

## 5. Refining Acquisition Strategies

### Early warnings and scorecard performance

**Population stability**

**Acceptance and override rates**

**Measuring performance**

**Actual vs expected analyses**

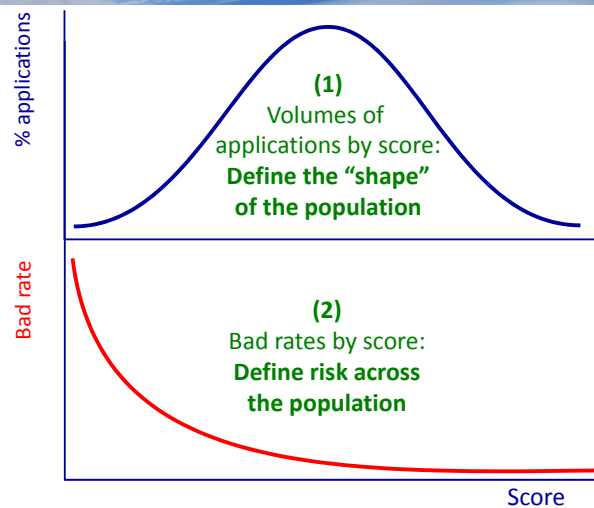
## Expected results

### Example scorecard statistics

Cut off score	Overall accept rate	Overall bad rate	Scoreband bad rate	Scoreband population %
0	100.0%	7.25%	28.9%	4.3%
190	95.7%	6.3%	19.5%	4.0%
200	91.8%	5.7%	18.7%	2.8%
205	88.9%	5.3%	15.0%	3.3%
210	85.6%	4.9%	12.9%	8.2%
220	77.4%	4.1%	9.0%	9.7%
230	67.6%	3.4%	6.6%	10.8%
240	56.8%	2.7%	5.0%	11.0%
250	45.8%	2.2%	4.0%	10.9%

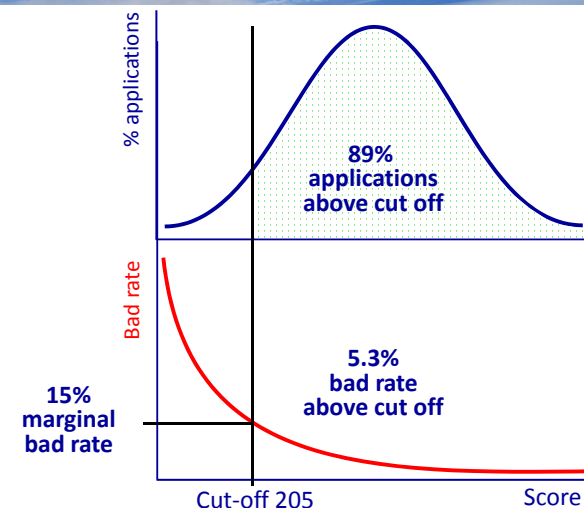
## Expected results

### From scorecard statistics



## Expected results

### Translated into business options



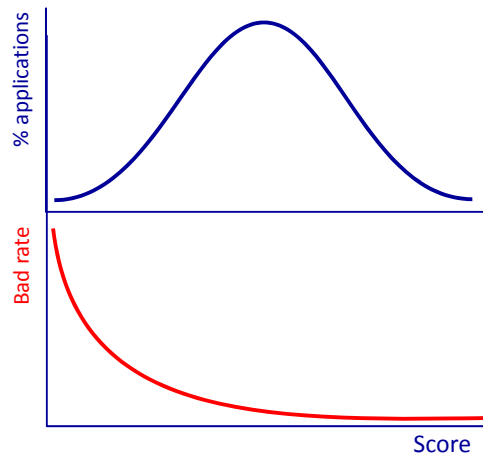
**Example:**  
Population bad rate 7.25%

Set risk threshold at 15%  
→ Cut off of 205  
→ 89% accept rate  
→ 5.3% bad rate

Based on statistics page 504

## Population stability tracking

- Assumption: Population 'shape' remains as predicted

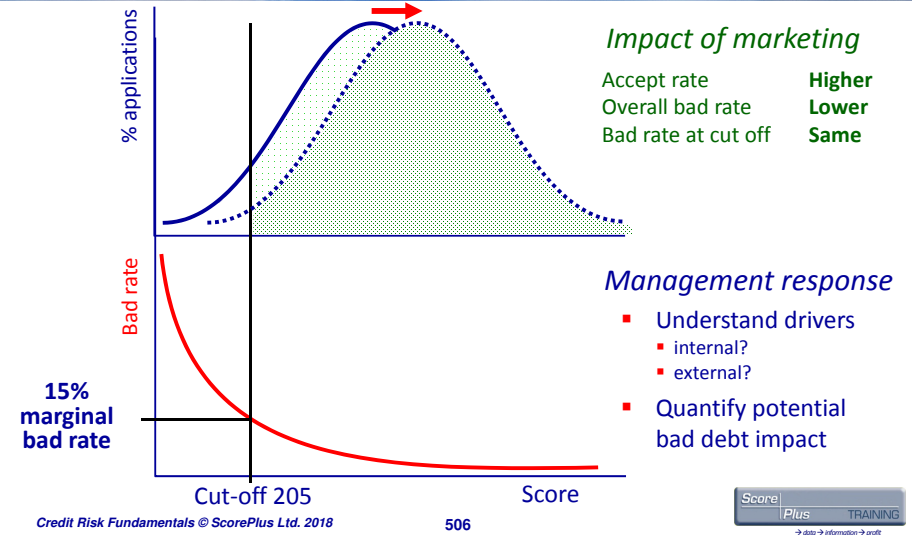


Today's population matches the model expectation?



Builds confidence for model reliability

## Population stability tracking Possible influences and consequences?

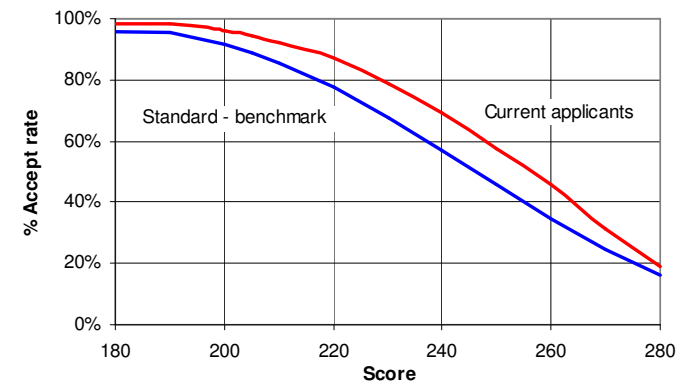


## Population stability table

Cut off score	Expected overall accept rate	Actual overall possible acc rate
0	100.0%	100.0%
190	95.7%	98.0%
200	91.8%	95.2%
205	88.9%	92.7%
210	85.6%	89.8%
220	77.4%	82.7%
230	67.6%	74.8%
240	56.8%	63.5%
250	45.8%	50.0%

**Interpretation?**

## Population stability graph



**Overall bad rate consequences?**

# Task

## Shifts in score profiles Why do they happen?

Investigate causes:

- Change in population
  - and in credit quality
- Changes in response
  - but 'same' applicants

Examples:

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Examples:

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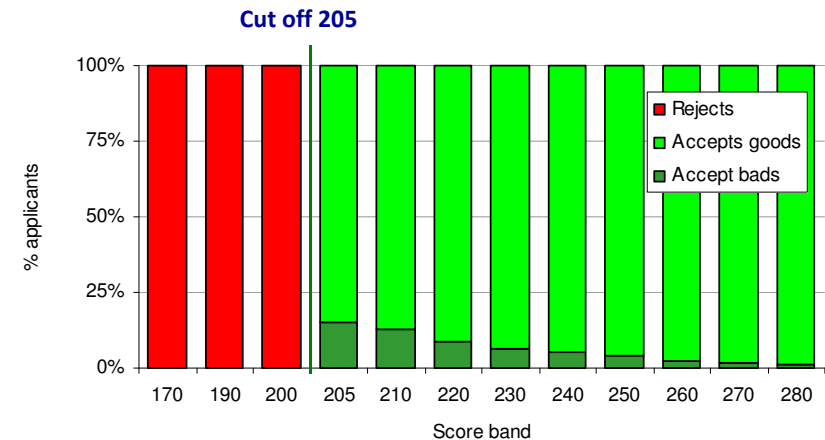
## 5. Refining Acquisition Strategies Early warnings and scorecard performance

- ✓ **Population stability**
- Acceptance and override rates**
- Measuring performance**
- Actual vs expected analyses**

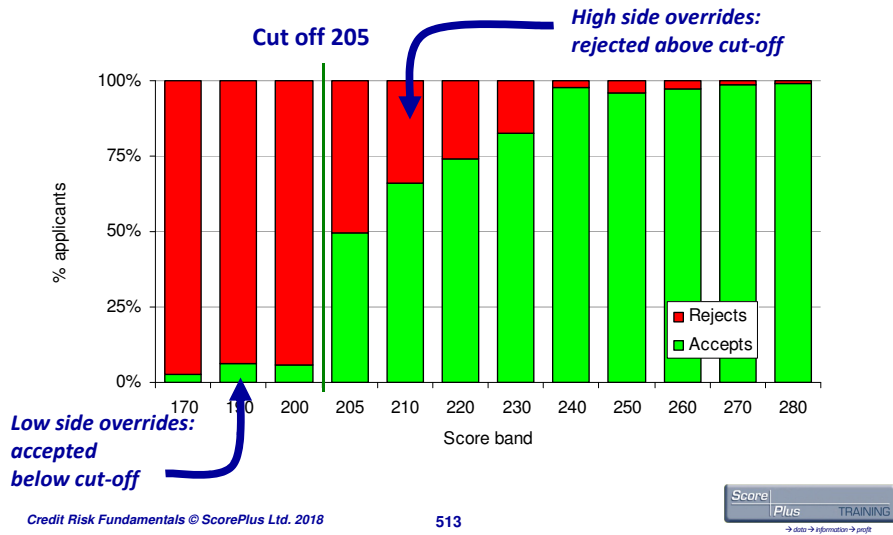
## More assumptions

- Population 'shape' remains the same
- ⇒ All applications  $\geq$  cut off accepted
- ⇒ All applications  $<$  cut off declined

## Expected accept rate by score What should it look like?



## Actual accept rate by score What has happened?



**Task**

## Consequences?

- 
- 
- 
- 
- 
- 

## 5. Refining Acquisition Strategies Early warnings and scorecard performance

- ✓ **Population stability**
- ✓ **Acceptance and override rates**

**Measuring performance**

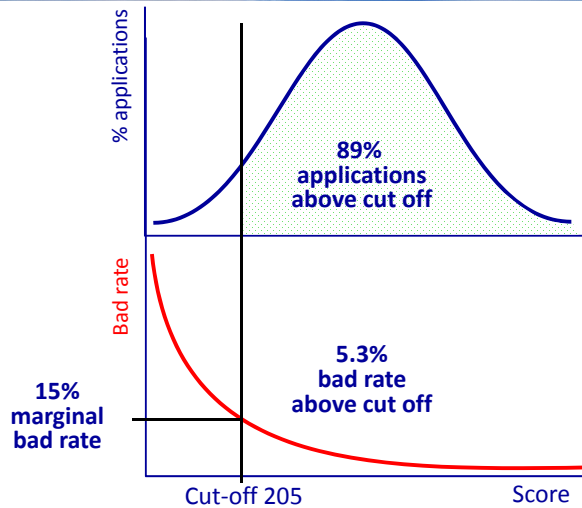
**Actual vs expected analyses**

## Yet more assumptions

- Population 'shape' remains the same
- All applications  $\geq$  cut off accepted
- All applications  $<$  cut off declined
- ⇒ Bad rate by score remains the same

**Reminder**

## Expected results Sets standards for monitoring

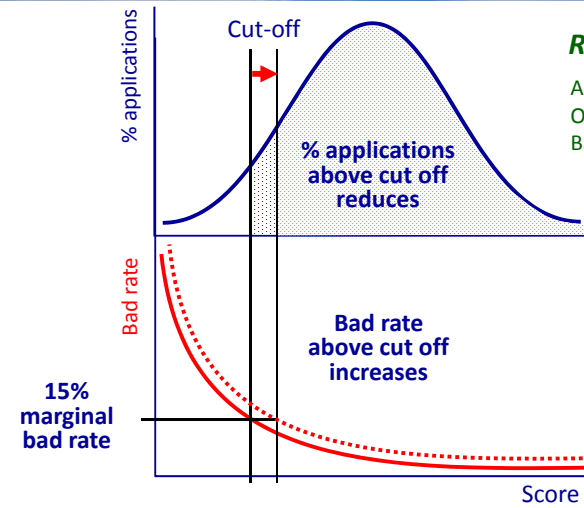


**Example:**  
Population bad rate 7.25%

Set risk threshold at 15%  
→ Cut off of 205  
→ 89% accept rate  
→ 5.3% bad rate

Based on statistics page 504

## Scorecard validation – performance Risk: score relationship – influences (1)



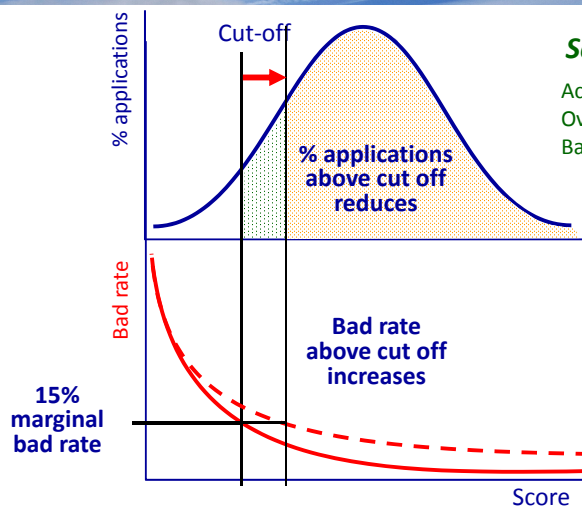
**Risk calibration changes**

Accept rate **Lower**  
Overall bad rate **Higher**  
Bad rate at cut off **Same**  
after cut off adjustment

**Management response**

- Short term
  - increase cut off
- Longer term
  - recalibrate model

## Scorecard validation – performance Risk: score relationship – influences (2)



**Scorecard deterioration**

Accept rate **Lower**  
Overall bad rate **Higher**  
Bad rate at cut off **Same**  
after cut off adjustment

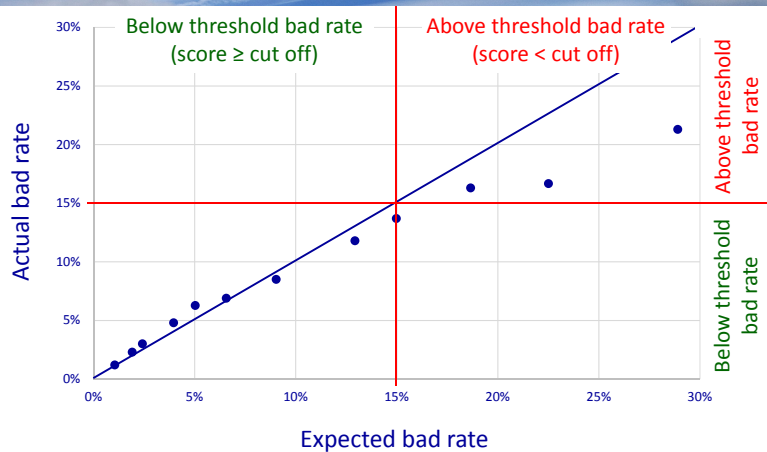
**Management response**

- Short term
  - increase cut off
- Longer term
  - rebuild model

## Bad rate by score table Example expected vs actual results

	Scoreband	Expected bad rate	Actual bad rate
<b>Expected marginal bad rate 15%</b>	Up to 189	28.9%	21.3%
	190 to 199	22.5%	16.7%
	200 to 204	18.7%	16.3%
	205 to 209	15.0%	13.7%
	210 to 219	12.9%	11.8%
	220 to 229	9.0%	8.5%
	230 to 239	6.6%	6.9%
	240 to 249	5.0%	6.3%
	250 to 259	4.0%	4.8%
	260 to 269	2.4%	3.0%
	270 to 279	1.9%	2.3%
	280 +	1.0%	1.2%

## Actual vs expected bad rate graph



Interpretation? What could be driving the 'actual' pattern?

## Task Accept and bad rate by score table Example expected vs actual results

Scoreband	Expected bad rate	Actual bad rate	Accept rate	Observations
Up to 189	28.9%	21.3%	2.6%	
190 to 199	22.5%	16.7%	6.4%	
200 to 204	18.7%	16.3%	6.0%	
205 to 209	15.0%	13.7%	49.7%	
210 to 219	12.9%	11.8%	65.9%	
220 to 229	9.0%	8.5%	74.3%	
230 to 239	6.6%	6.9%	82.7%	
240 to 249	5.0%	6.3%	97.9%	
250 to 259	4.0%	4.8%	96.0%	
260 to 269	2.4%	3.0%	96.0%	
270 to 279	1.9%	2.3%	96.0%	
280 +	1.0%	1.2%	96.0%	

## Impact of acceptance on performance Analysis and response

### Analysis

- Below cut off: overrides worse than threshold
- Cut off to 229: overrides masking true performance?
- 230 and above: underestimating risk?

### Management response

- Review < cut off procedures - eliminate low side overrides?
- Understand reasons for decline - can other data be used to enhance scorecard?
- Scorecard calibration?

Scorecard assessment: understand front end and performance

## Key concepts

- Why monitor?
  - scores underpin strategy
- How?
  - actual vs expected
  - scorecard statistics provide benchmarks
  - N.B. update with experience
- 'Front end'
  - population stability
  - acceptance rates
  - override rates
- 'Performance'
  - risk vs score
  - focus at the margin
  - link results to 'front end'