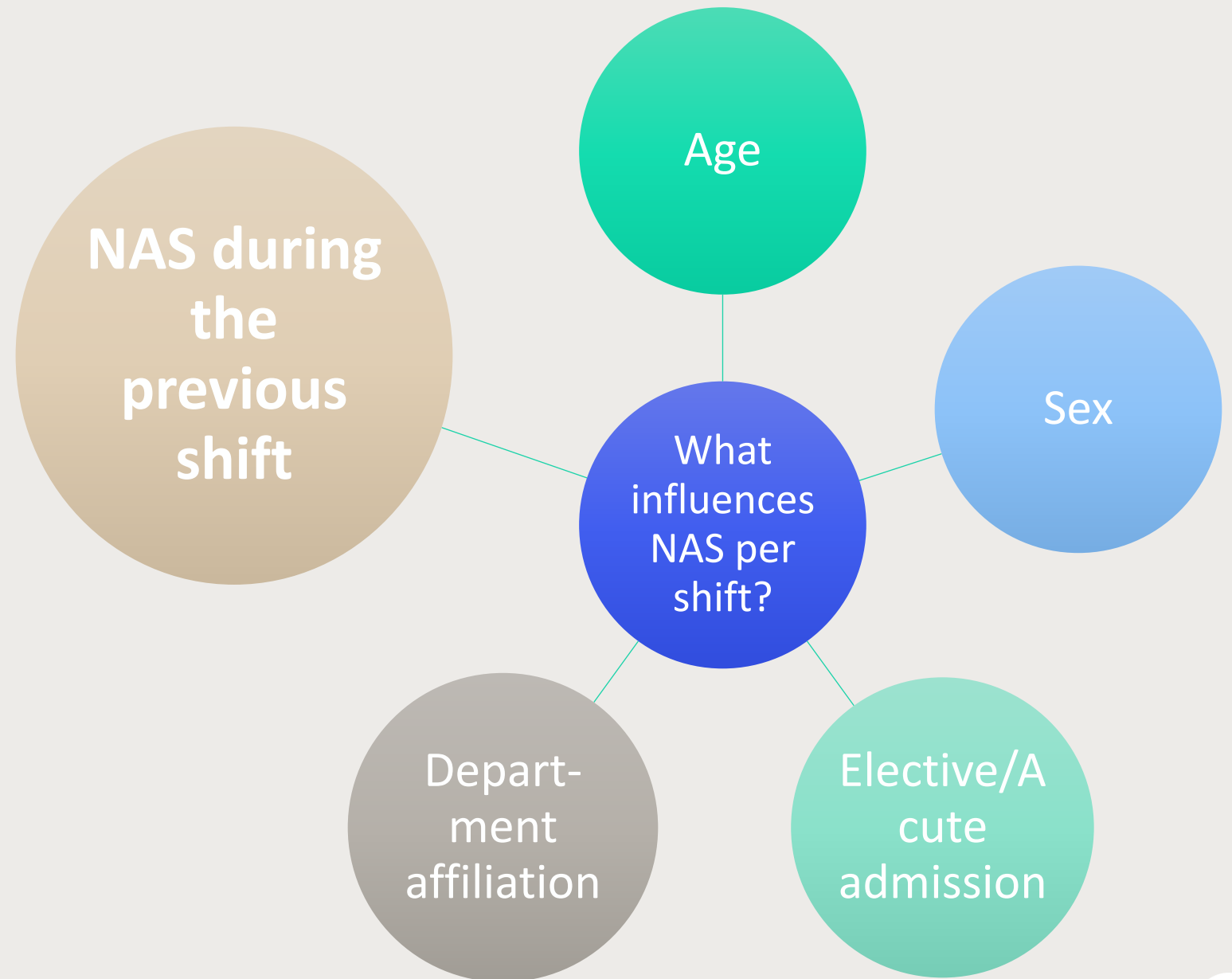
Results:

What influences nursing workload?



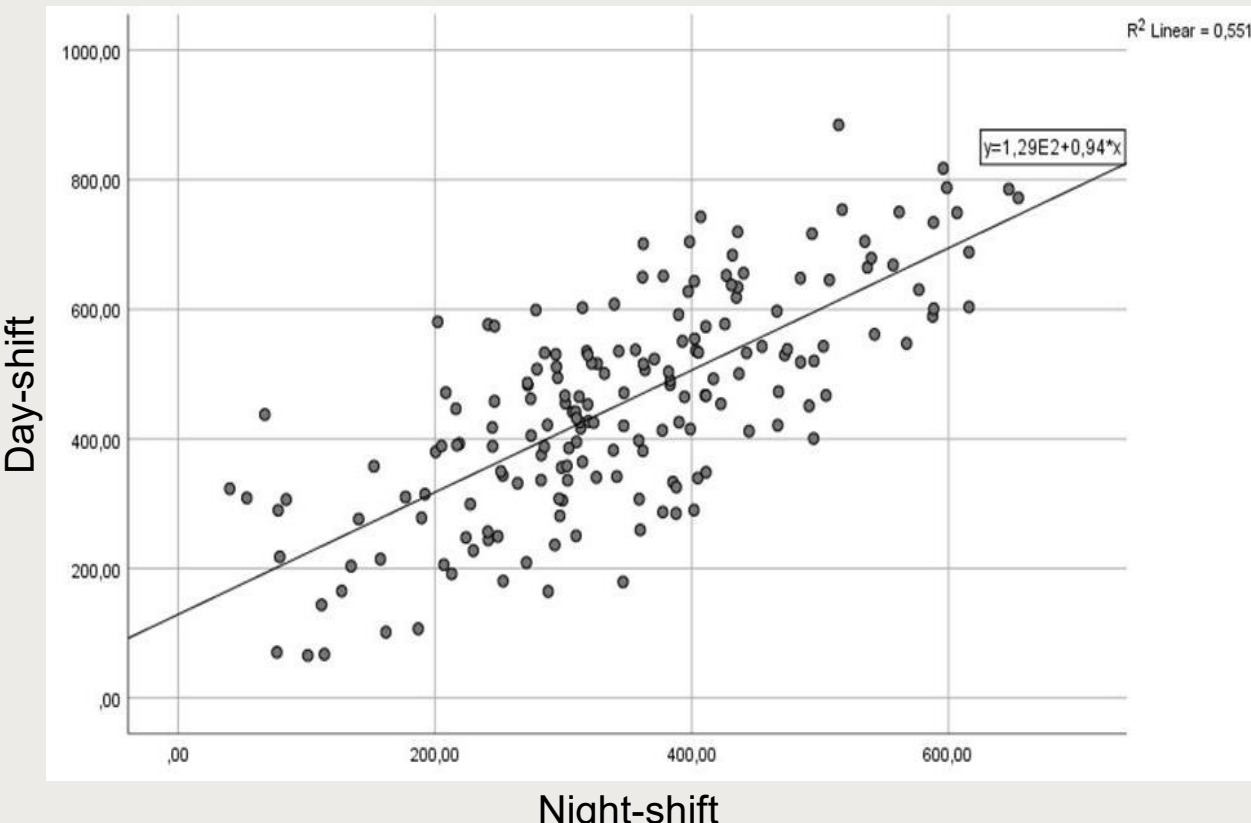
Results:

What influences
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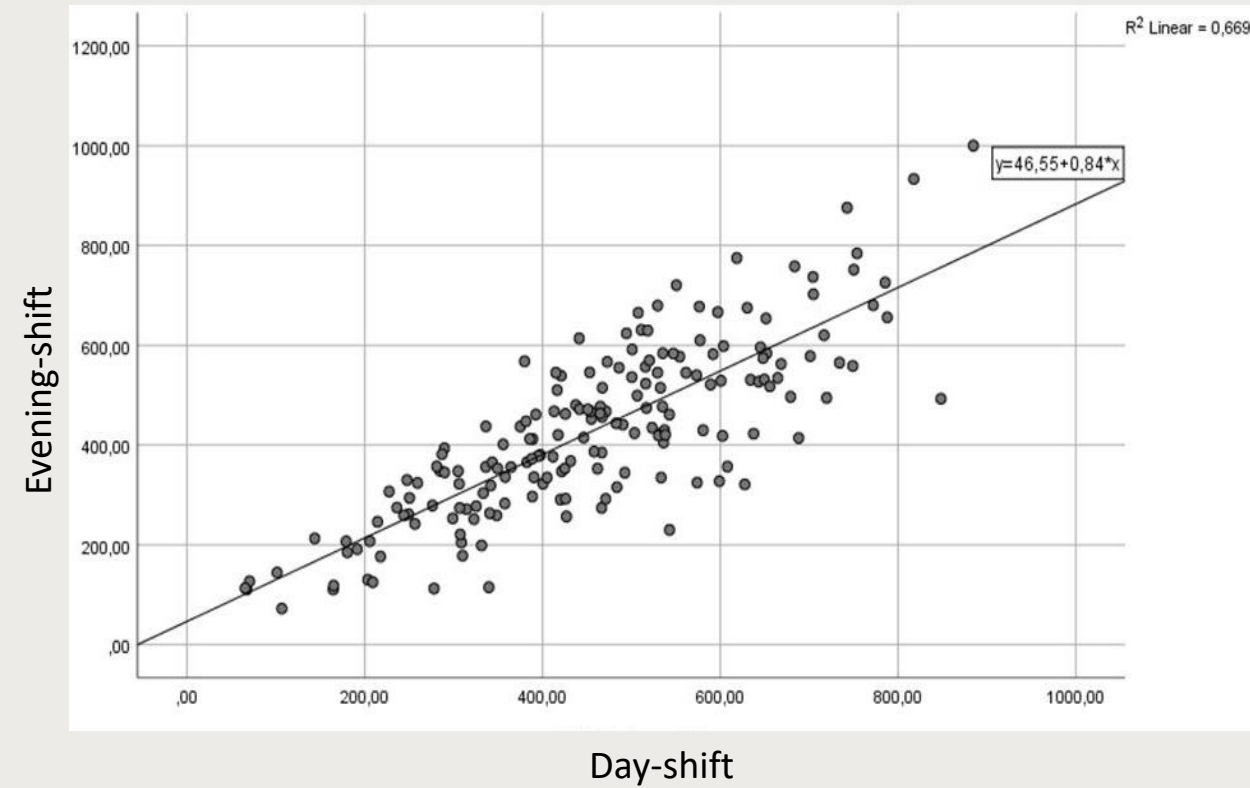


Conclusion

NAS-night shift could explain 55.1% of the variation in NAS-dayshift



NAS-dayshift could explain 66.9% of the variation in NAS-evening shift



Developing a shared understanding of workload

- Bedside nurses reported that the NAS corresponded well with the workload experienced during daily clinical practice
- But - NAS-data were not used for budgeting, performance management, or resource allocation decisions



Stock photo



Does measured workload correspond with experienced workload?

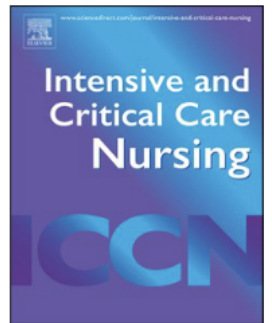
INTENS CRIT CARE NUR 95 (2026) 104428



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Intensive & Critical Care Nursing

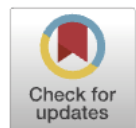
journal homepage: www.sciencedirect.com/journal/intensive-and-critical-care-nursing



Research Article

Nurses' subjective workload assessed with the NASA-TLX and its relationship with the nursing activities score (NAS) and nurses' demographic factors: a prospective cross-sectional study

Ann-Margret Hasselgård^{a,b,c,*} , Heidi Torgersen Larsen^d, Ann-Cathrin Melby^{e,f} ,
Sylvi Vullum^g, Sigbjørn Flatland^h, Kristine Aasheim Imslandⁱ, Stina Willadsen^j,
Julie Hoseth Berntsen^c, Antonija Petosic^k , Aliaksandr Hubin^l , Siv Karlsson Stafseth^{a,m} 



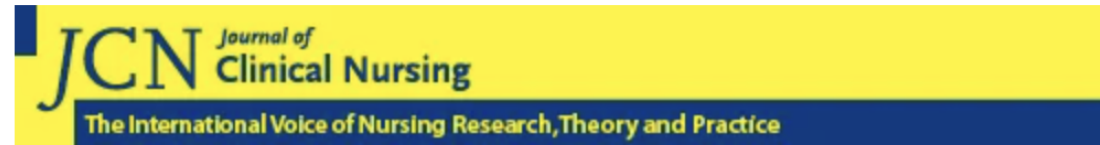
BMJ Open Physician and nurse well-being, patient safety and recommendations for interventions: cross-sectional survey in hospitals in six European countries

Linda H Aiken,¹ Walter Sermeus,² Martin McKee ,³ Karen B Lasater ,¹ Douglas Sloane,¹ Colleen A Pogue,¹ Dorothea Kohlen ,² Simon Dello ,² Claudia B Bettina Maier ,⁴ Jonathan Drennan,⁵ Matthew D McHugh ,¹ For the Magnet4Europe Consortium

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BMJ Open: first published as 10.1136/bmjopen-2021-027111 on 14 January 2025. Protected by copyright.

Why subjective workload?



EMPIRICAL RESEARCH QUANTITATIVE

Association of Burnout and Intention-To-Leave the Job With Objective Nursing Workload and Nursing Working Environment: A Cross-Sectional Study Among Intensive Care Nurses

[Arnaud Bruyneel](#) , [Jérôme E. Dauvergne](#), [Nicolas Bouckaert](#), [Anaëlle Caillet](#), [Walter Sermeus](#), [Laurent Poiroux](#), [Koen Van den Heede](#)

First published: 14 January 2025 | <https://doi.org/10.1111/jocn.17650> |

 [VIEW METRICS](#)

Index zatížení úkolu (NASA-TLX)

1. Duševní nárok (Mental demand): Kolik duševní a vnímací aktivity bylo potřeba (např. přemýšlení, rozhodování, počítání, paměť)?
2. Fyzický nárok (Physical demand)
3. Časový nárok (Temporal demand)
4. Vlastní výkon (Performance)
5. Úsilí (Effort)
6. Míra frustrace (Frustration)



Project

Describe the nurse's workload in intensive- and postoperative units in Norway

Examine the relationship between NASA-TLX and NAS and associations with demographic variables



Method

Prospective observational study
with a cross-sectional design

12 units, 14-days period

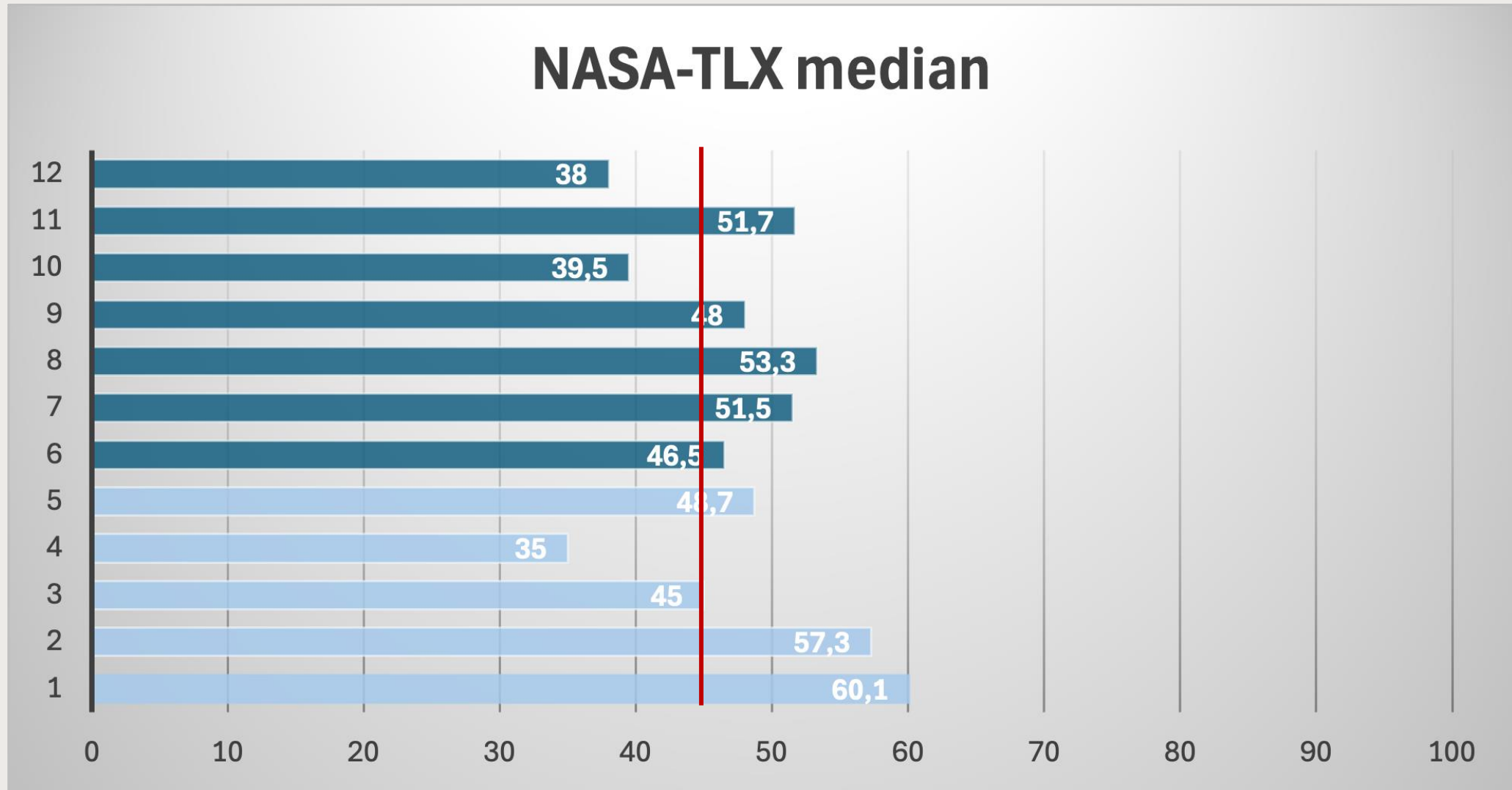
991 patients

741 nurses

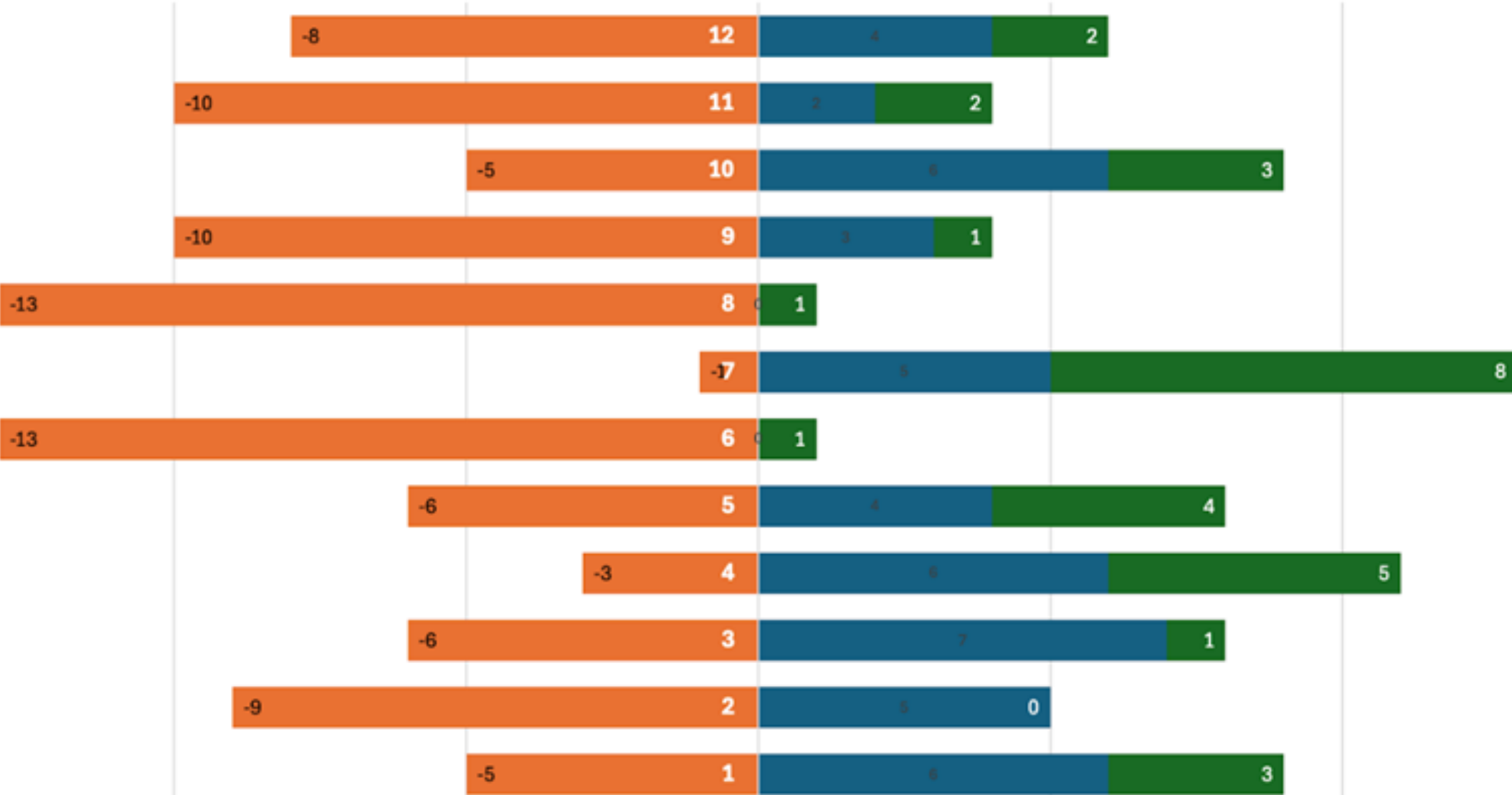
3484 shifts



Subjective workload across units (n=3484 shifts)



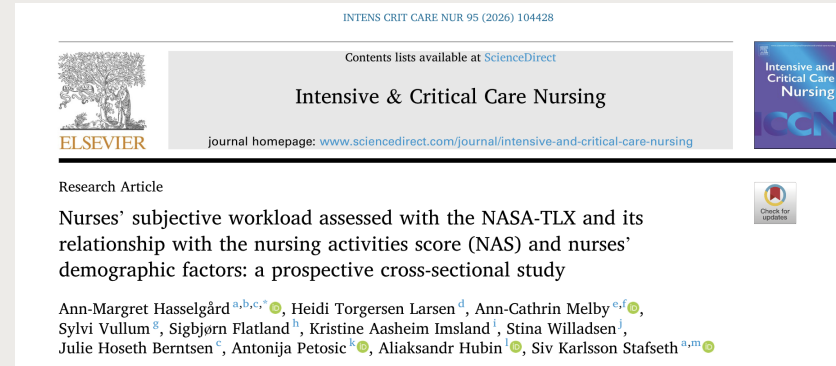
Staffing adequacy based on NAS



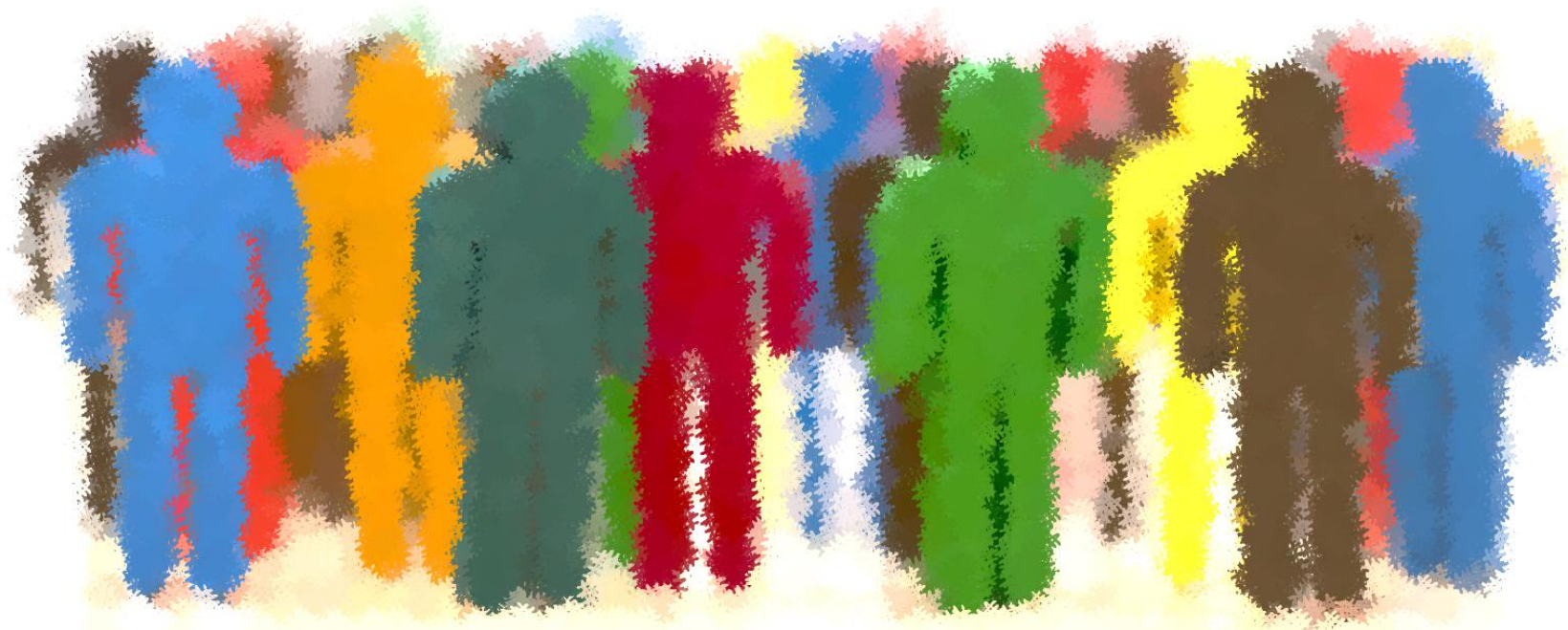
Key-findings

1. There was a strong association between NAS and NASA-TLX.
2. Nurses > 50 years experienced higher NASA-TLX
3. Evening- and night-shifts had lower NASA-TLX scores compared to dayshift
4. Nurses with 3-5 years of experience – overall highest NASA-TLX
5. NASA-TLX decreases after 5 years of experience
6. After 10 years – reported significantly lower mental and temporal demands

NAS ukazuje, co sestry dělají. NASA-TLX ukazuje, jak náročná jim práce připadá. Společně poskytují podklad pro bezpečné plánování personálu.



From measurement to management



How workload data can support staffing decisions

Norsk	Engelsk	Tsjekkisk
Virkelig	Actual value	Skutečná hodnota
Måltall	Target value	Cílová hodnota
Avvik	Variance	Odchyľka

Målskjema 2022 - Intensivseksjonen

Måltall:		Januar	Februar	Mars.	April	Mai	Juni	Total hittil i år	Resultat-vurdering
1. Budsjett versus regnskap	Virkelig	12 240	12 706	13 548	10 328	14 406	4 385	69 686	
	Måltall	13 594	11 749	11 534	11 522	12 669	5 103	64 099	
	Avvik	-1 354	-957	-2 014	1 194	-1 737	-718	-5 587	
2. Sykefravær samlet <8,0 %	Virkelig	9,7	13.6	11.3	11.6	10.2	10.9	11.2	
	Måltall	8,0	8,0	8,0	8,0	8,0	8,0	8,0	
	Avvik	1.7	5.6	3.3	3.6	2.2	2,9	3.2	
3. Gj.snitt NAS pr. intensivpasient/kirurgisk intermediær	Virkelig	130/103	132/103	131/101	131/104	118/97	116/104	131/99	
	Måltall	120/80	120/80	120/80	120/80	120/80	120/80	120/80	
	Avvik	10/23	12/23	11/21	11/104	2/17	4/24	11/19	
4. Gj. snitt kirurgisk intermediærpas/døgn	Virkelig	1.1	2,2	2.6	2.4	3	3	2.8	
	Måltall	3	3	3	3	3	3	3	
	Avvik	1,9	0,8	0.4	0.6	0	0	0.2	

Mean NAS-score per ICU-patient/Postoperative patient

NAS – higher than target almost every month

Målskjema 2022 - Intensivseksjonen

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	Avvik		10/23	12/23	11/21	11/104	2/17	4/24	11/19	
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	Måltall		3	3	3	3	3	3	3	
	Avvik		1,9	0,8	0,4	0,6	0	0	0,2	

Mean NAS-score and sick-leave

Sick leave – above target throughout the period

Målskjema 2022 - Intensivseksjonen

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	Avvik		10/23	12/23	11/21	11/104	2/17	4/24	11/19	
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	Måltall		3	3	3	3	3	3	3	
	Avvik		1,9	0,8	0,4	0,6	0	0	0,2	

Take home message

1. Workload can be measured
2. Nurses recognize NAS as a reflection of their daily work
3. Workload data can support staffing, resource allocation and management decisions
4. As AI becomes part of workforce scheduling, the quality of staffing decisions will depend on the quality of the workload data we provide



Stockpicture

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Referanser

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