What is Operational Research and what's it got to do with health?

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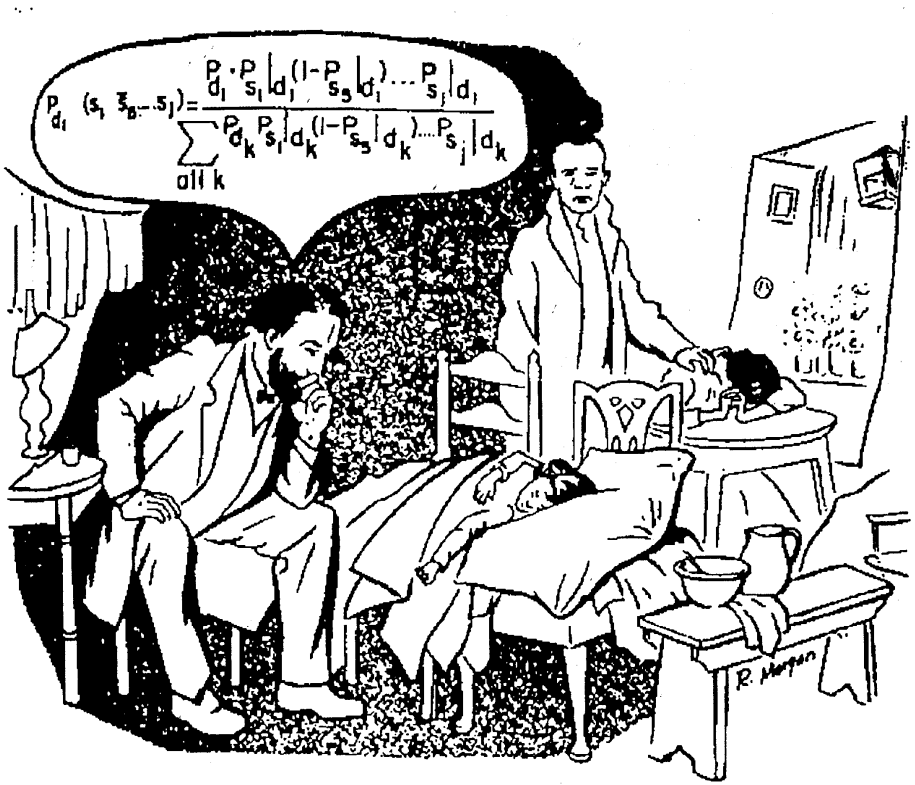
*with acknowledgement to:
Martin Utley (CORU)
Steve Gallivan (CORU)

What is Operational Research?

There is no single definition. One good one is:

> The use of mathematical modelling to help in making decisions about complex systems

What does CORU do?



…use Operational Research techniques in close collaboration with clinicians, nurses and managers to try to improve patient care.

Clinical Operational Research Unit

RCM 16 November 2010

Case Study 1: Ward Overload!

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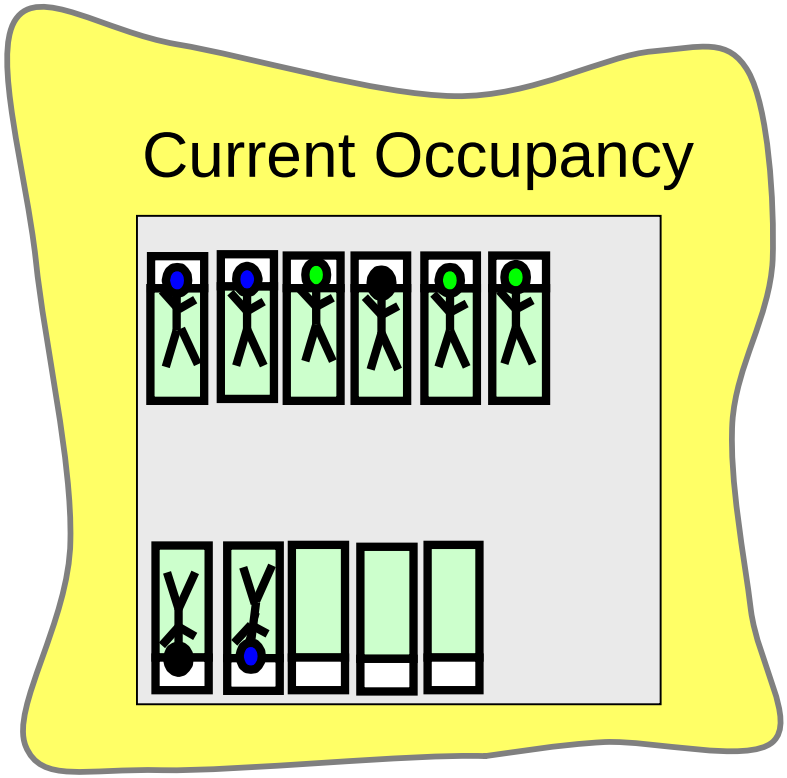

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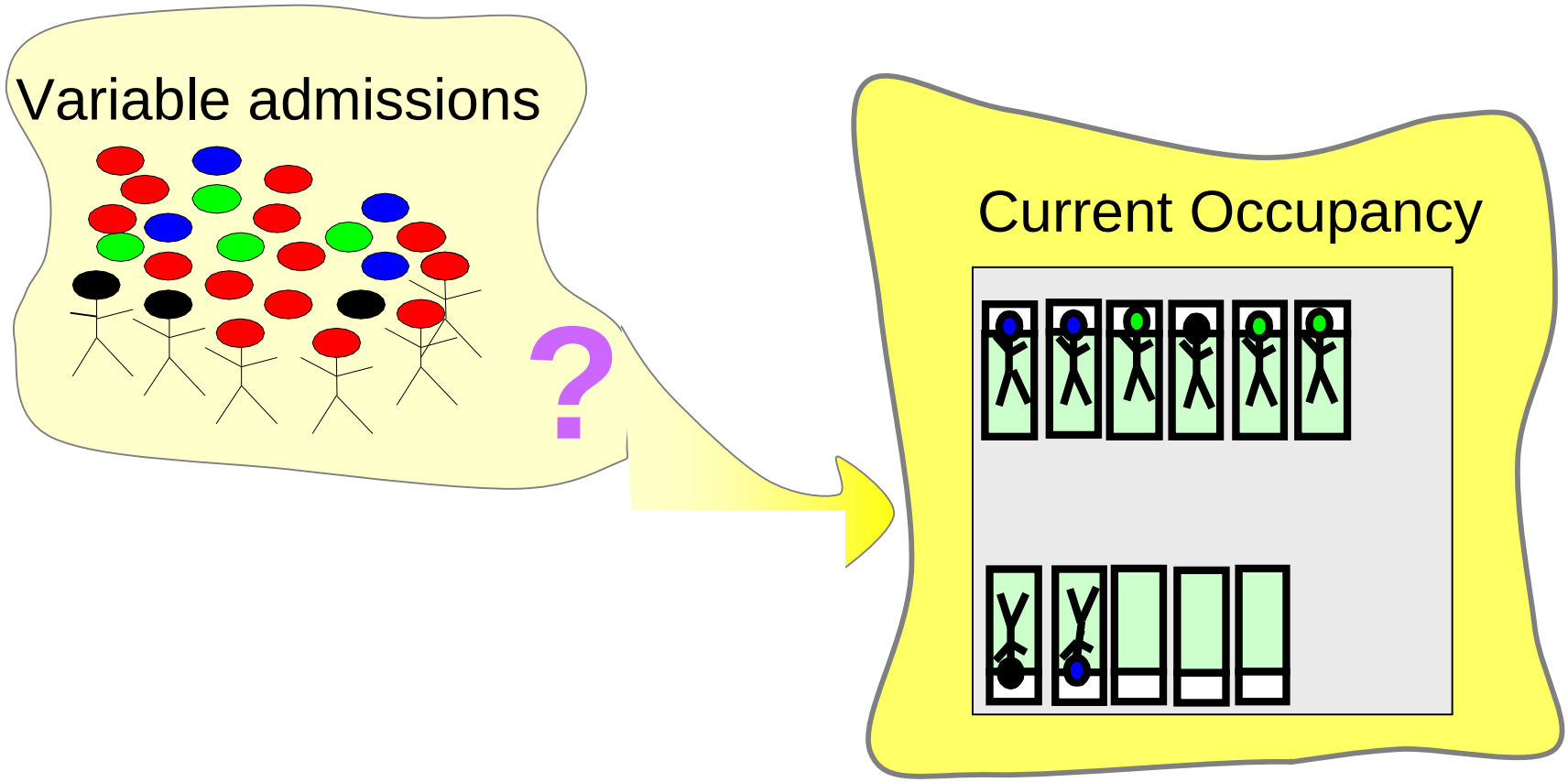

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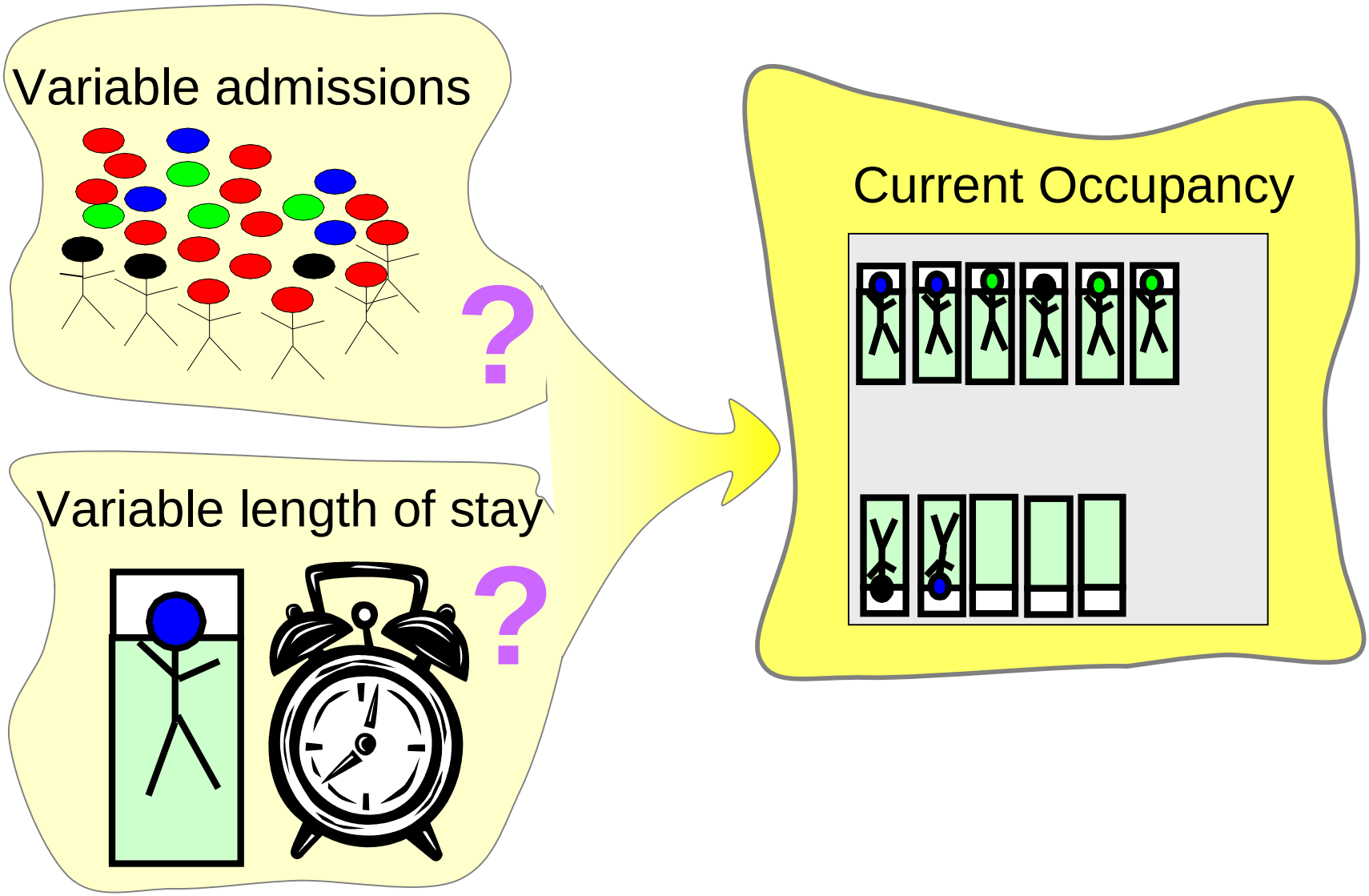

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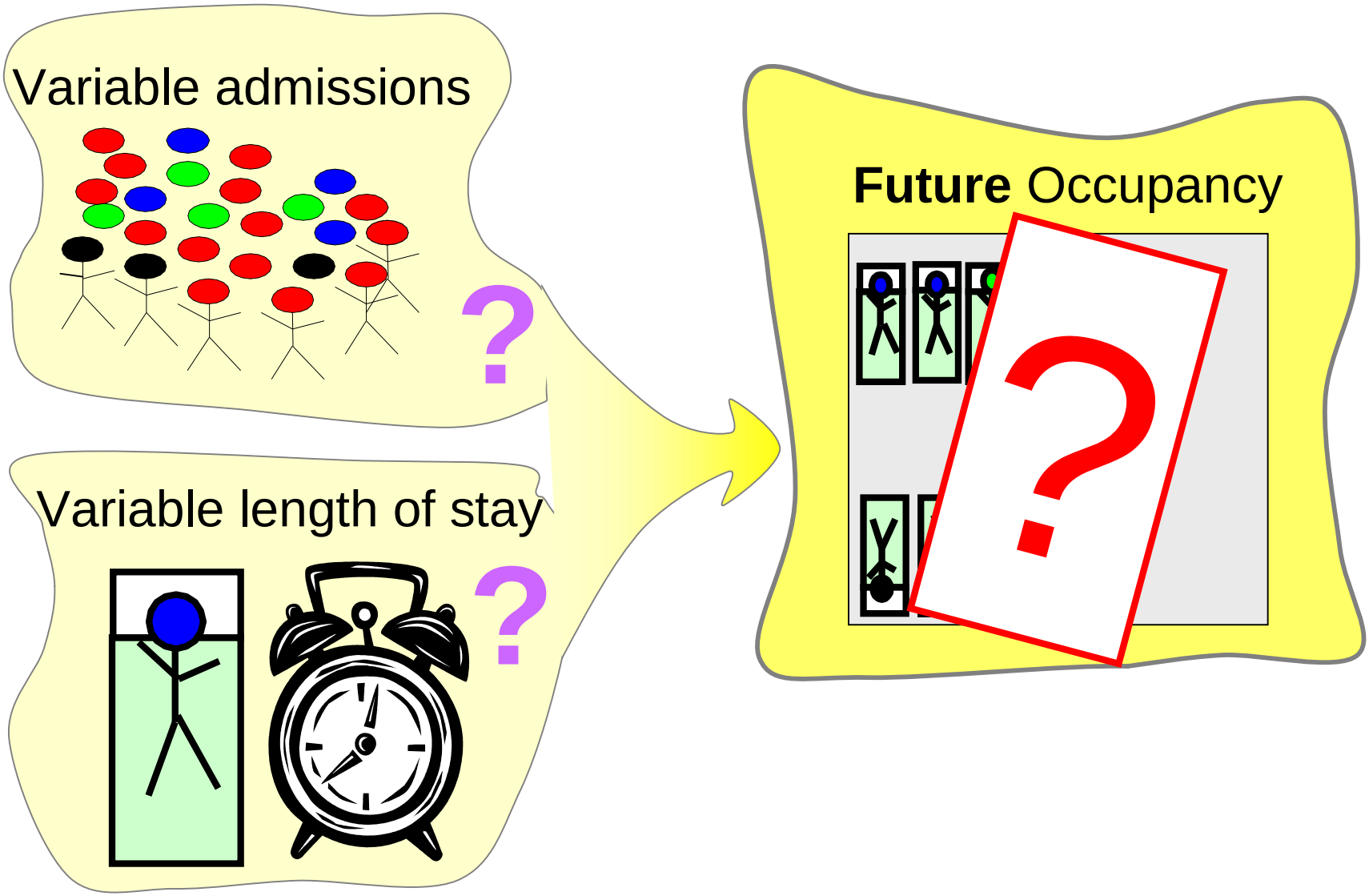

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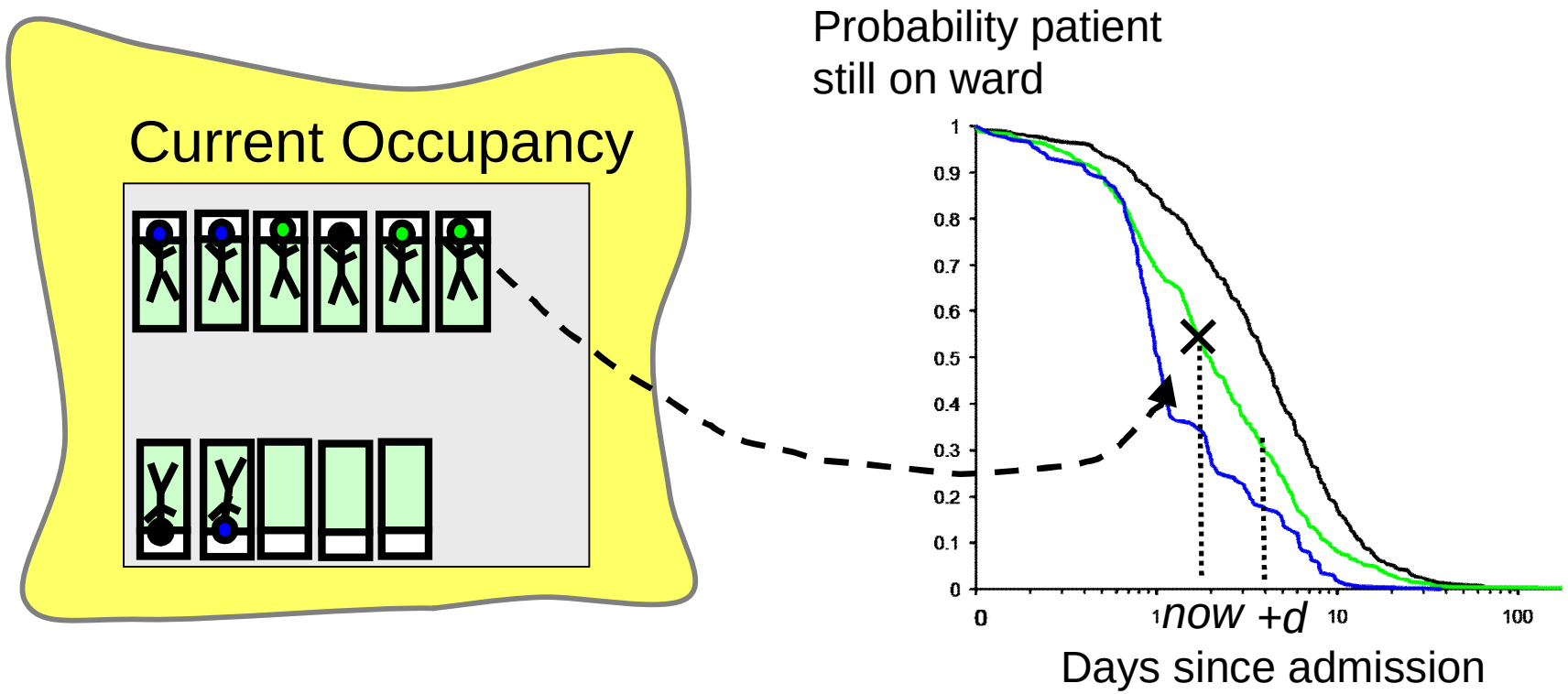

We know who is on the ward now, how long they've been there and have some idea of their length of stay distribution…

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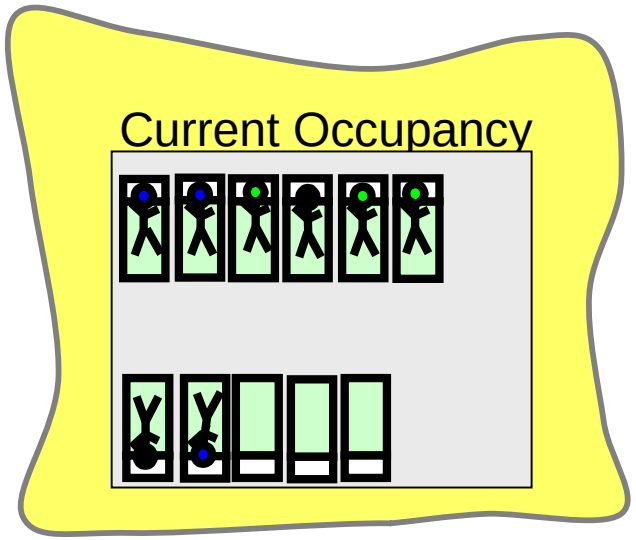

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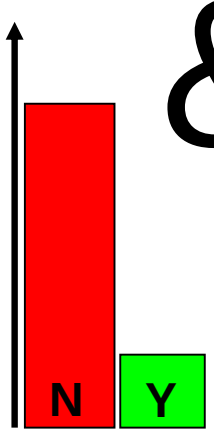
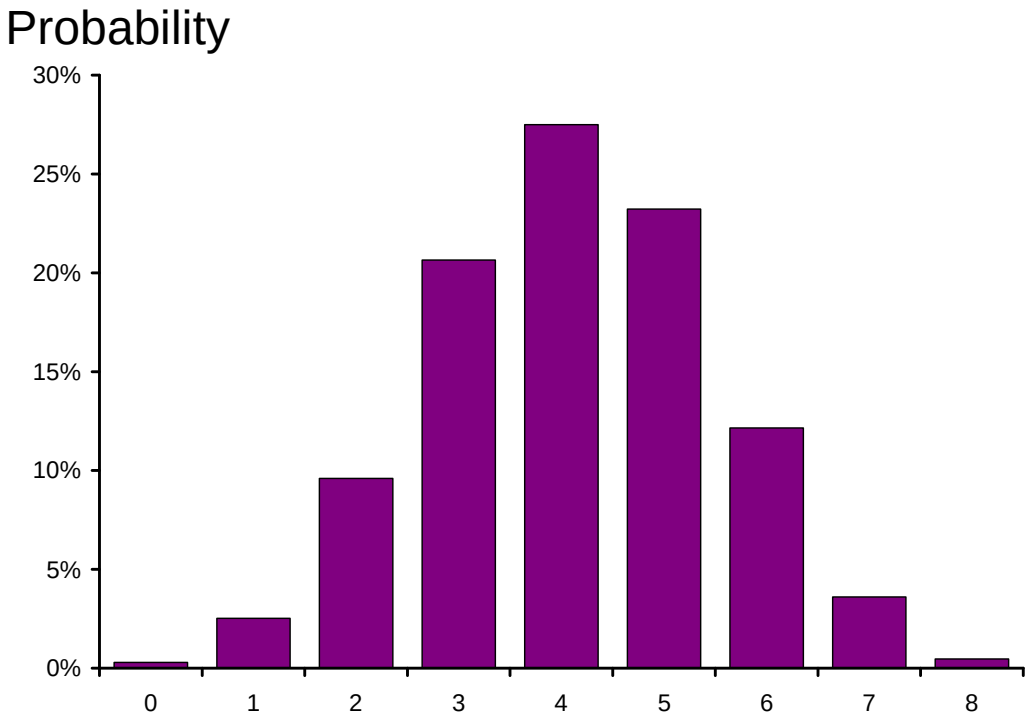


Still on ward in *d* days?



Number of current patients still on ward in *d* days

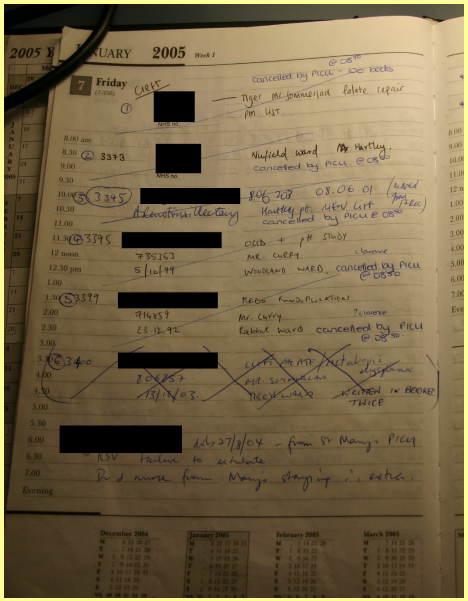
Case Study 1: Ward Overload!

Future admissions

Two types :

– Emergency admissions

– Booked admissions



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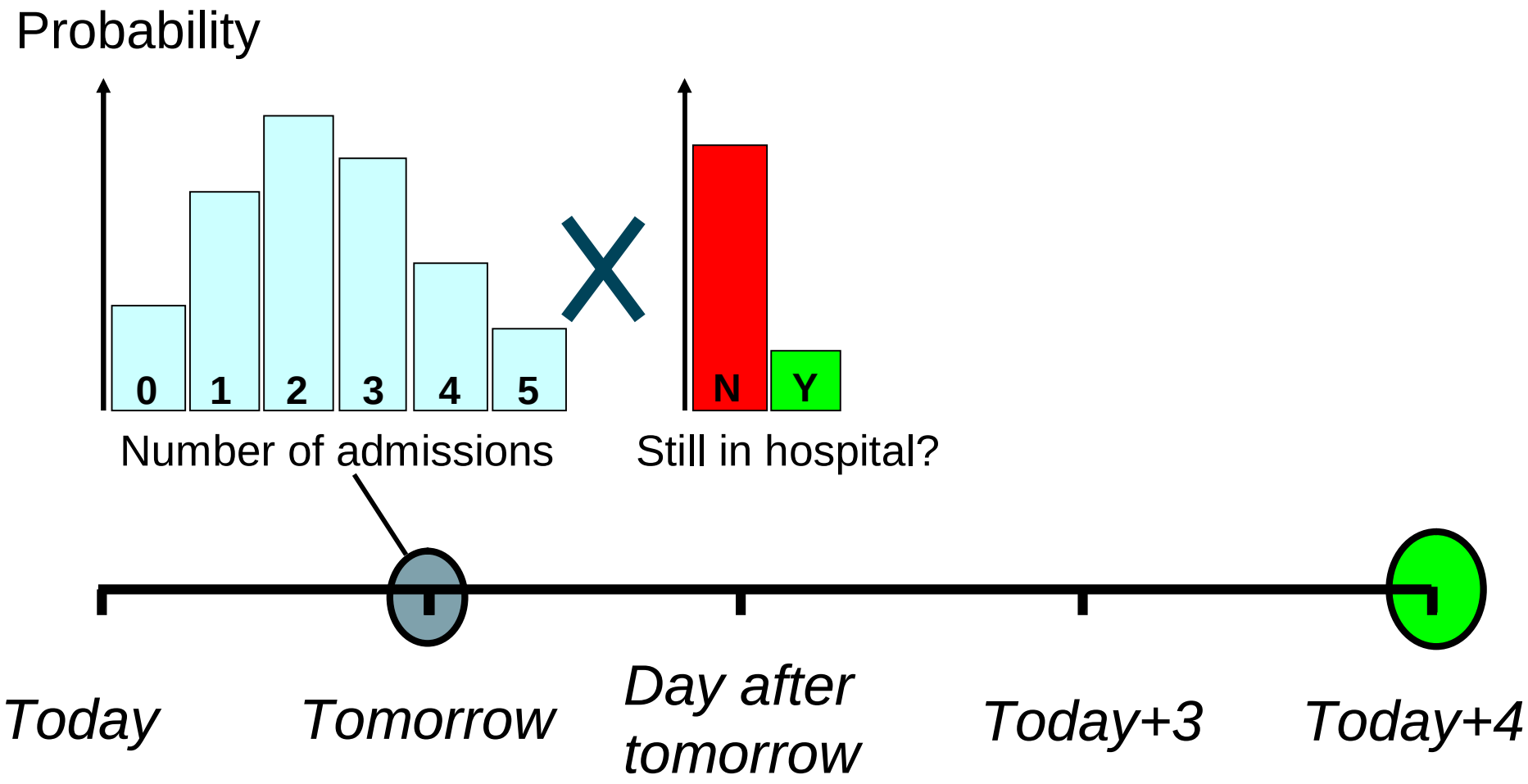

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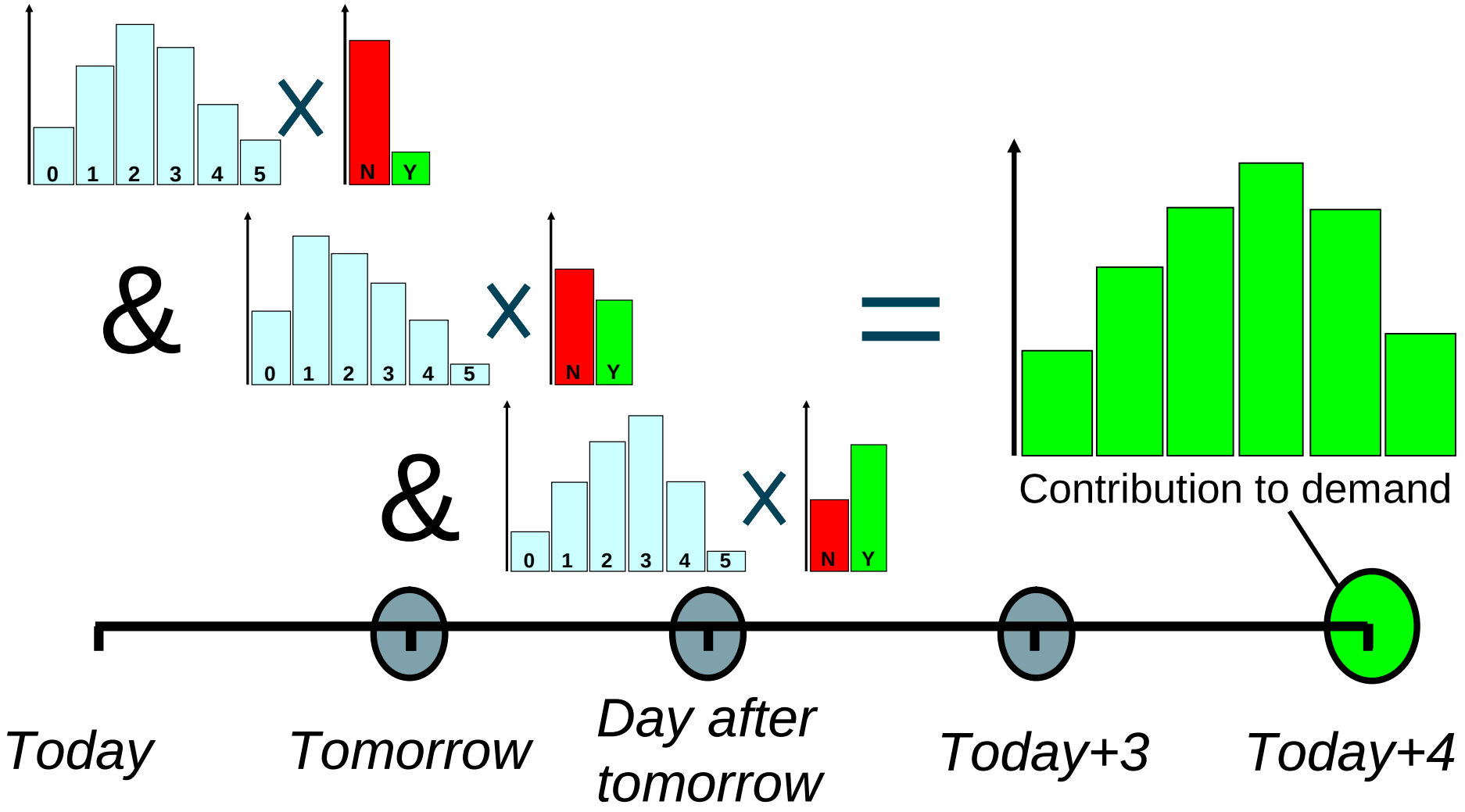
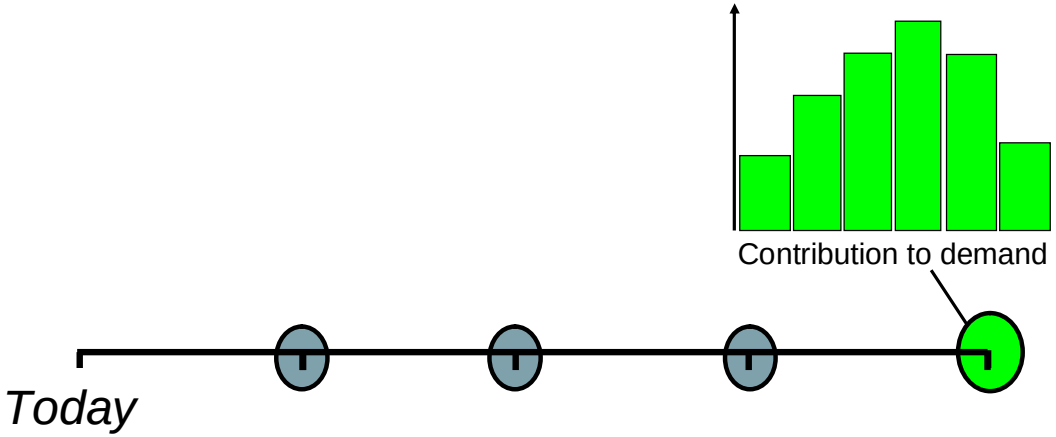
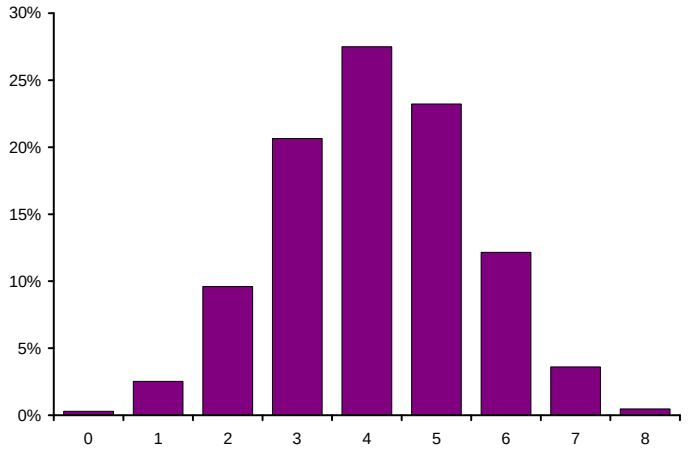




Future patients

&

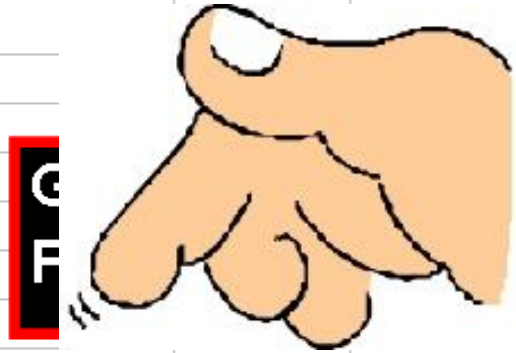
Current patients



Case Study 1: Ward Overload!

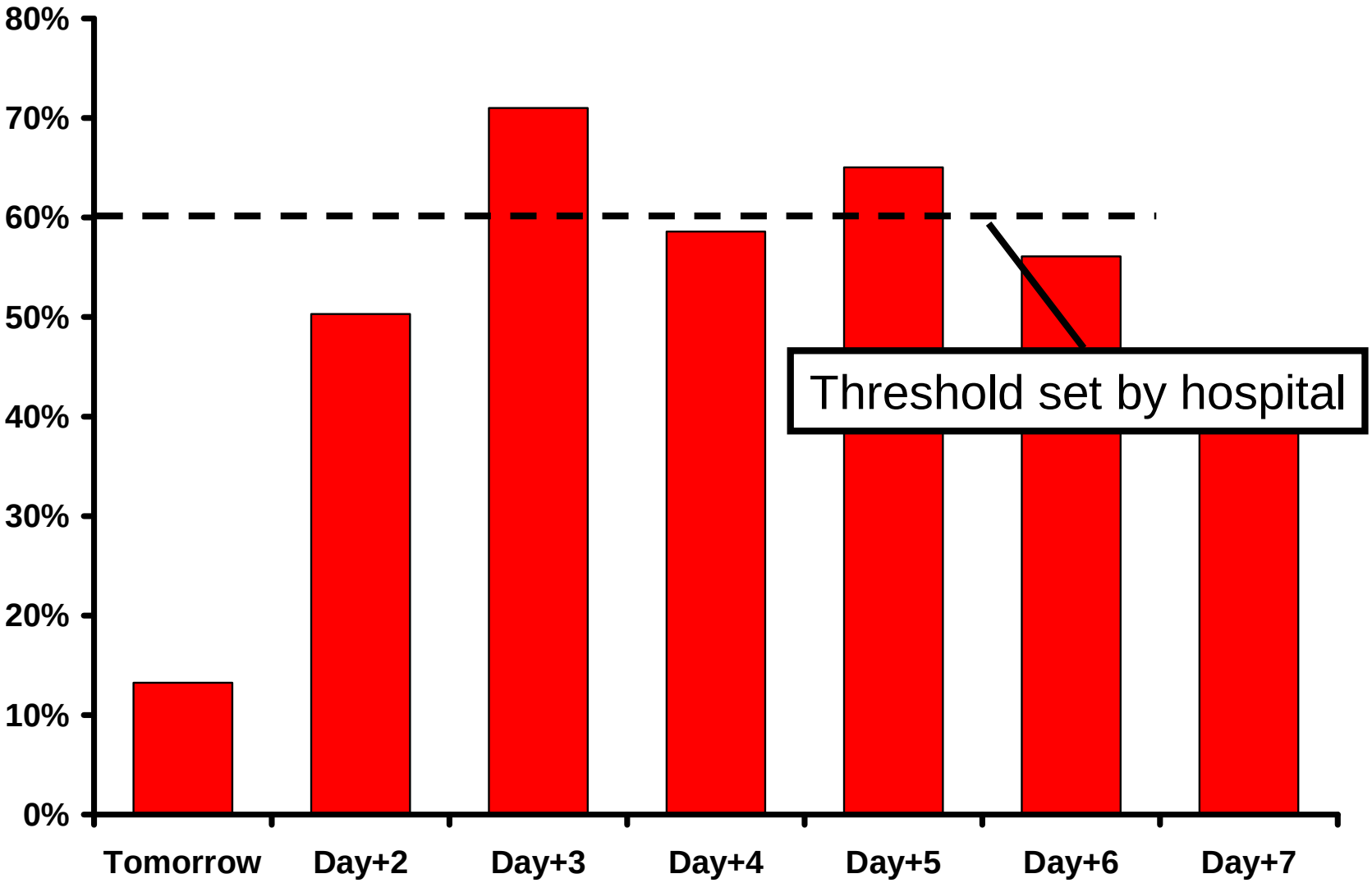
Current Patients	Length of Stay Type	Days stayed so far
1	Long	1
2	Medium	0
3	Medium	2
4	Long	1
5	Short	1
6	Short	2
7	Medium	0
8	Long	3
9		

Number of days ahead to consider	Day of week today
7	Sunday



Case Study 1: Ward Overload!

Probability that more than 9 beds will be needed



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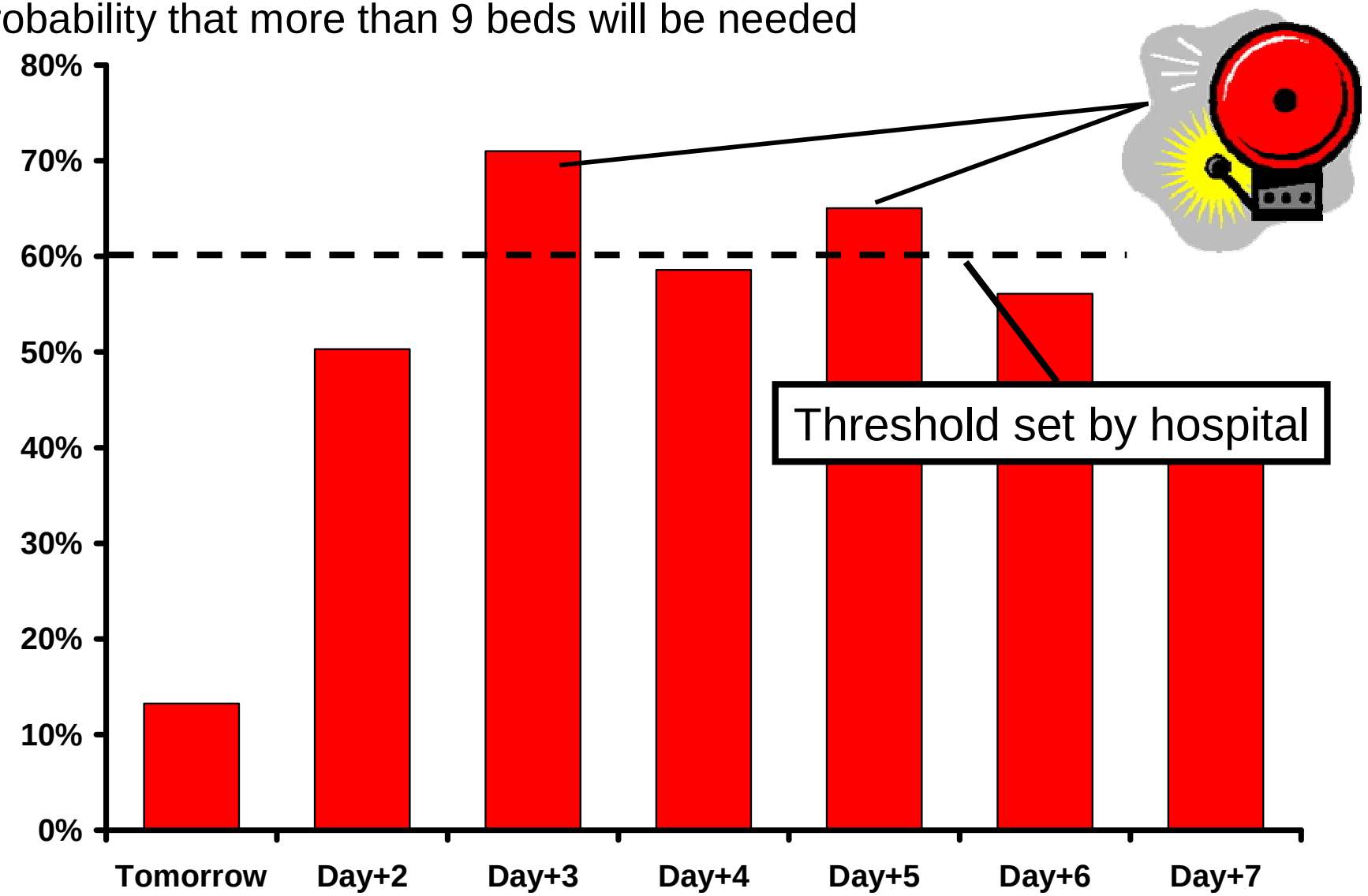
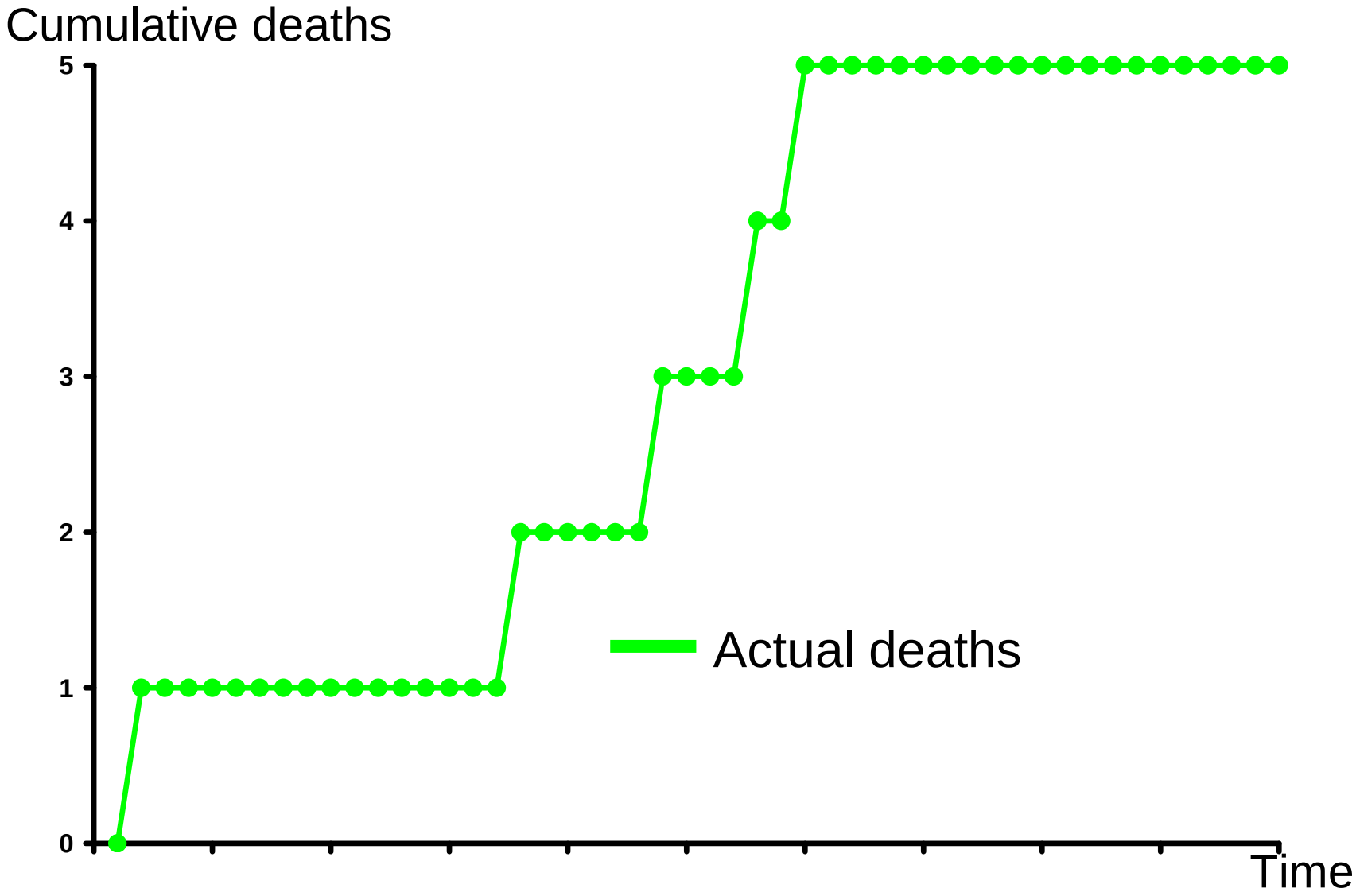


Case Study 2: VLAD

Variable **L**ife **A**djusted **D**isplay

Case Study 2: VLAD



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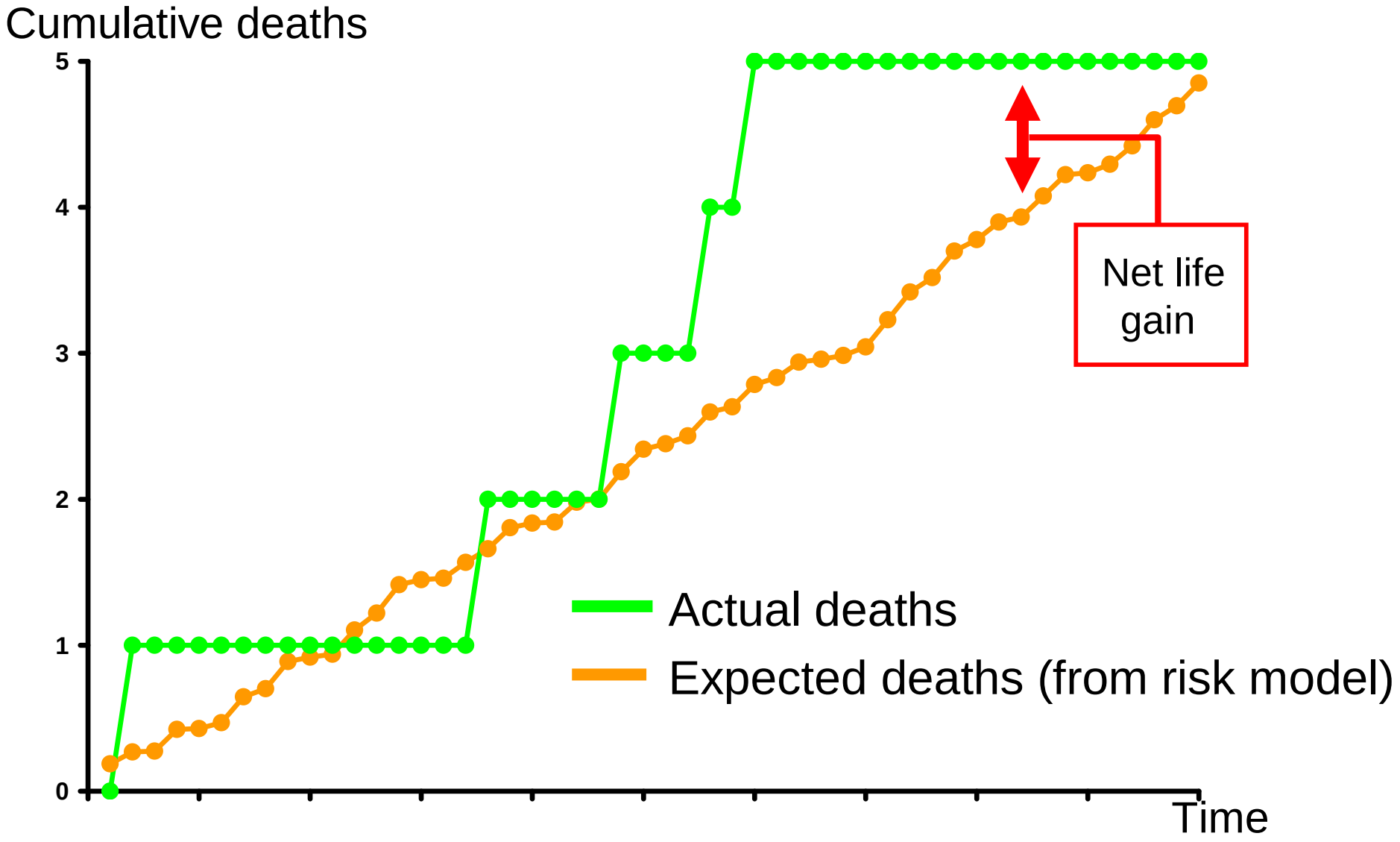
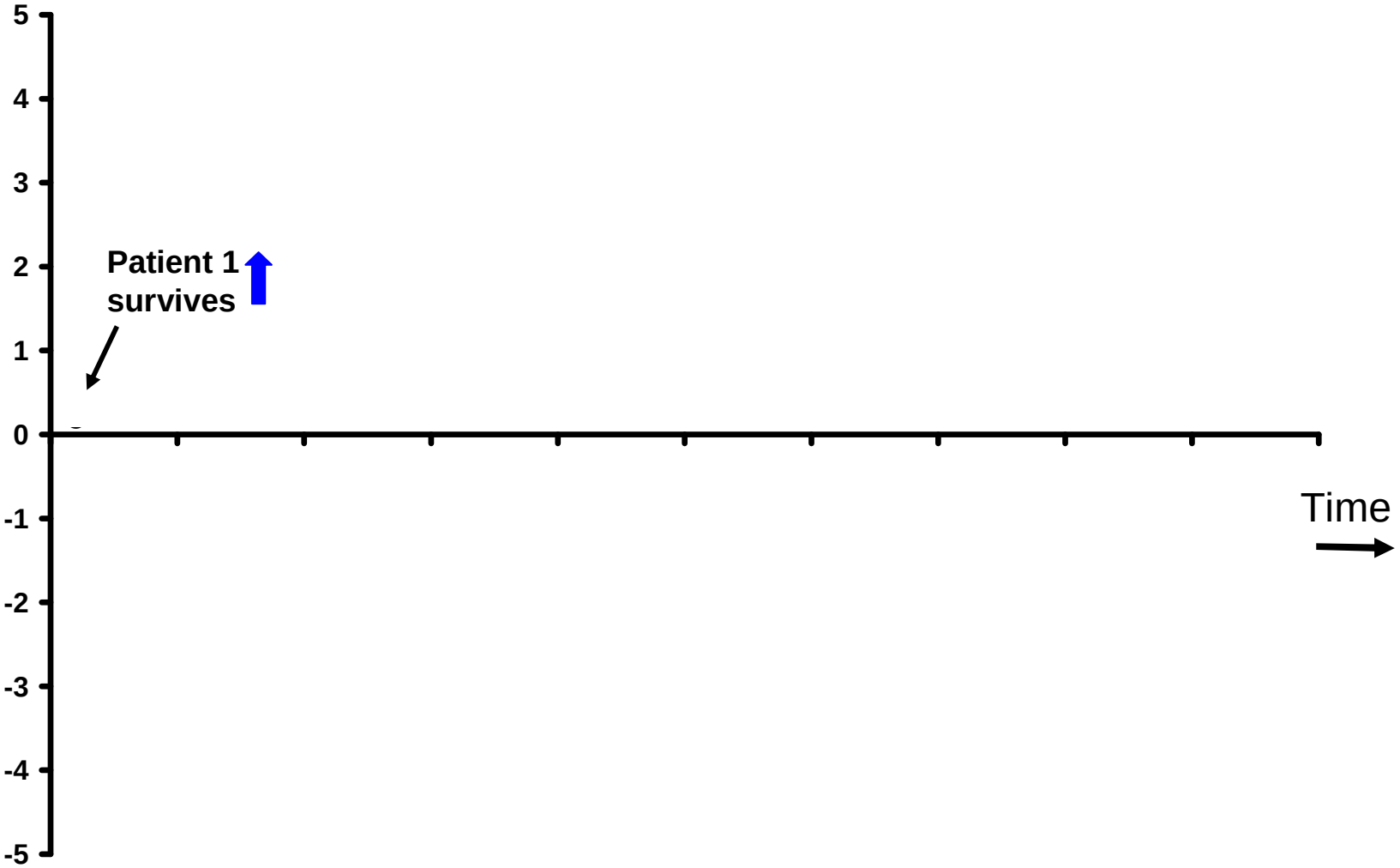


Case Study 2: VLAD

Cumulative expected – observed deaths



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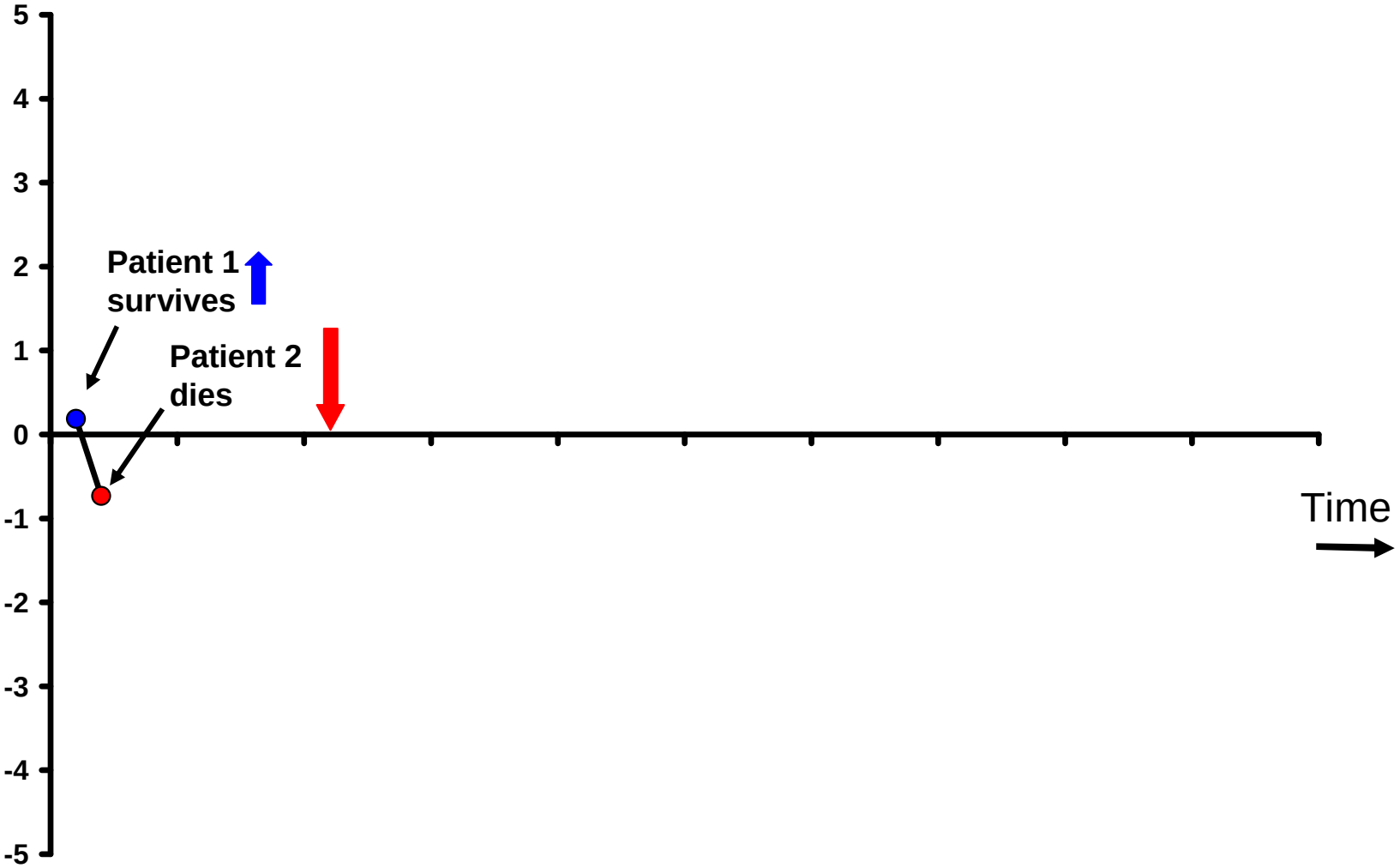

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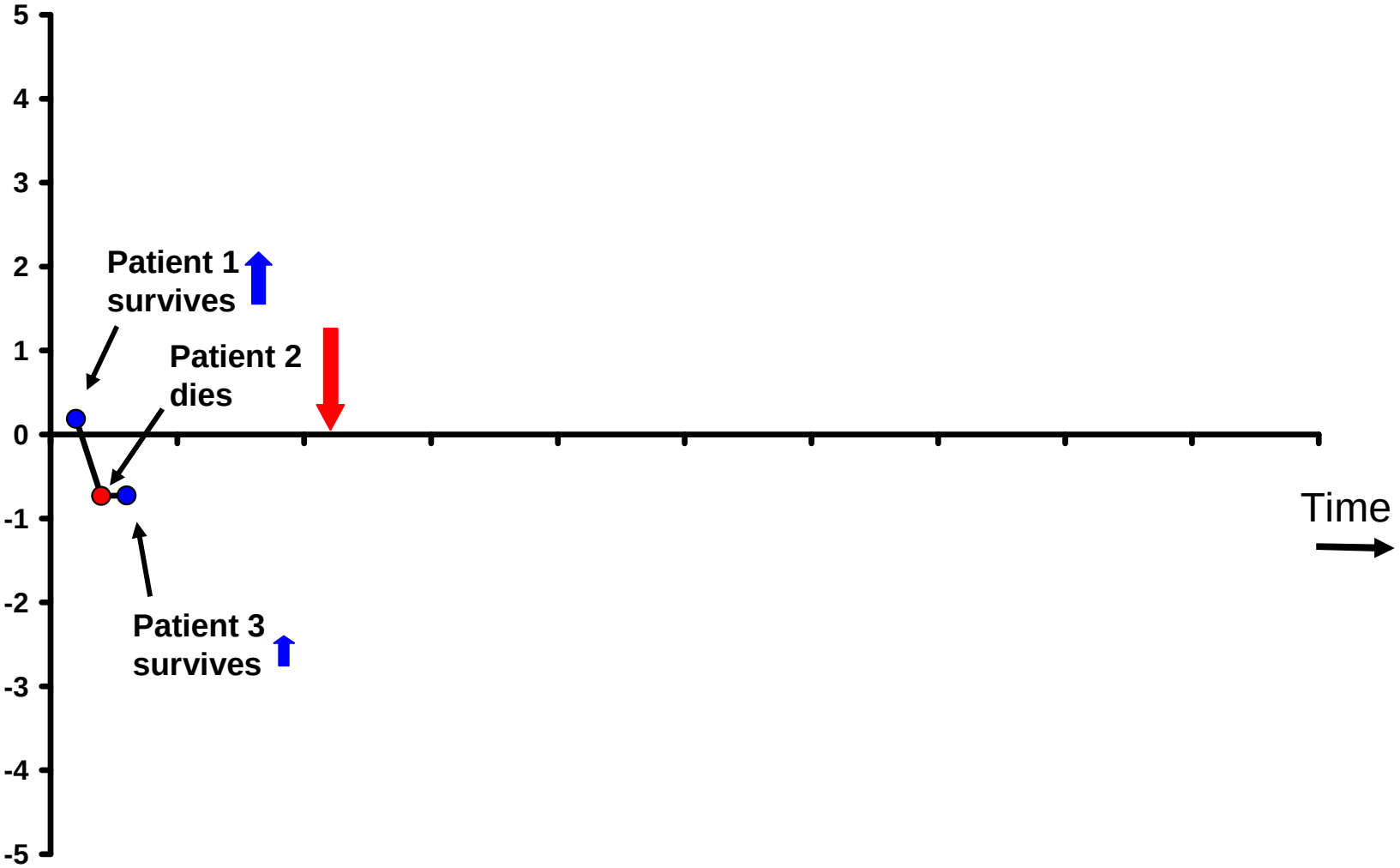

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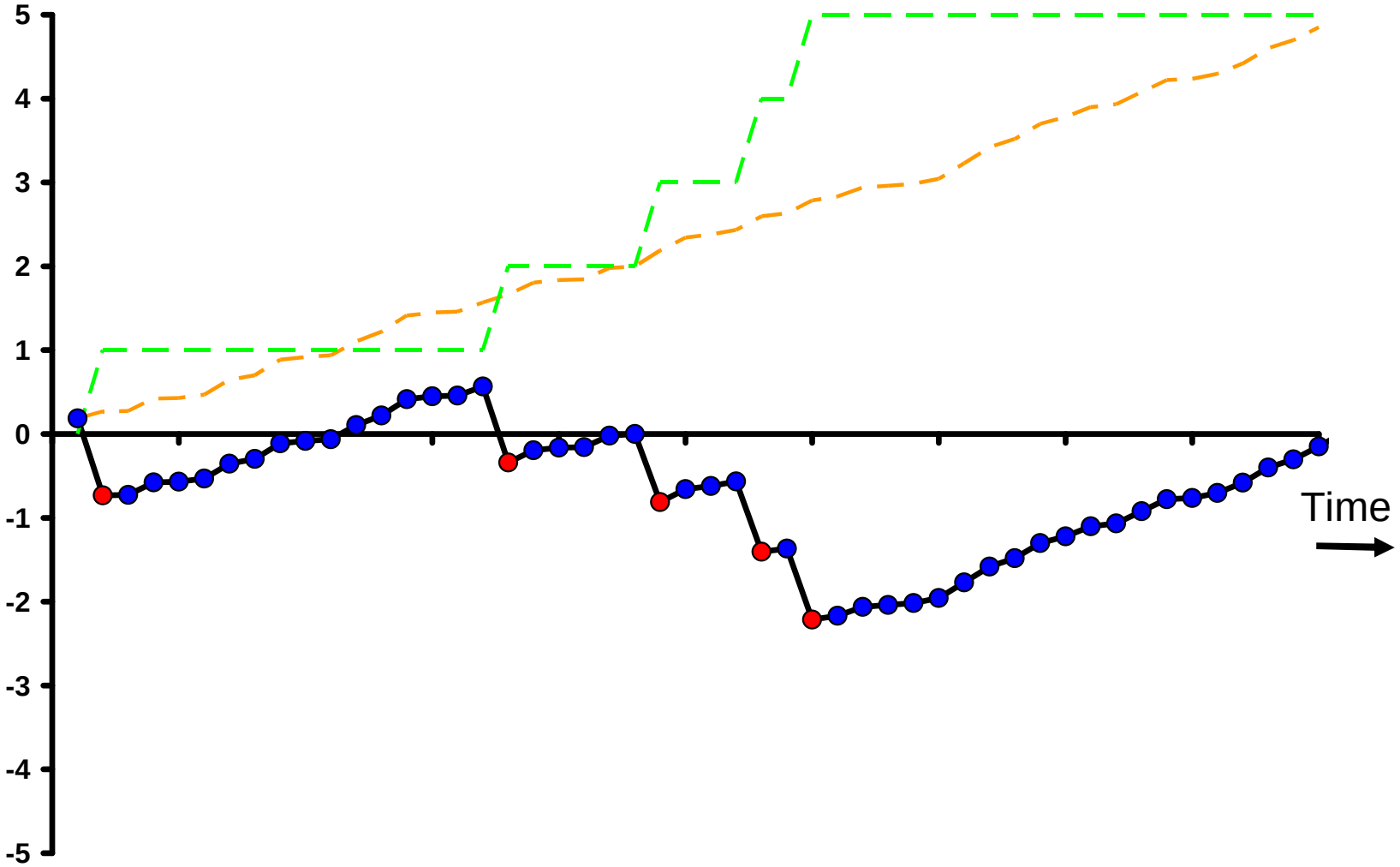

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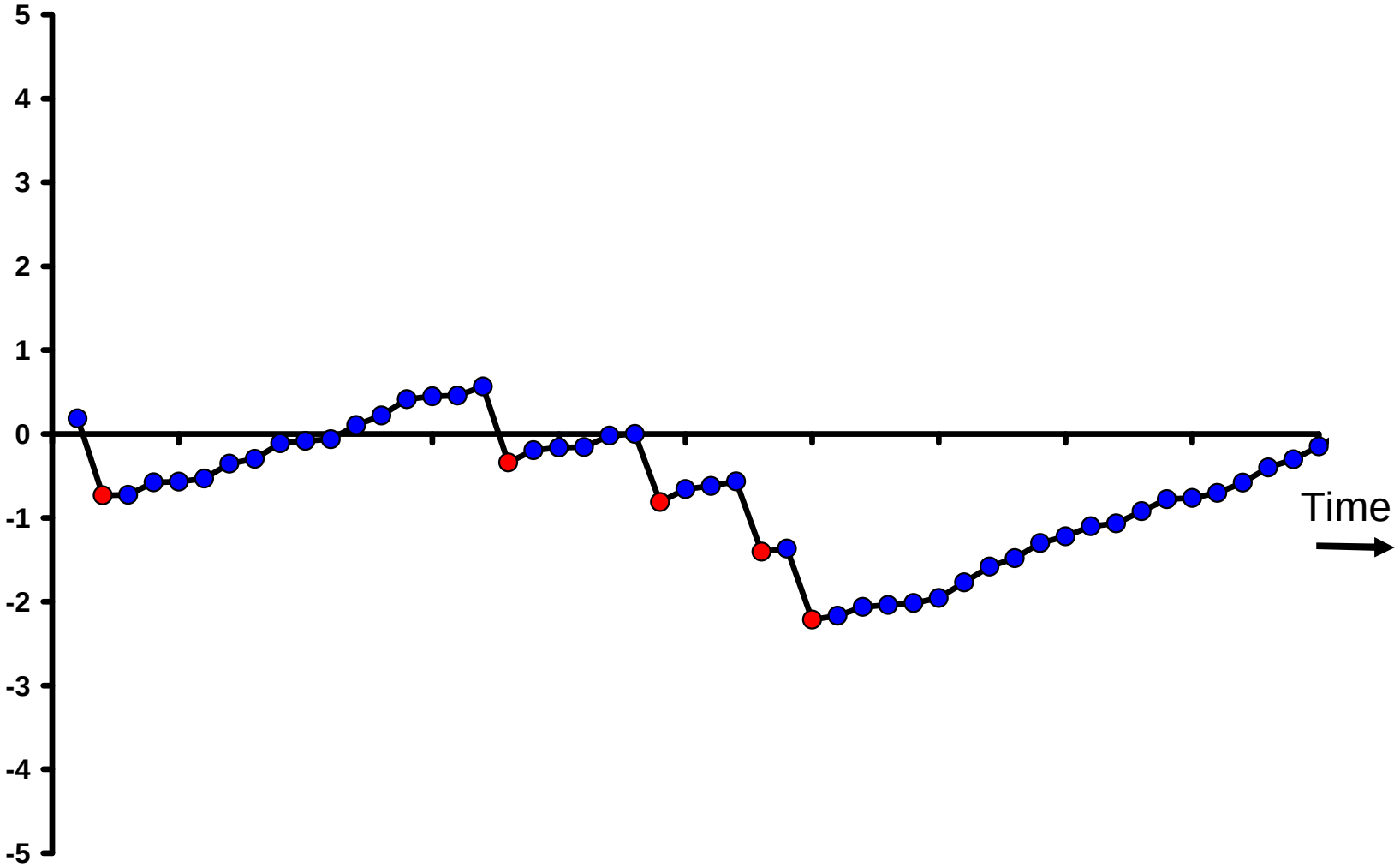

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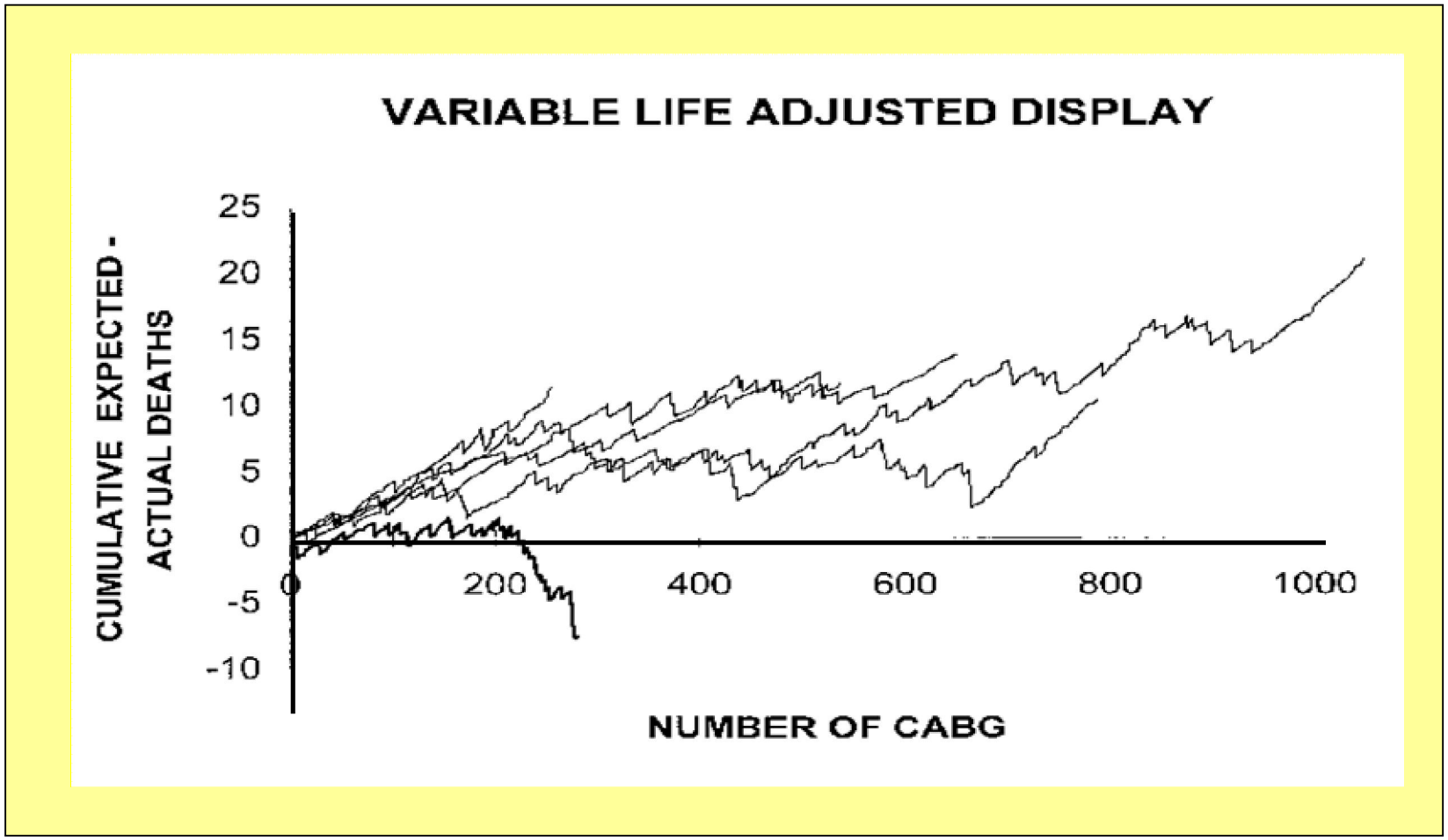
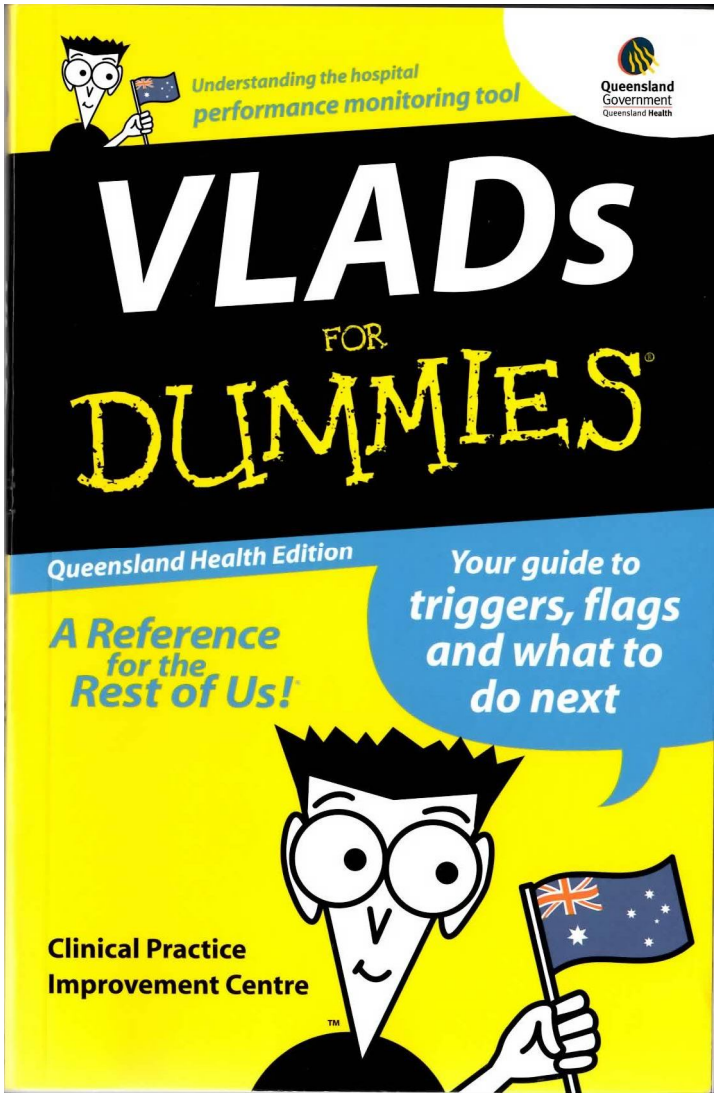


Comparing several surgeons at a single hospital

Case Study 2: VLAD

VLADs now used worldwide



Case Study 2: VLAD

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Articles

Effect of a participatory intervention with women's groups on birth outcomes and maternal depression in Jharkhand and Orissa, India: a cluster-randomised controlled trial

Prasanta Tripathy, Nirmala Nair, Sarah Barnett, Rajendra Mahapatra, Josephine Borghi, Shibanand Rath, Suchitra Rath, Rajkumar Gope, Dipnath Mahto, Rajesh Sinha, Rashmi Lakshminarayana, Vikram Patel, Christina Pagel, Audrey Prost, Anthony Costello

Summary

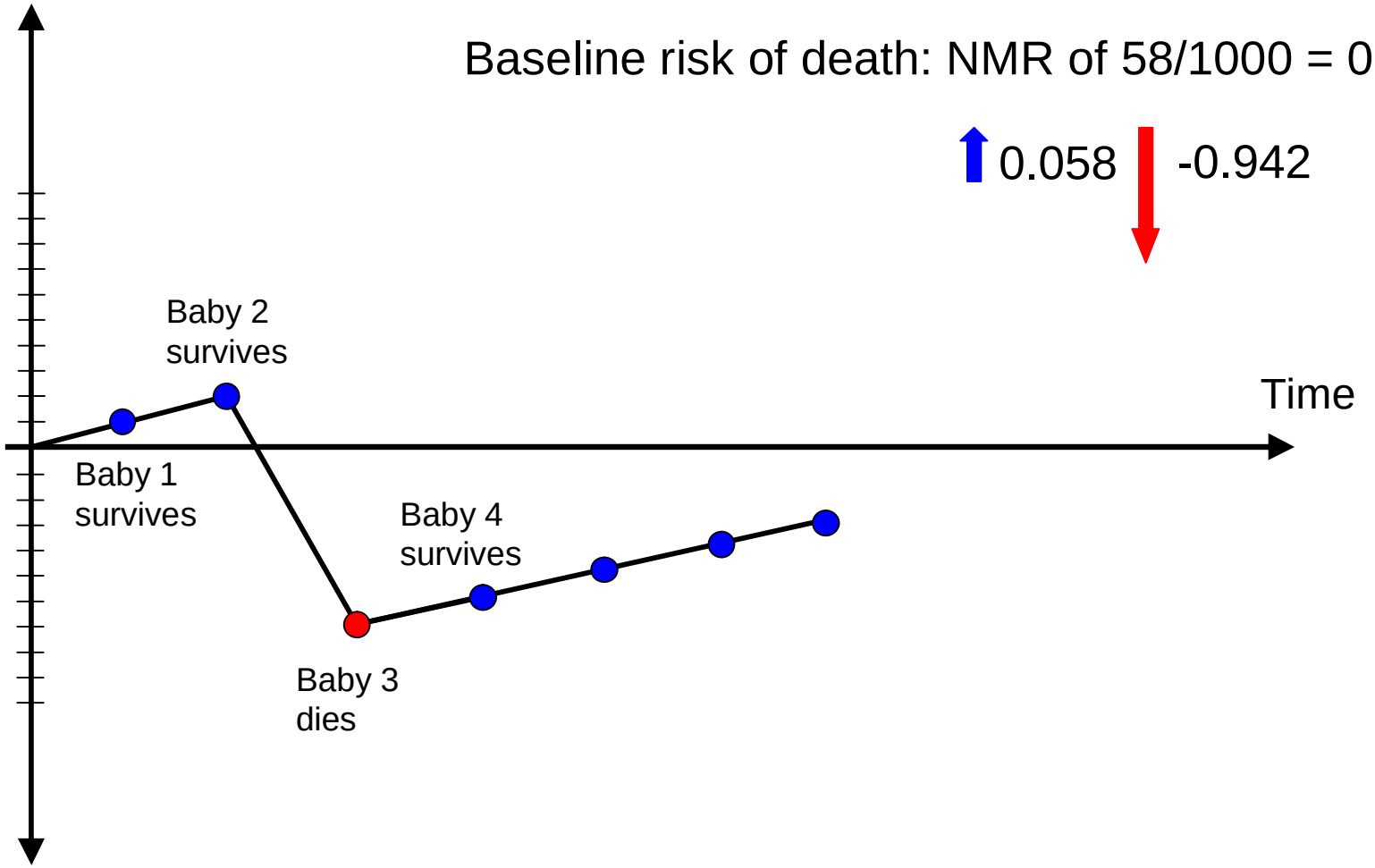
Background Community mobilisation through participatory women's groups might improve birth outcomes in poor rural communities. We therefore assessed this approach in a largely tribal and rural population in three districts in eastern India.

Published Online March 8, 2010 DOI:10.1016/S0140-6736(09)62042-0

30% reduction Neonatal Mortality Rate (NMR) over 3 years.
42% over the last 2 years.

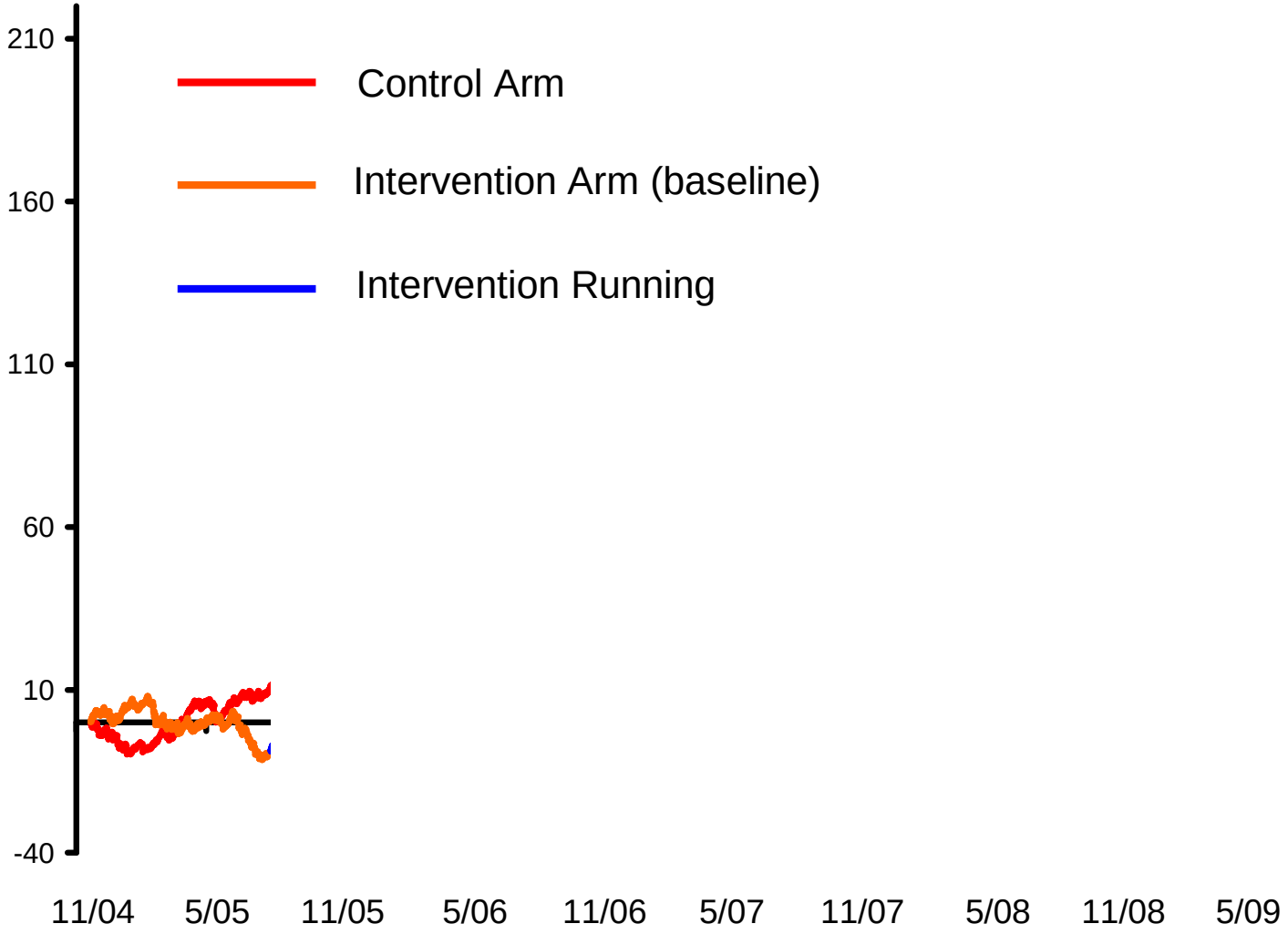
Case Study 2: VLAD

Cumulative expected – observed deaths



Case Study 2: VLAD

Cumulative number of lives saved compared to baseline Neonatal Mortality Rate (58/1000)



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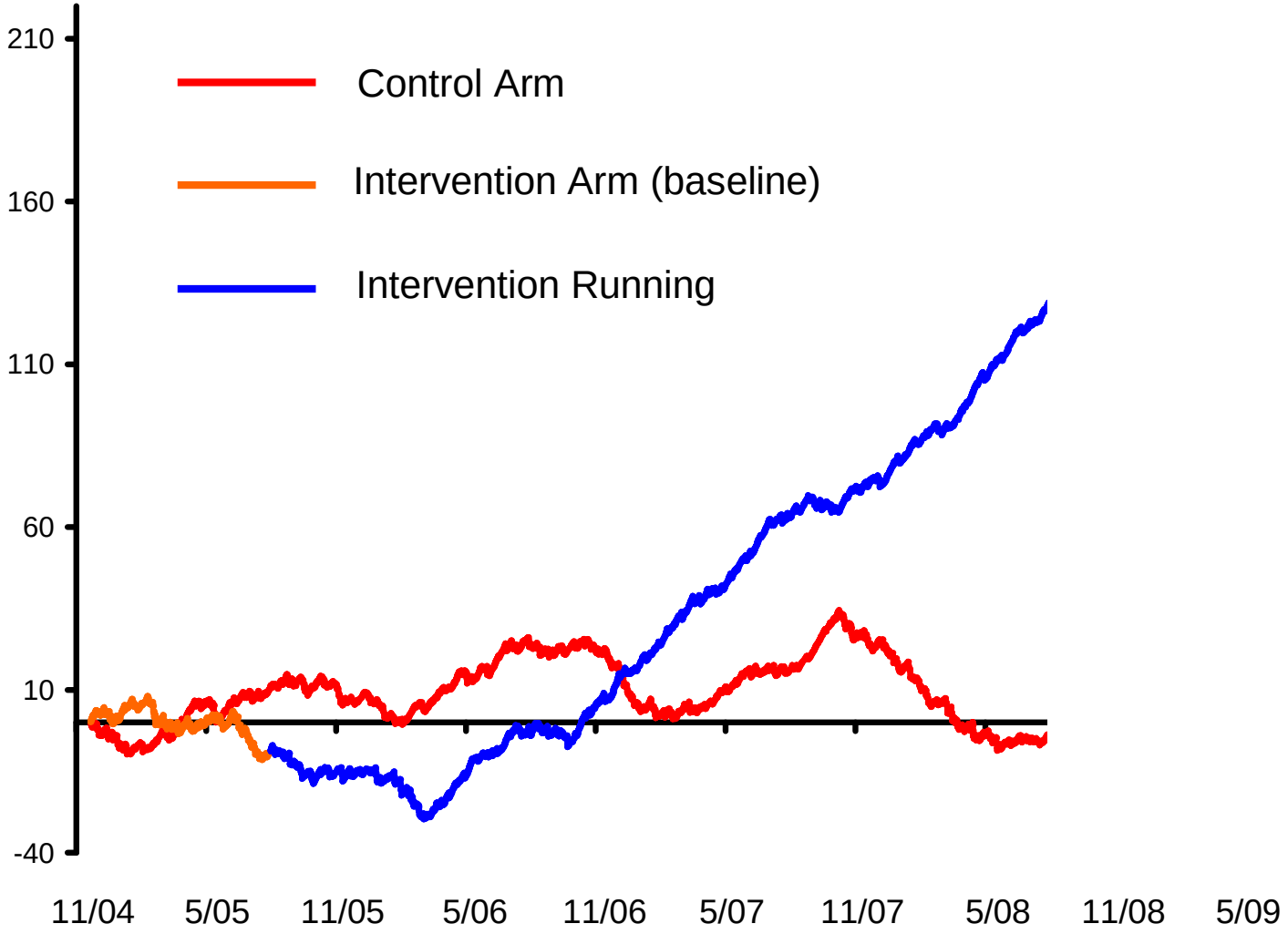

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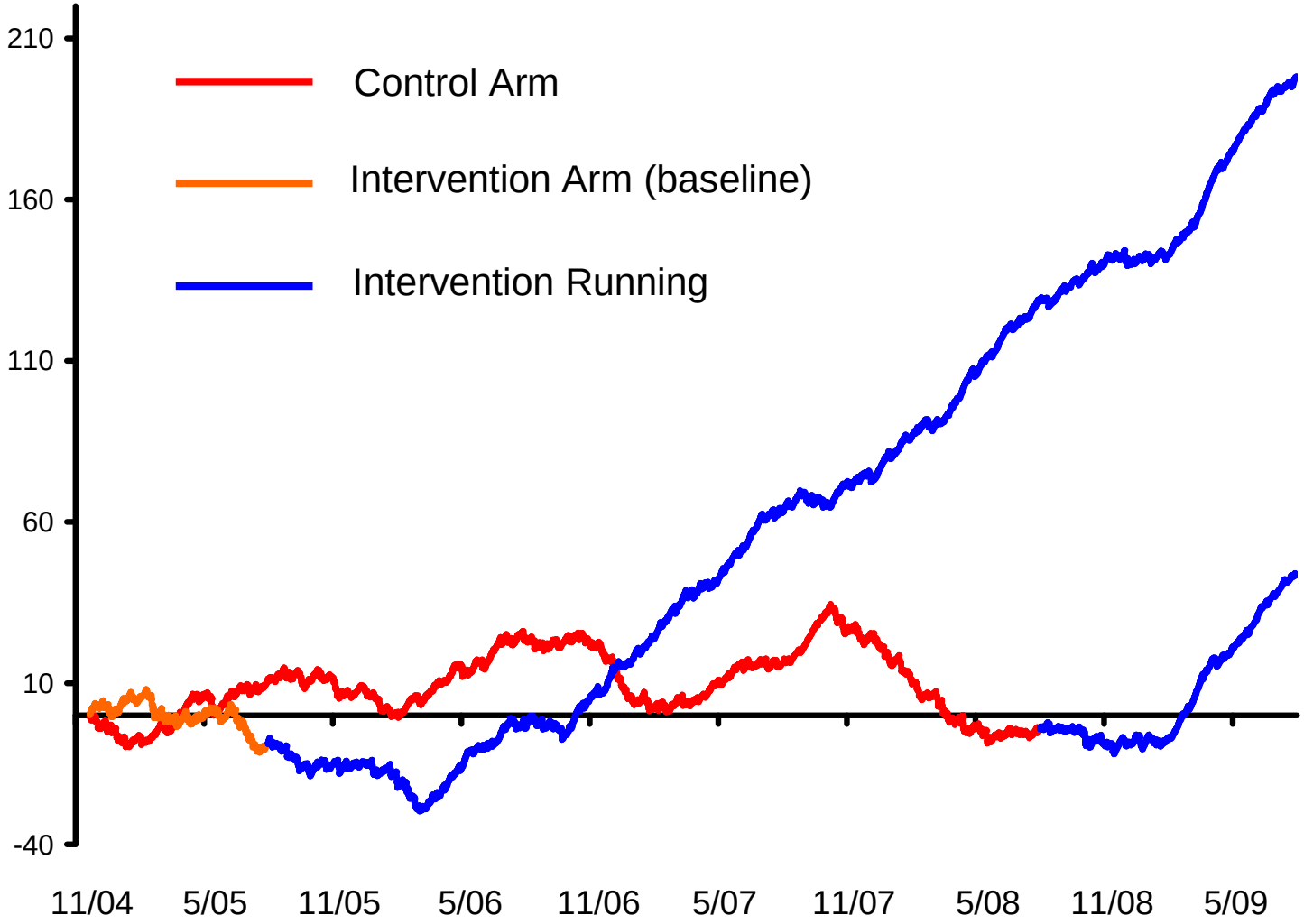

Summary

Operational research is about:

Thinking carefully about what the ‘problem’ is

Thinking about what it is you actually want to know the answer to

Exploring what drives the relevant processes

Helping people make better (informed) decisions