

# Data Science 1

STAT/CS 287

James Bagrow, UVM Dept of Math and Statistics

LECTURE 02

# Announcement

Course Teaching Assistant:

Damin Zhu ~ **damin.zhu@uvm.edu**

Help with questions and will hold office  
hours (Tuesdays 2–3pm)

# Today's Schedule

Intro/Review of probability and statistics

Reading assignment:

Review the rest of today's lecture notes when posted  
(including properties of expectation, variance)

# Motivation



Abraham Wald  
1902–1950



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During WW2: help planes survive combat  
→ **Where to put bulletproof armor?**

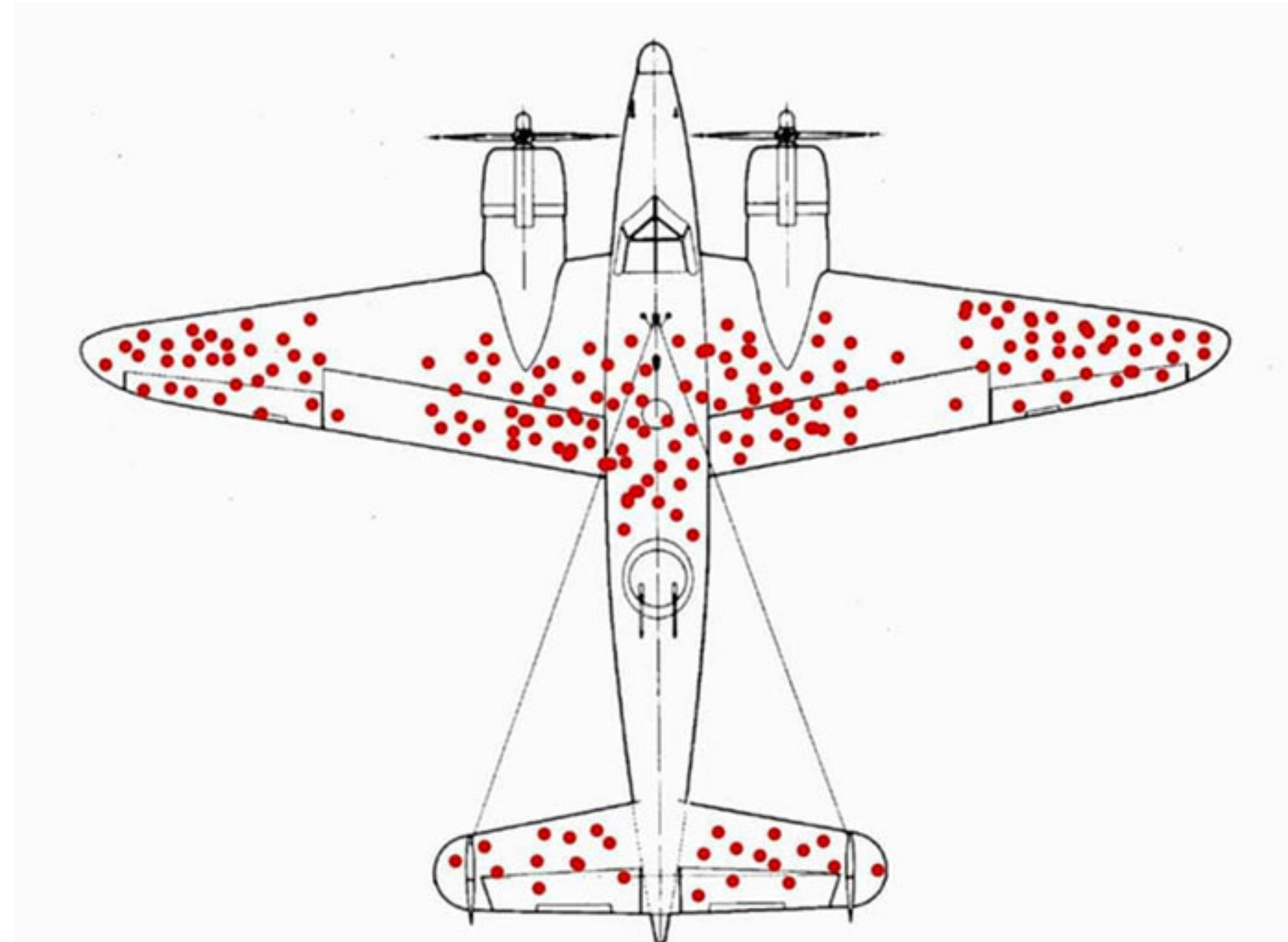




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1902–1950



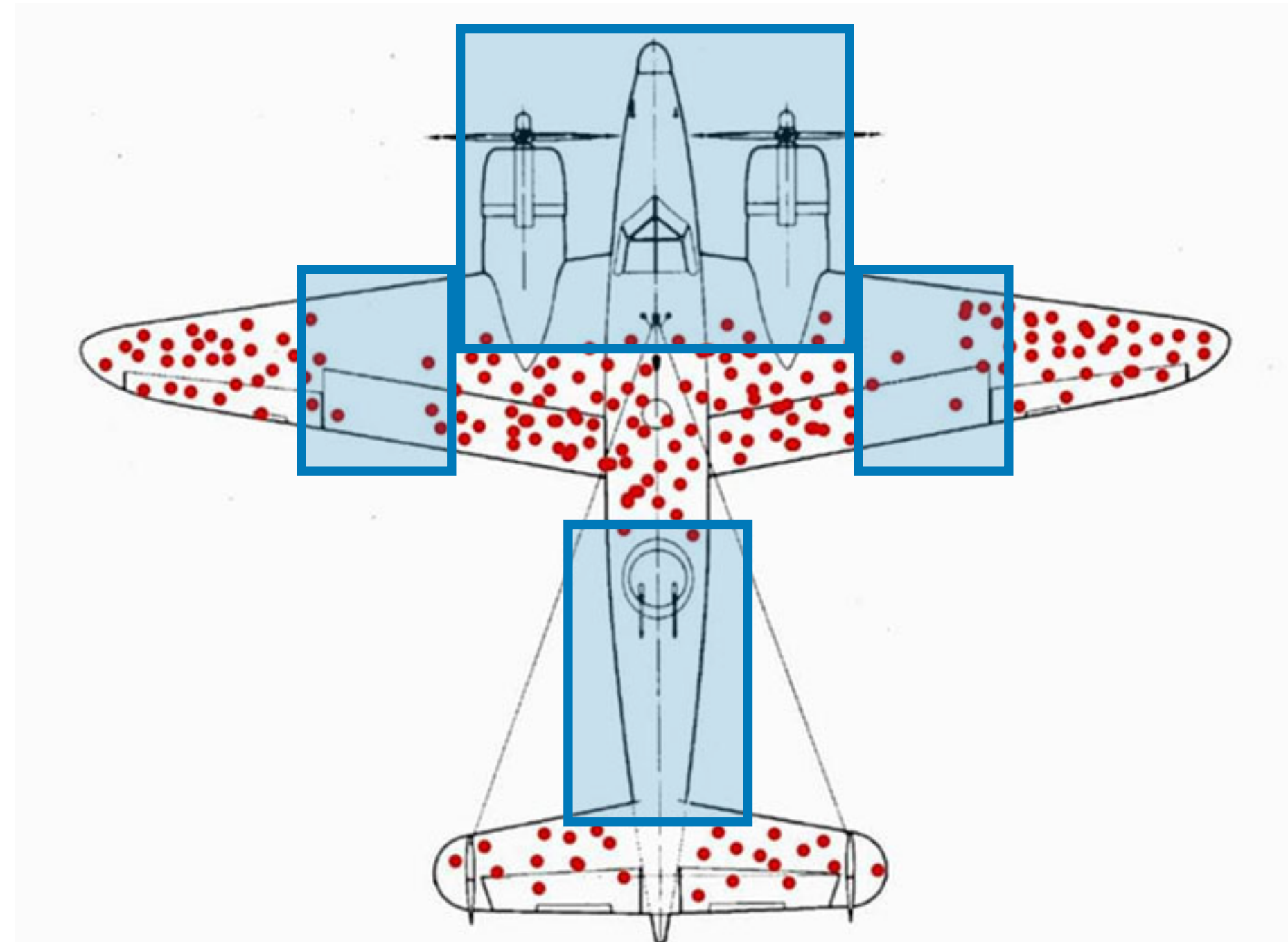
Went to airfields and measured damage on many planes after missions

Drew an interesting conclusion:

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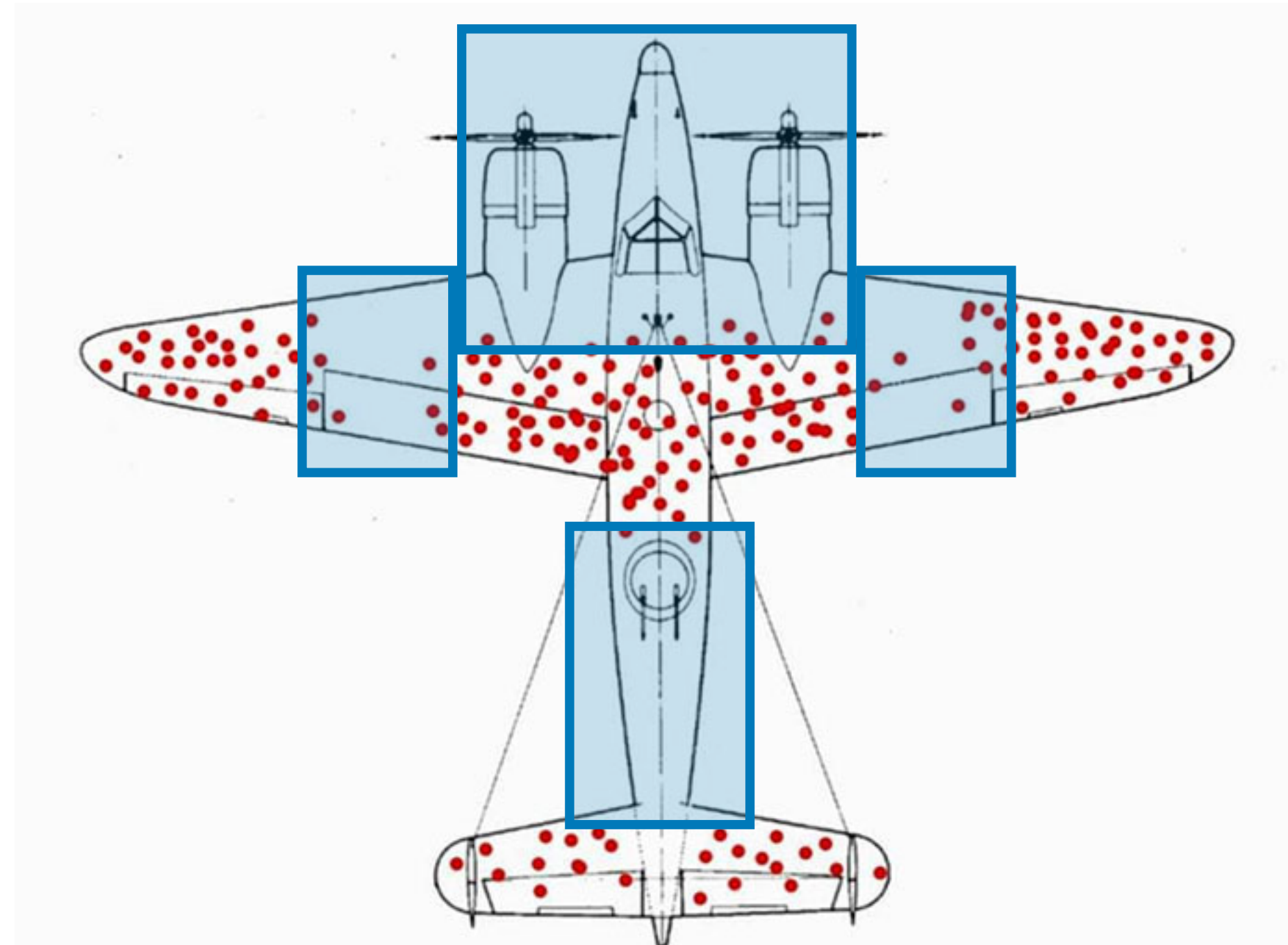
Put the armor where the bullet holes **aren't**!



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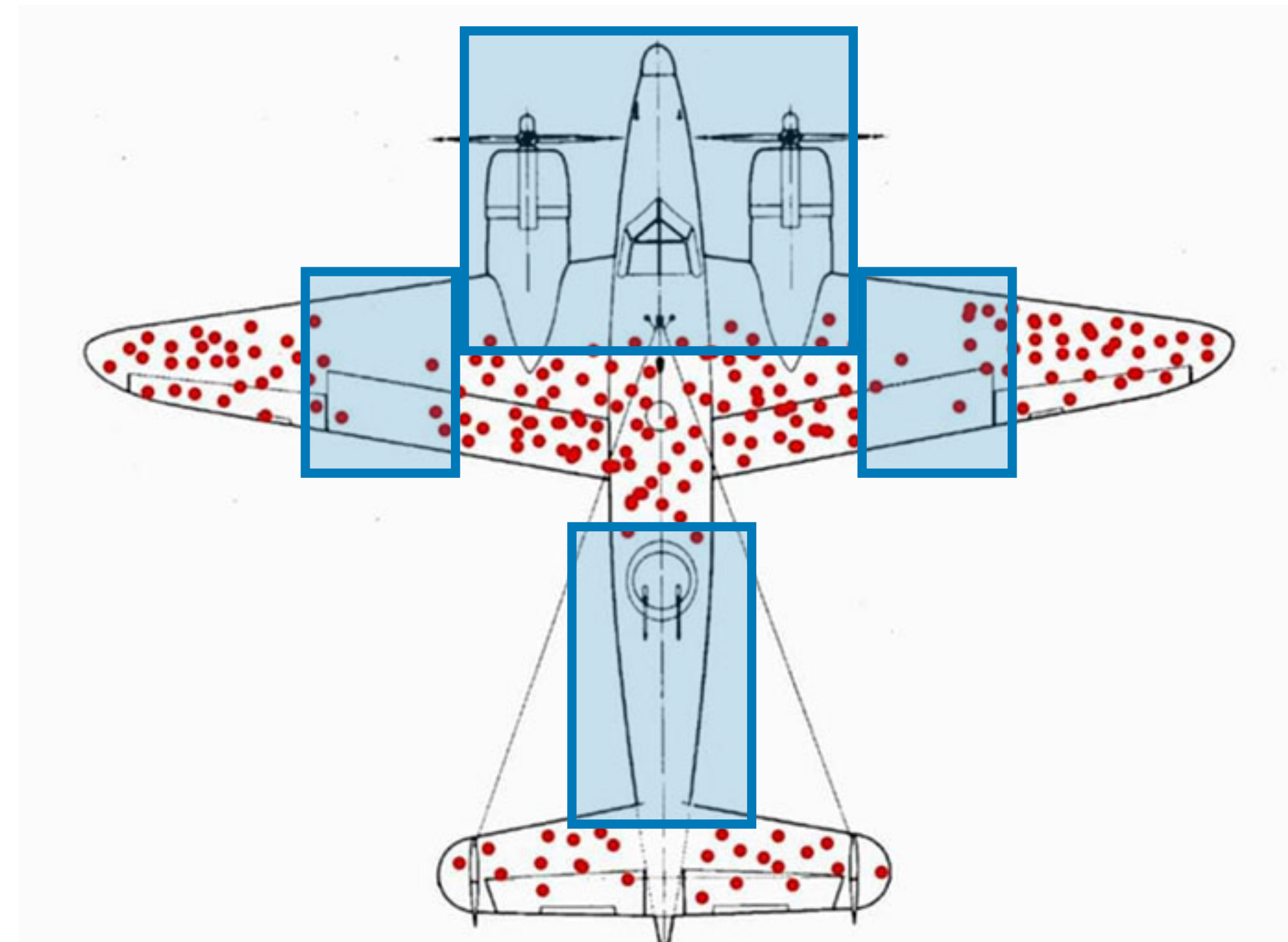
Why? Survivorship bias: only *saw the planes that made it back*. His sample of data was conditional!



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As data scientists, we should always be **reasoning** about the **greater context** of the data at hand.  
→ Helped by a good grounding of *(conditional) probability*

Let's switch to the board