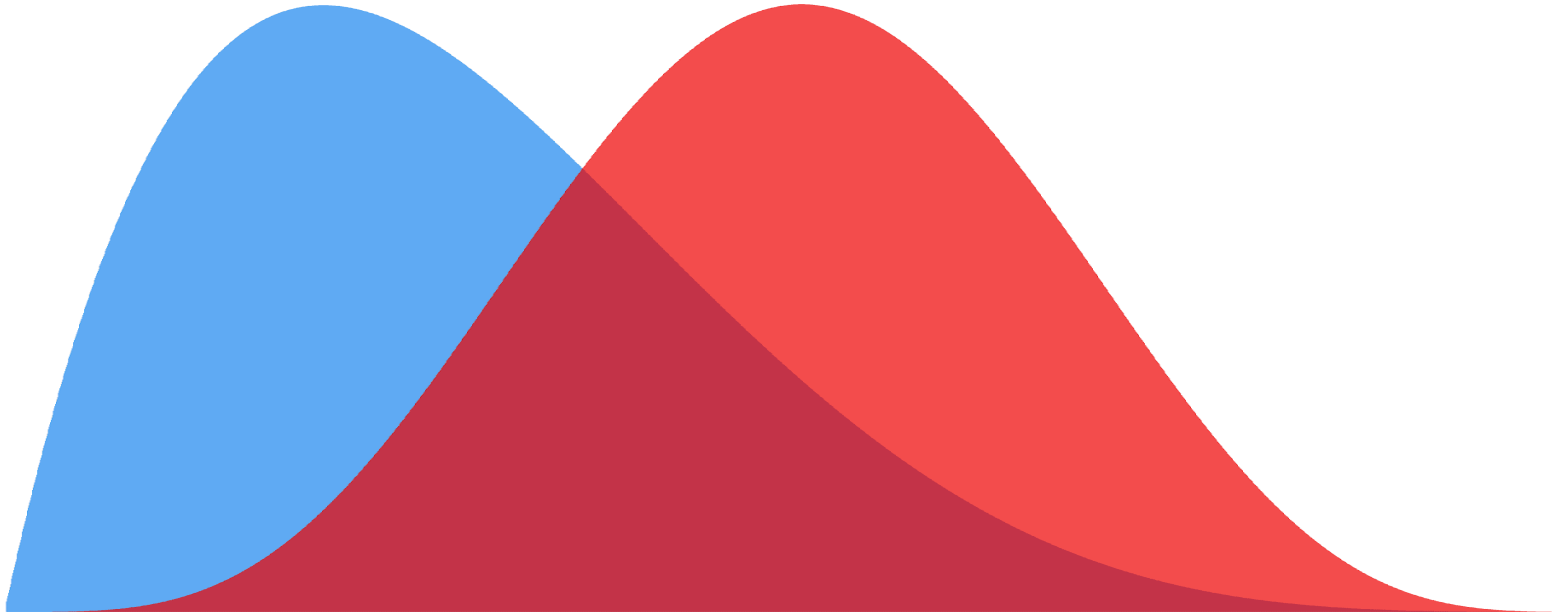
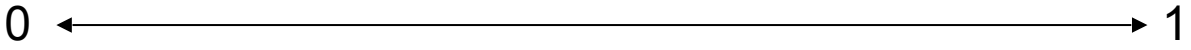
Risk Distributions



From Corbett Davis & Goel - ICML 2019 tutorial

What's the chance there's contraband in the vehicle?



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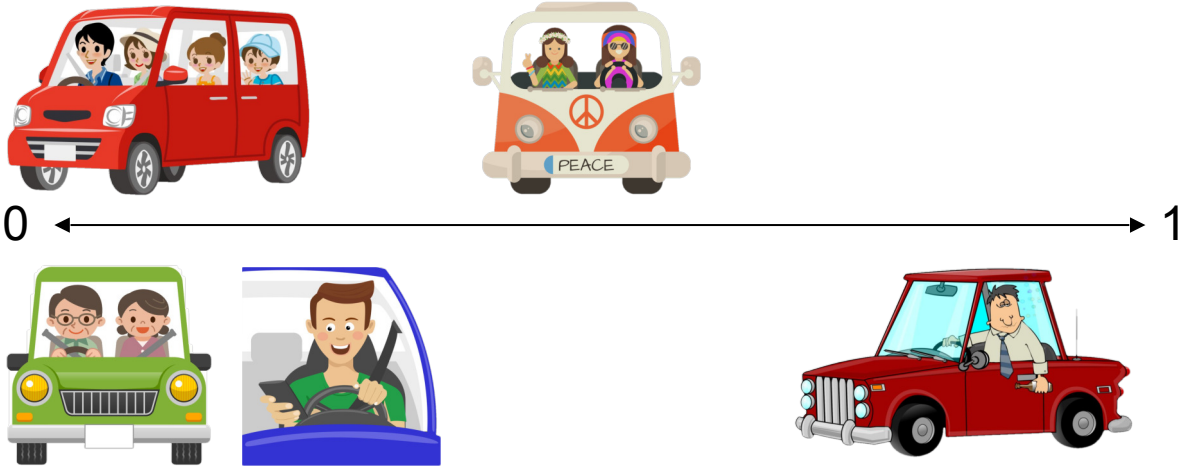

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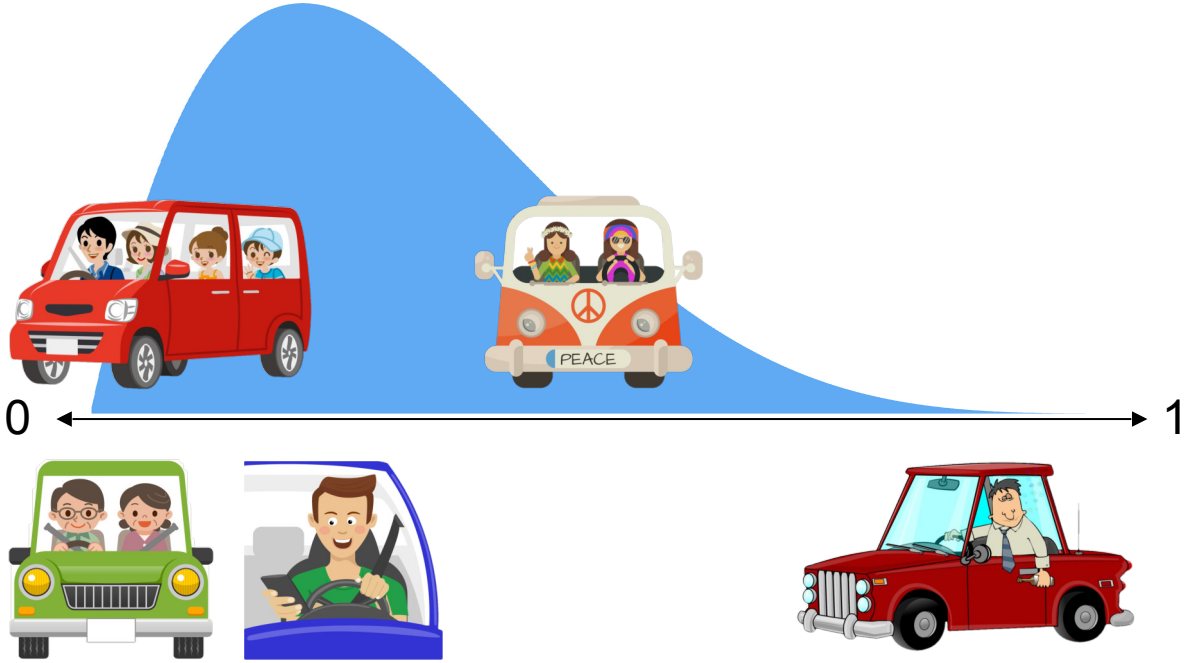

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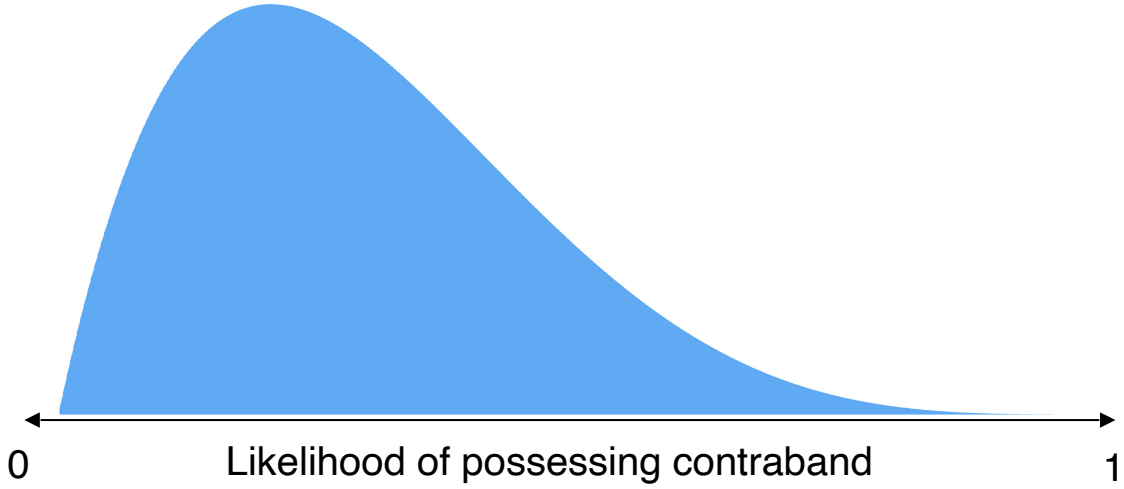

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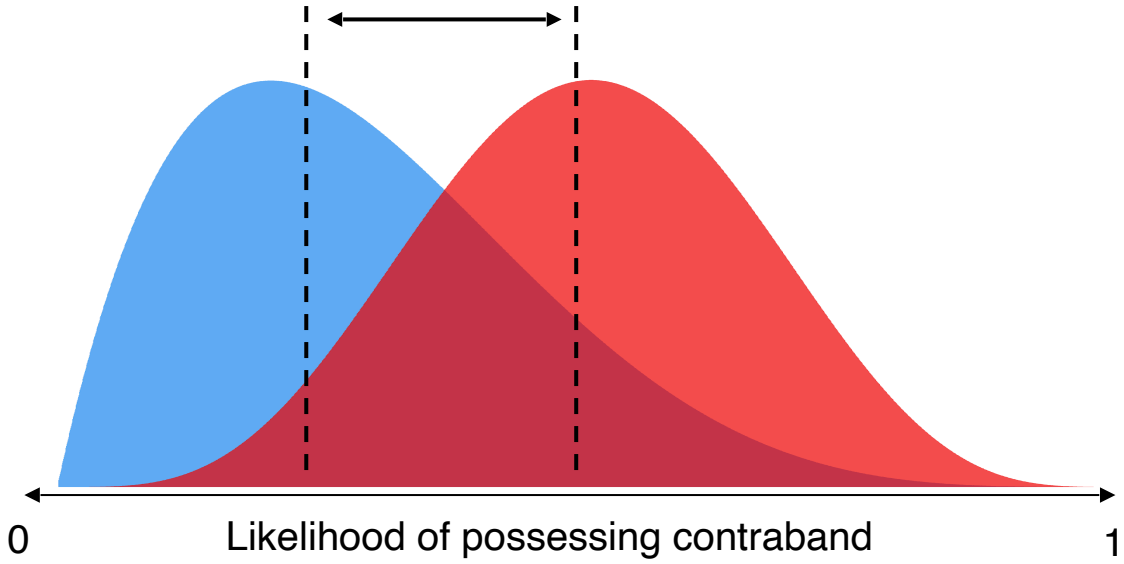
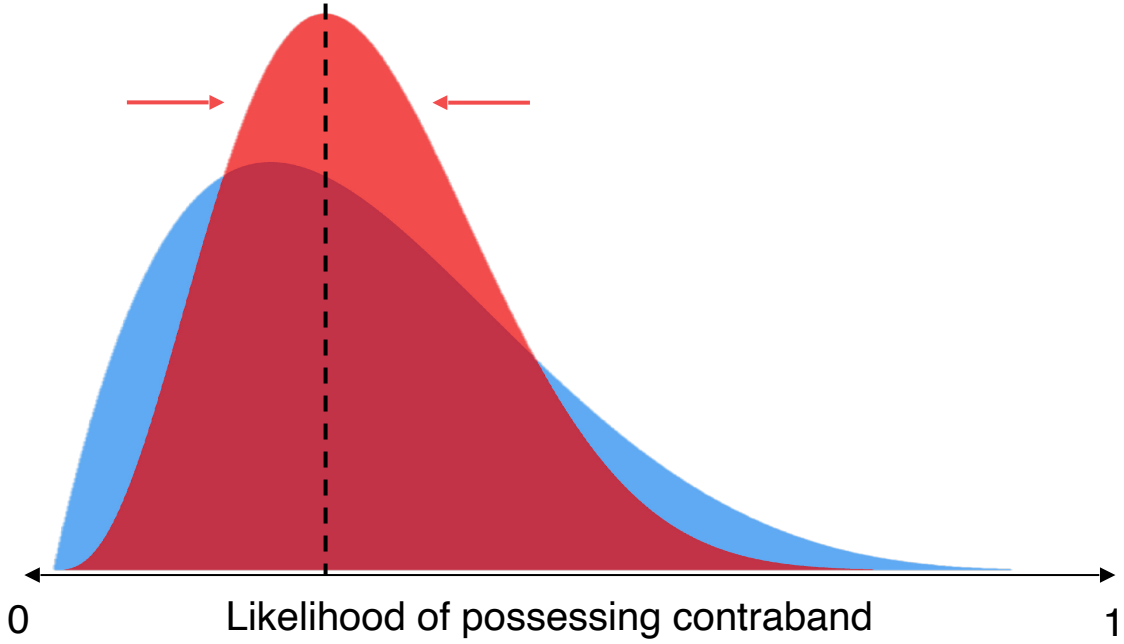


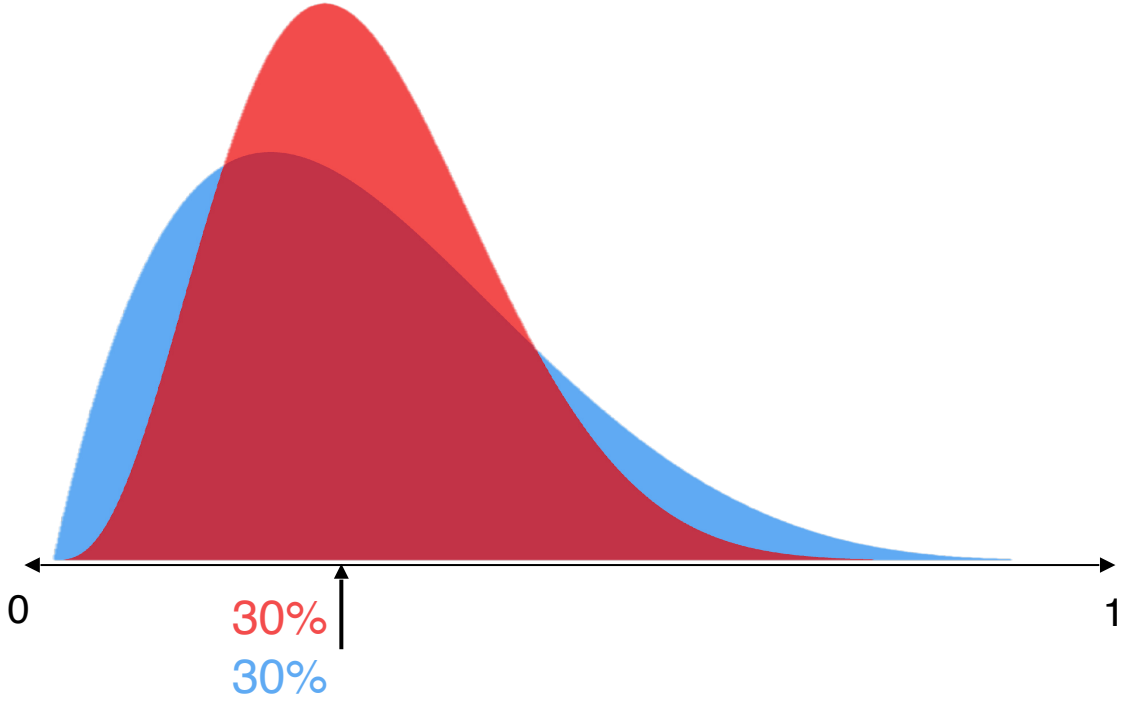
Different average risk = different rates of carrying contraband

Risk distributions



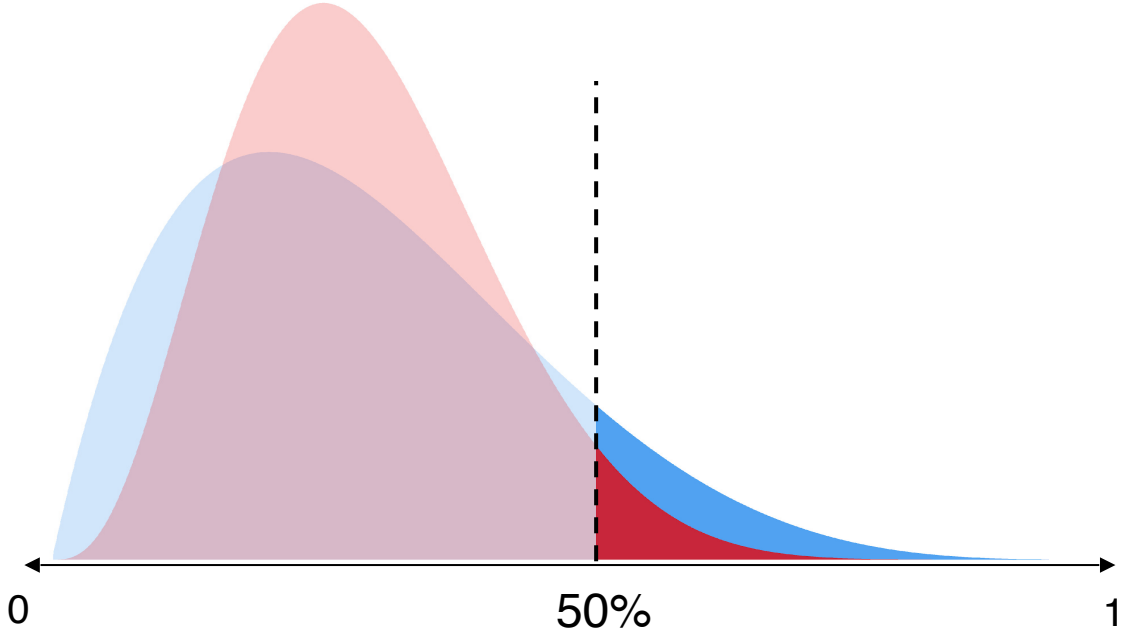
Lower variance = harder to determine who's carrying contraband

The problem with the outcome test



Two groups who both carry contraband 30% of the time

The problem with the outcome test



Police search if there's greater than 50% chance they'll find contraband.

[A facially neutral, non-discriminatory search policy.]

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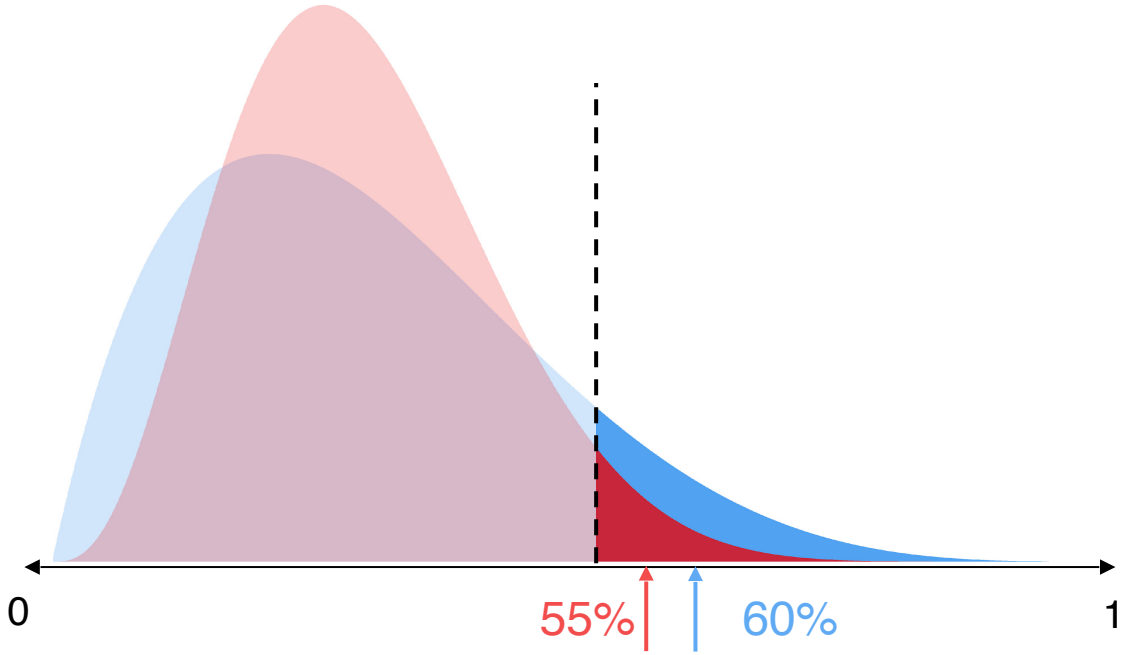

Searches of the blue group are more successful.

[The outcome test incorrectly suggests bias against the red group.]

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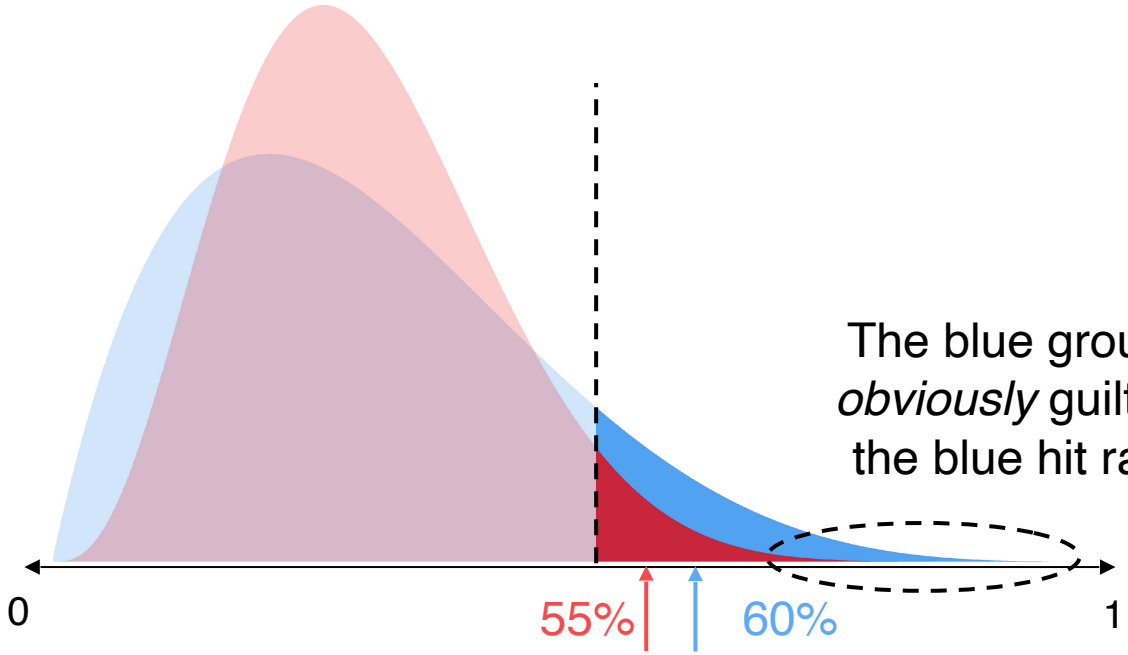

The blue group has more *obviously* guilty people, so the blue hit rate is higher

Searches of the blue group are more successful.

[The outcome test incorrectly suggests bias against the red group.]

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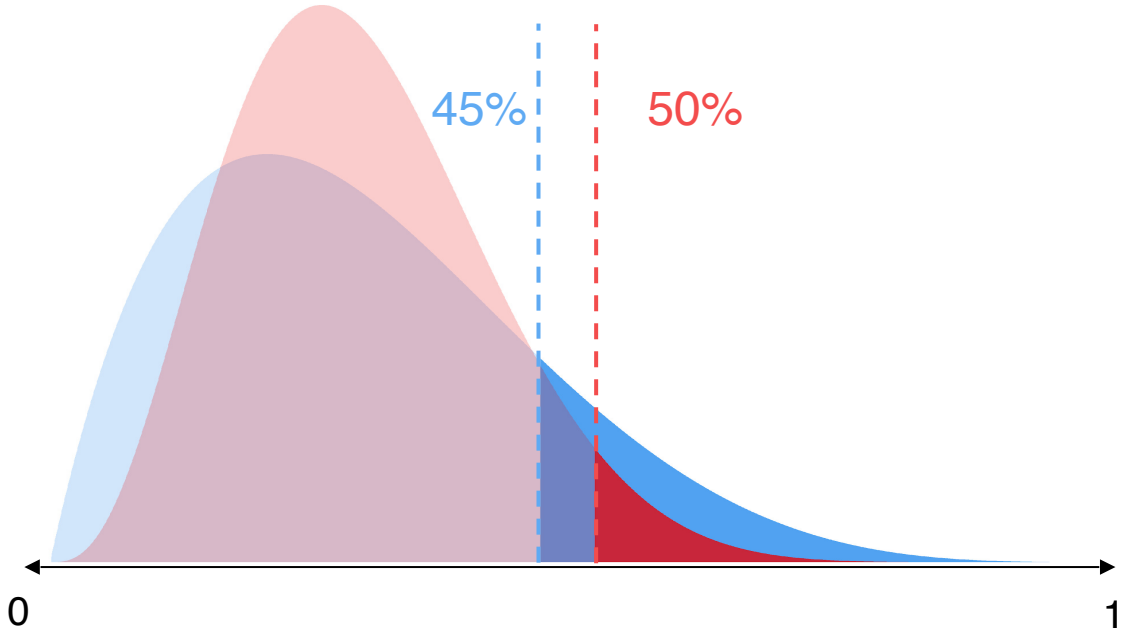

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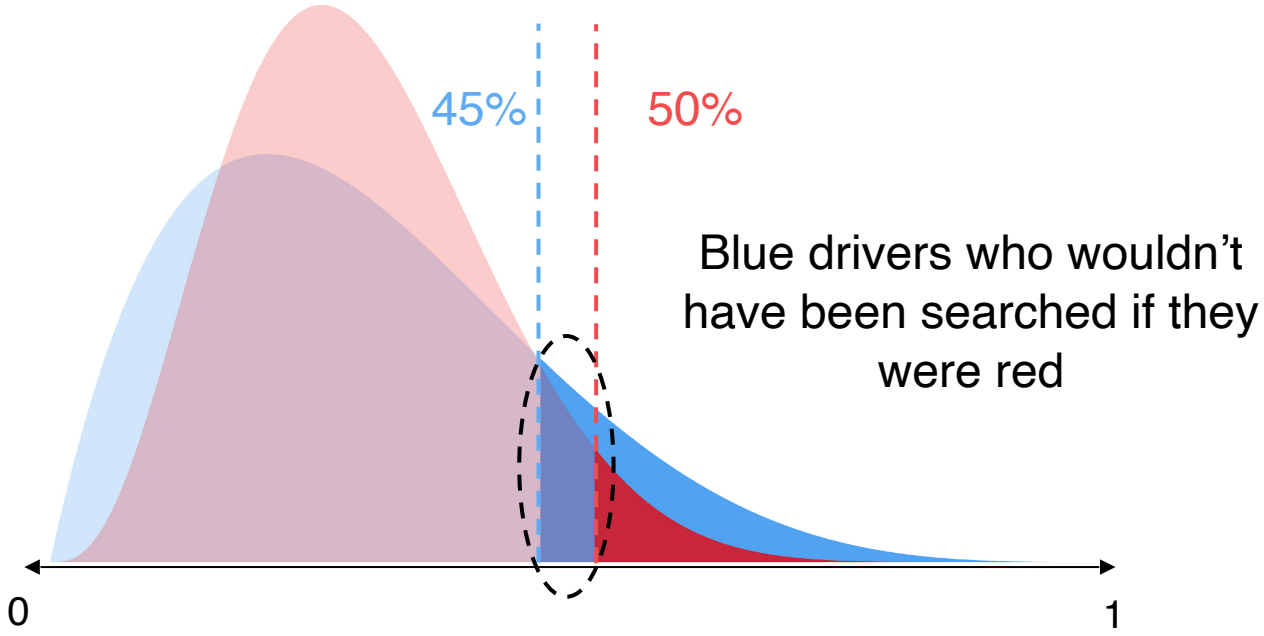
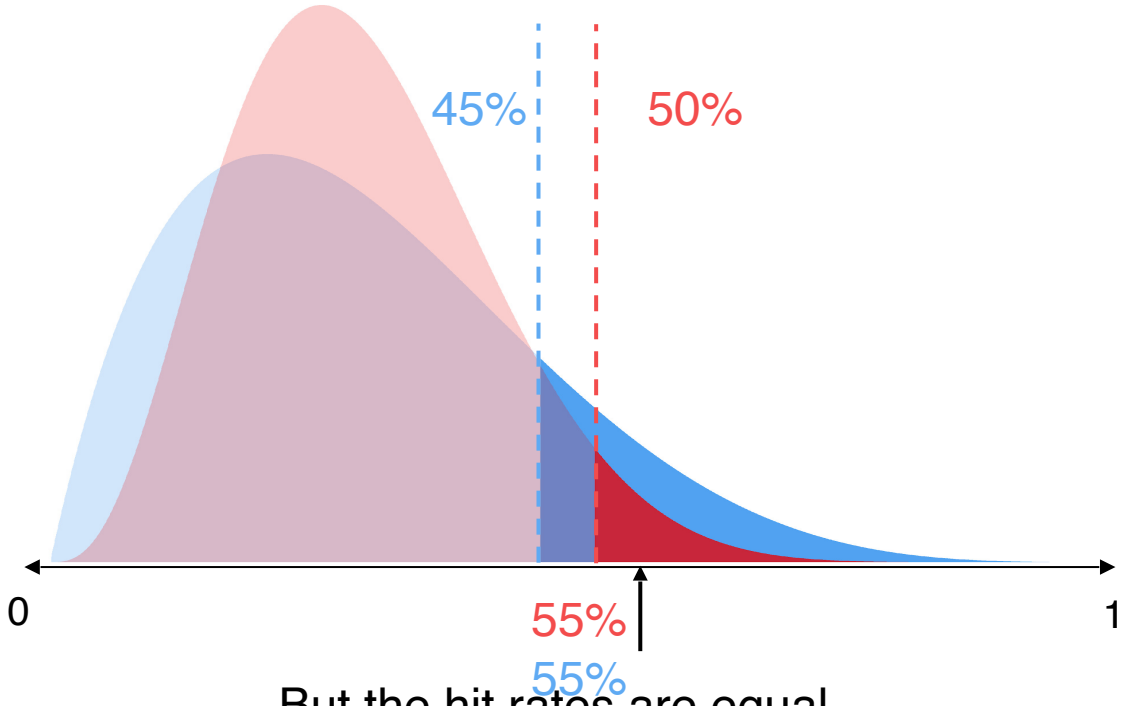


Police are acting suboptimally in order to discriminate against blue drivers

The problem with the outcome test



But the hit rates are equal.

[The outcome test incorrectly finds no discrimination.]