ABMS & DES For Modelling Emergency Department

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Proposal Presentation
Research Practice 1

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2 Objective

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Introduction

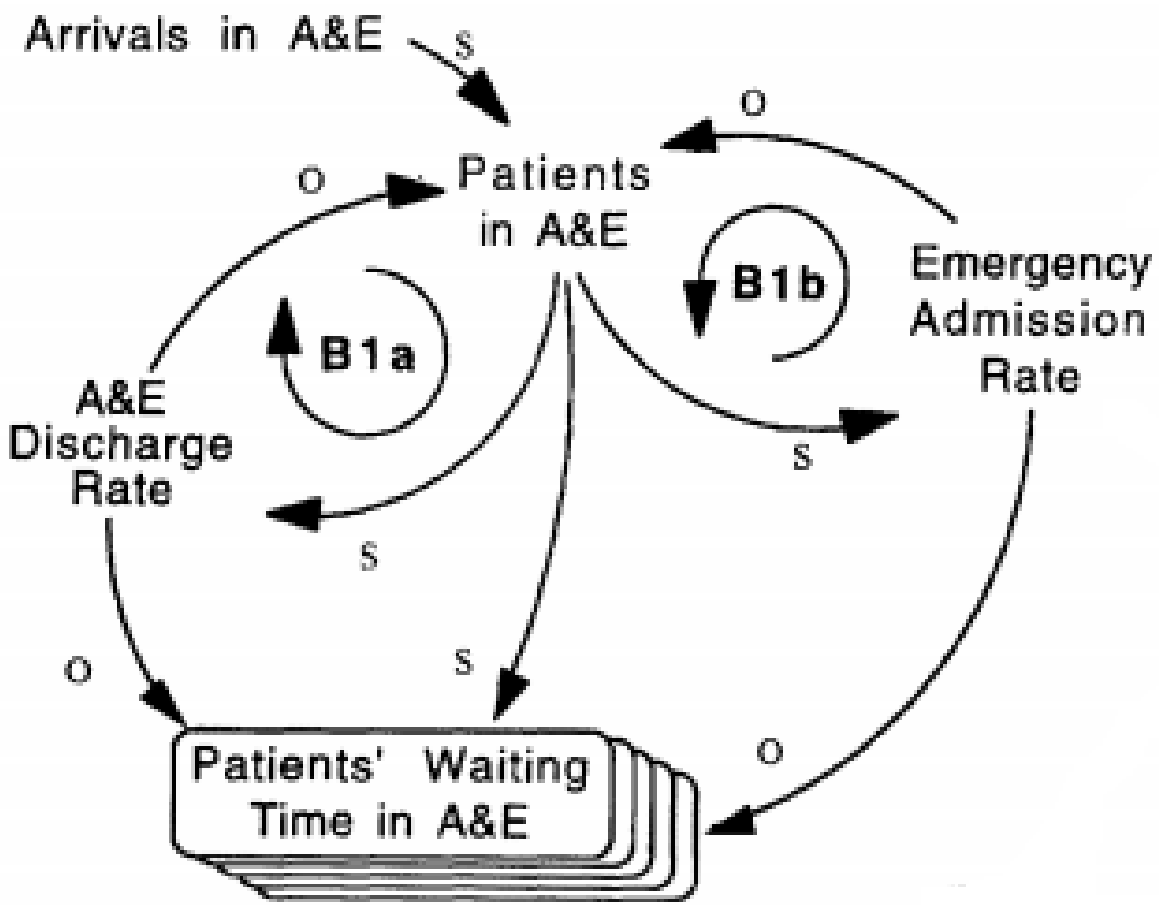

Figure 1a: Causal loop diagram of the main effects determining waiting times in an A&E department. *Taken from Lane (2000, p 521)*

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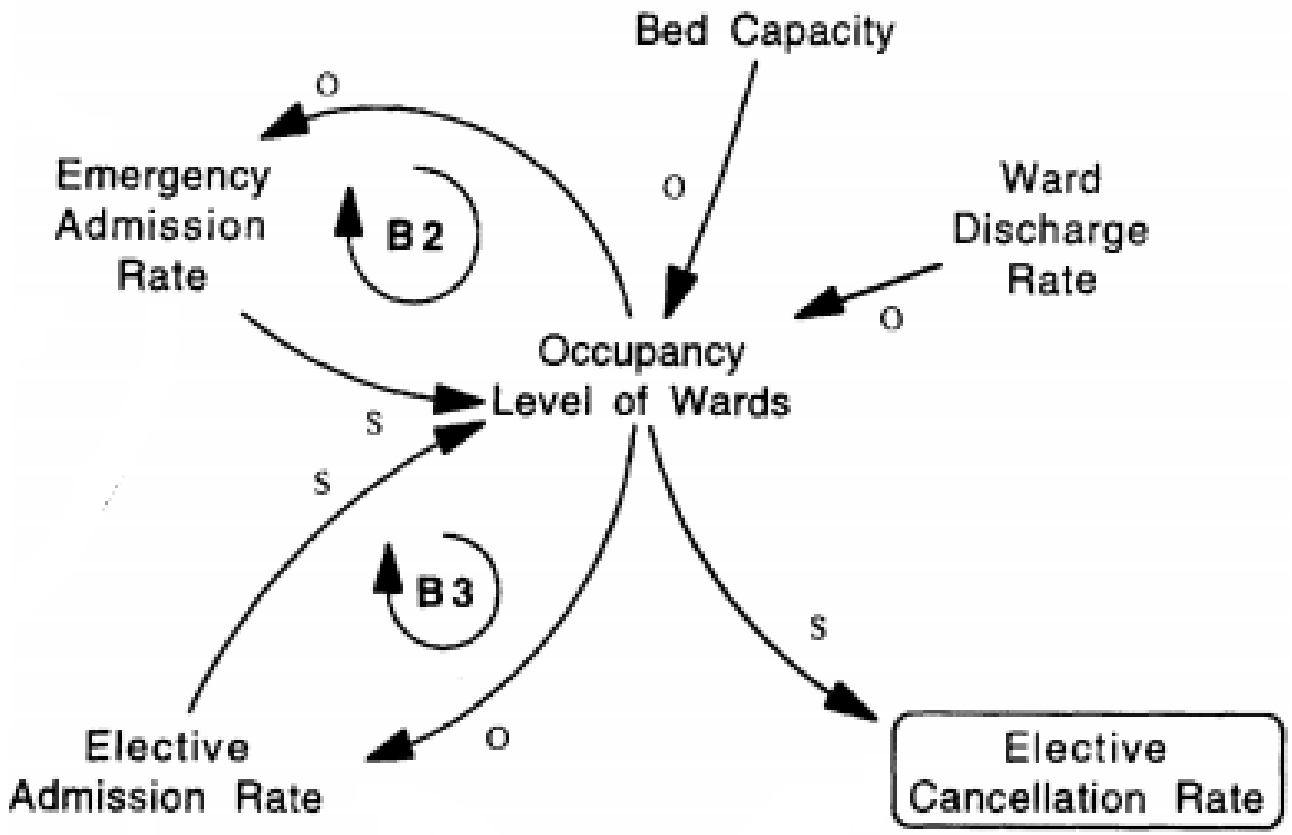

Figure 1b: Causal loop diagram of the main effects of emergency admissions on the elective cancellation rate. *Taken from Lane (2000, p 521)*

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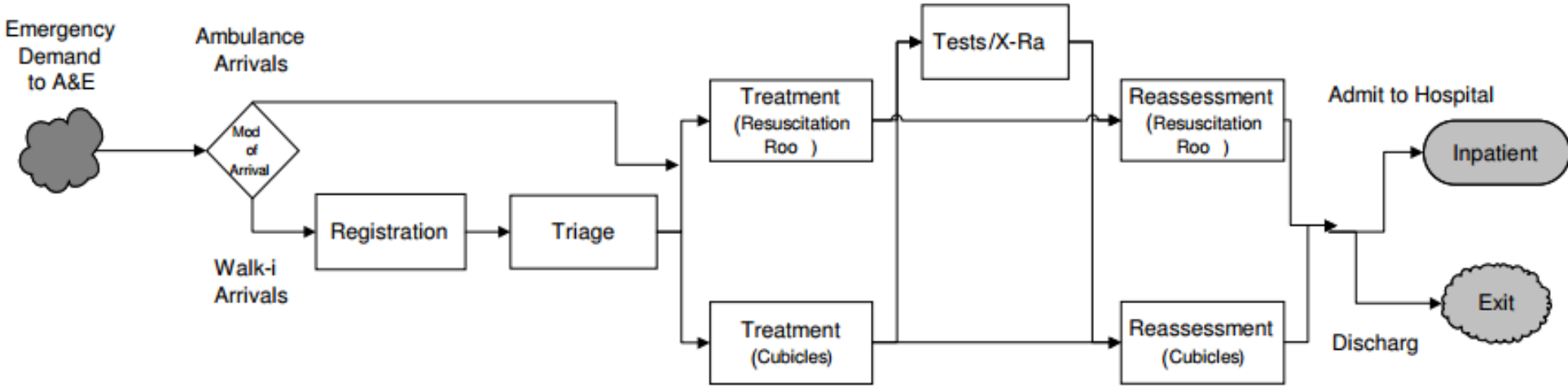

Figure 2: DGHPSim A&E Component Model. *Taken from Gunal and Pidd (2008, p 155)*

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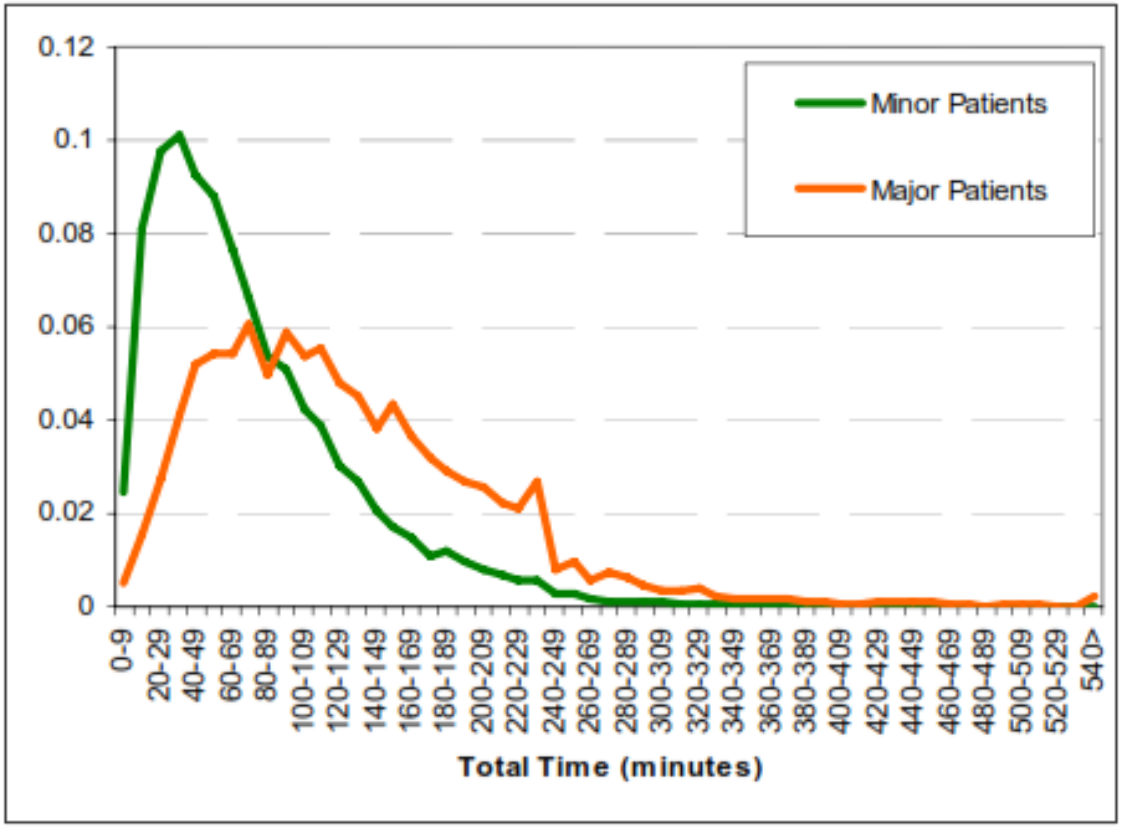

Figure 3: Total time of patients by triage category in the A&E histogram. *Taken from Gunal (2006, p 448)*

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Objective

- To develop an ABMS and DES hybrid model of an hypothetical emergency department.

AGENTS	ENTITIES
?	?

- **Discrete event simulation (DES):**
  - Arrivals
  - Registration
  - Triage
  - Test and treatment
  - Exit

"Understanding accident and emergency department performance using simulation" Gunal, Murat and Pidd (2006)

- **Agent based modelling and simulation (ABMS):**
  - Some aspects of doctor's behavior

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Methodology

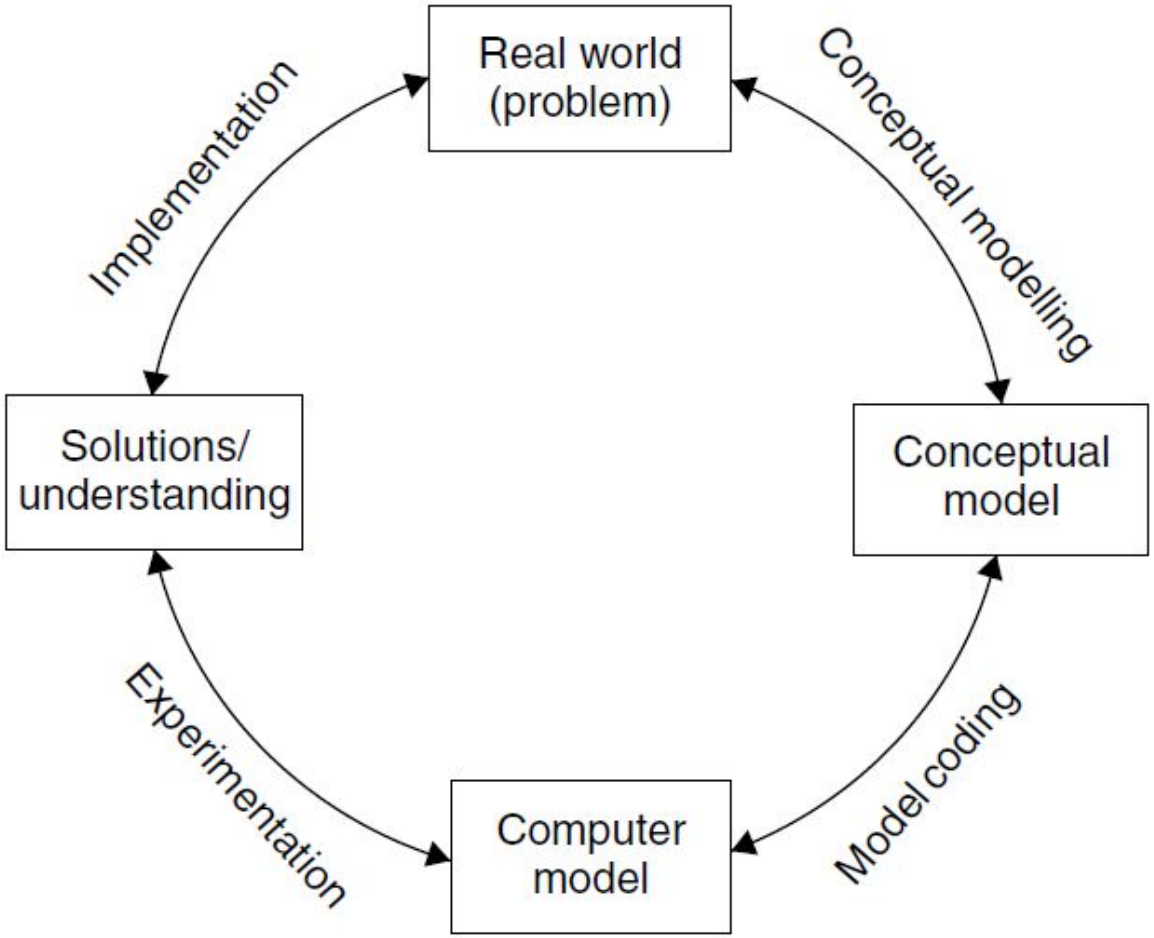

Figure 4: Simulation Studies: Key Stages and Processes. *Taken from Robinson (2014, p 52)*

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References

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