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People Analytics Case Study

Daniel Pinedo| March 2020

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Given the provided dataset, how can we increase:

series 7 exam pass rates?
efficiencies in the recruiting and training process?

This case study includes:

recommendations for above questions
summary of findings

Case Study Highlights

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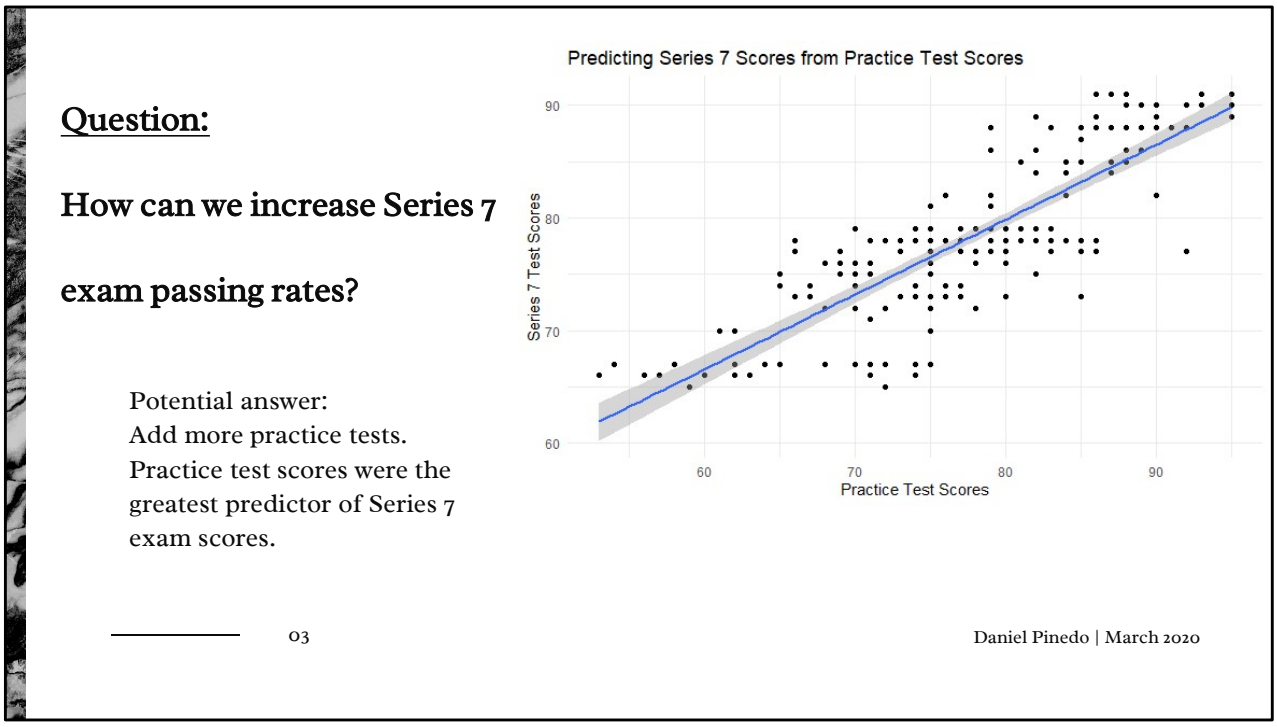
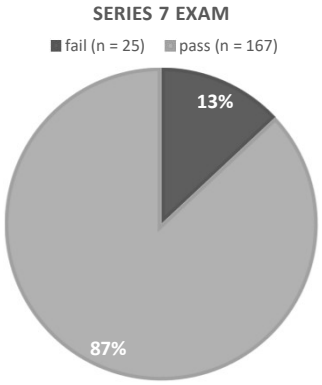
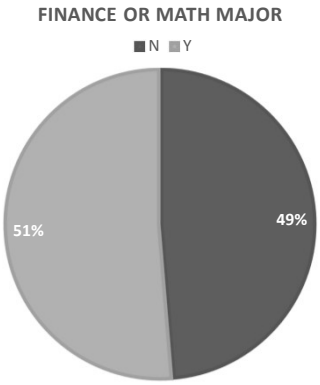


Technical explanation is below
Blue line is our prediction curve:
26.73 + 0.66x + SE = y
x = practice test scores
y = series 7 exam scores
Residual Standard Error = plus or minus 4 (gray area)
X accounted for 69% of the variance of y (adjusted r-squared)

Acceptable pass rate for prior Series 6 and 63 Exams = 93% (6% improvement needed)





Whether a new hire was a Finance or Math major also predicted success on the Series 7 exam, but did not account for much more prediction above and beyond practice test scores

Additional Findings

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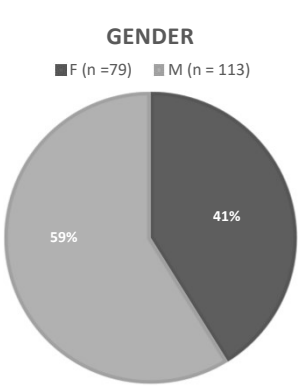
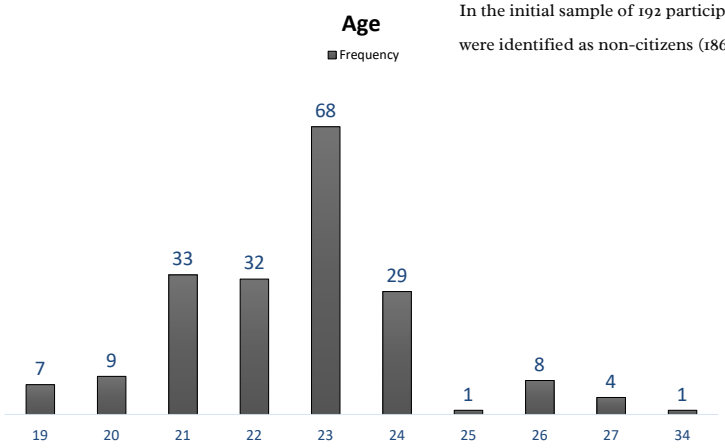
Technical explanation is below:
Finance or math major explained an additional 4% of variance (from 69% with Practice test alone to 73%) of the scores on series 7 exam.
By itself (if no practice tests existed), being a finance or math major accounts for 32% of variance.

It's a stretch, but we could take the above to indicate that Practice tests alone are more than twice as predictive of passing the Series 7 as being a finance or math major that takes no practice tests. Putting practice tests together with being a finance or math major does predict passing a little better (6% better) than practice tests alone





In the initial sample of 192 participants, 6 were identified as non-citizens (186 citizens)

Demographics

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Question:

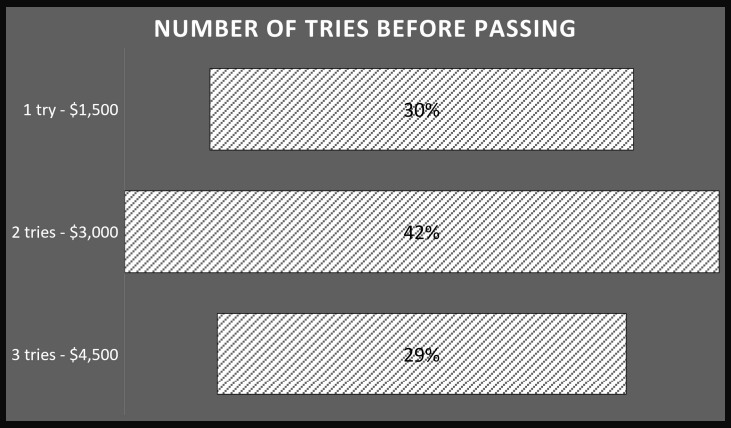
How can we increase efficiency in the recruiting and training process?

Reduction of failure rates

Since practice test scores predict Series 7 exam scores with a high level of confidence, we can reduce failure rates by implementing more practice tests

Cost projections

Current Training Costs	Efficient State (1 try)
$2,984,375	$1,500,000
Difference	**Percent Difference**
$1,484,375	-49.7%



Training Cost Efficiency

Cost projections are based on total new hire number of 1,000

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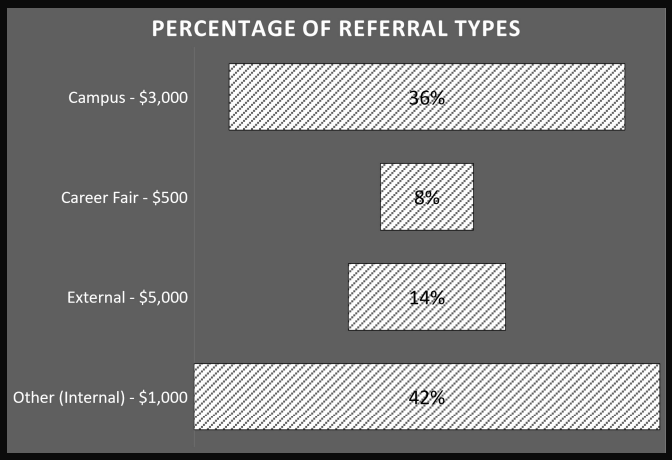

Referral Cost Efficiency

Referral type did not predict success on the Series 7 exam.

Therefore, we may seek efficiencies here by simply reducing cost.

We may achieve this by eliminating external referrals (highest cost) and substituting career fair referrals (lowest cost).

Current Referral Costs	Efficient State
$2,235,602	$1,599,476
Difference	**Percent Difference**
$636,126	-28.45%

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Total new hires: 1000
Average Salary: $50,000
Total Cost = Training + Referral Costs

	Current	With training efficiency only	With referral efficiency only	With both efficiencies
Total cost per new hire (Averaged)	$5,220	$3,736	$4,584	$3,099
As percentage of salary	10.44%	7.47%	9.17%	6.20%

Cost Summary

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Thank you

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