



Estimating Casualty Numbers

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Outline

- Introduction
- Classifying casualties
- Battle casualty estimation techniques

Introduction

- Casualty estimation is required for:
 - Operational planning
 - Long term planning of equipment procurement and force structures
- In both cases it is used as an:
 - output measure of merit from analysis
 - input to medical support planning

Casualty classification

- Casualty
 - ‘any person who is lost to the organisation by reason of having been declared dead, wounded, injured, diseased, **detained, captured or missing**’
- Battle Casualties
 - ‘incurred as the direct result of hostile action, [or] sustained **in combat or relating thereto** or sustained **going to or returning** from a combat mission’
- Disease and non-battle injuries (DNBI)

Battle casualties

- Killed in Action (KIA)
- Died of Wounds (DOW)
- Wounded in Action (WIA)
- Missing in Action (MIA)
- Captured in Action (CIA)

Key points

- During combat operations injuries due to any cause will be reported as battle casualties. During other operations only casualties due to hostile action will be so reported.
- WIA totals include only those with wounds serious enough to be admitted to a medical facility. With battle stress, only the most serious cases will be reported.
- Where casualties arising from fratricide are not identified separately they are subsumed into the battle casualty totals.

Battle casualty estimation techniques

- Two basic approaches:
 - statistical analysis of historical data
 - *ab initio* simulation of combat operations
- Choice varies with environment and the aim of the analysis

Battle casualty estimation: maritime and air

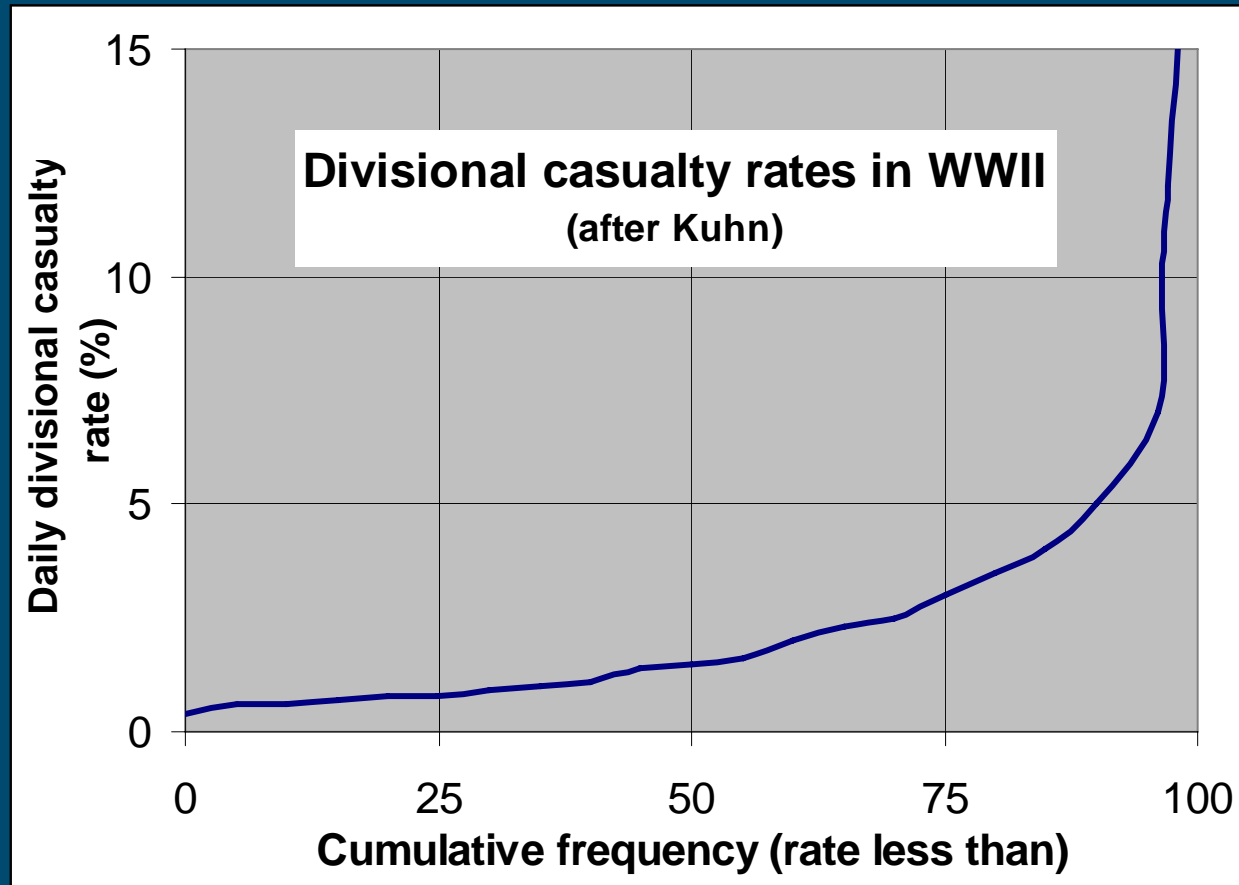
- Typical approach
 - *ab initio* simulation of combat operations to determine equipment losses
 - statistical analysis of historical data to determine casualties per equipment lost

Battle casualty estimation: land

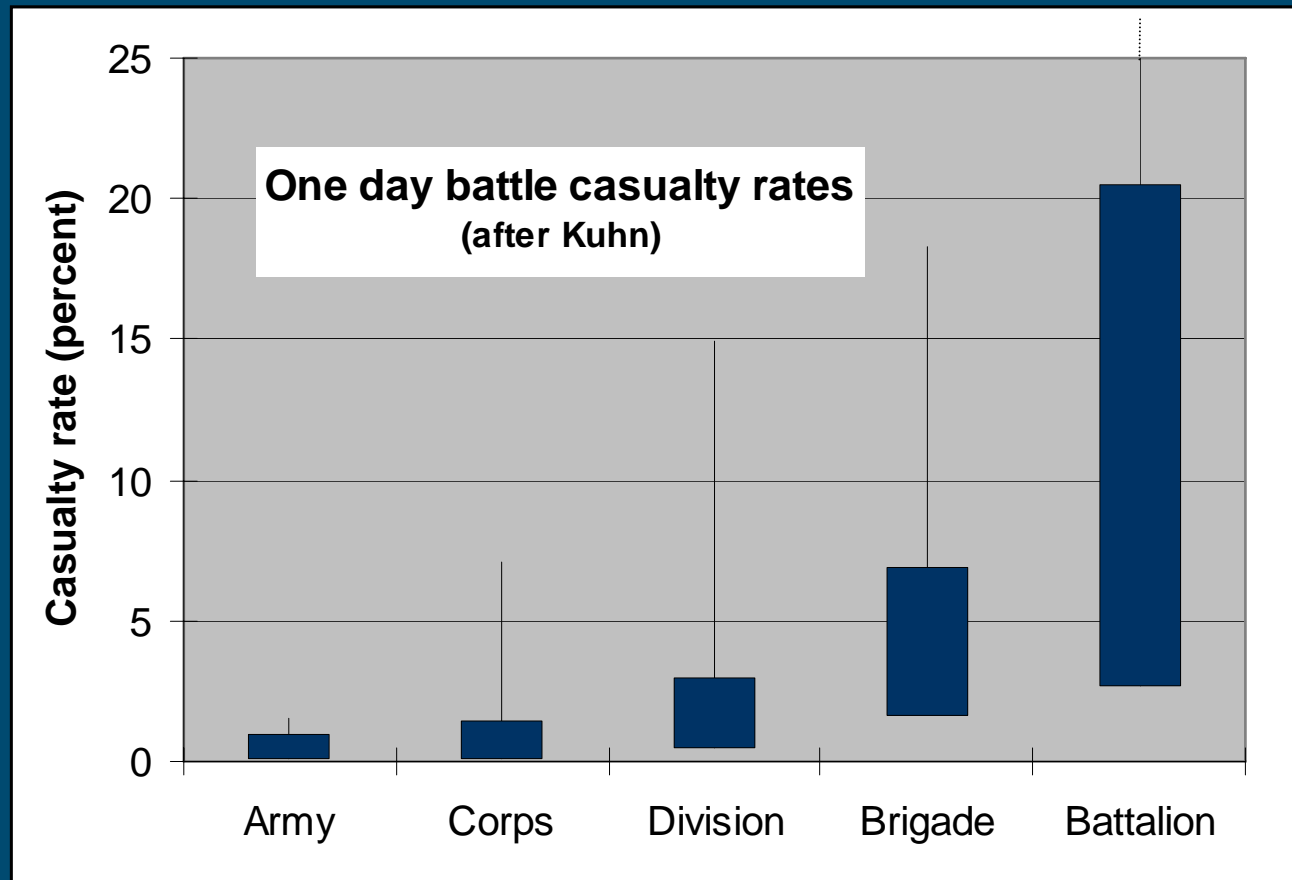
- Operational planning
 - statistical analysis of historical data

- Long term planning
 - *ab initio* simulation of combat operations to determine equipment losses
 - statistical analysis of historical data to determine casualties per equipment lost

Characteristics of land casualty rates



Characteristics of land casualty rates



Key points

- Errors using historical rates common as:
 - Casualty rates are highly dependent on the size of the formation
 - Peak casualty rates are not sustained over time
- Statistical models provide better estimates than rate based approaches if the required parameters are known
- Casualty rate estimates from simulations need to be validated against historical data
- As operational casualty rates fall the importance of estimating casualties other than due to hostile action is increasing