

# Predictive Factors of Success on the American Board of Radiology Core Examination

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## Introduction

Diagnostic Radiology (DR) resident physicians must take the American Board of Radiology Core Examination (ABR Core) in the third year of dedicated diagnostic radiology training for certification

Approximately 10-15% of residents fail the ABR Core on first-attempt

No consensus exists in the radiology community or in academic literature regarding the reasons for increasing examination failure rate.

This study aims to investigate how radiology residents prepare for the ABR Core, and characterize the factors that predict success.

## Methodology

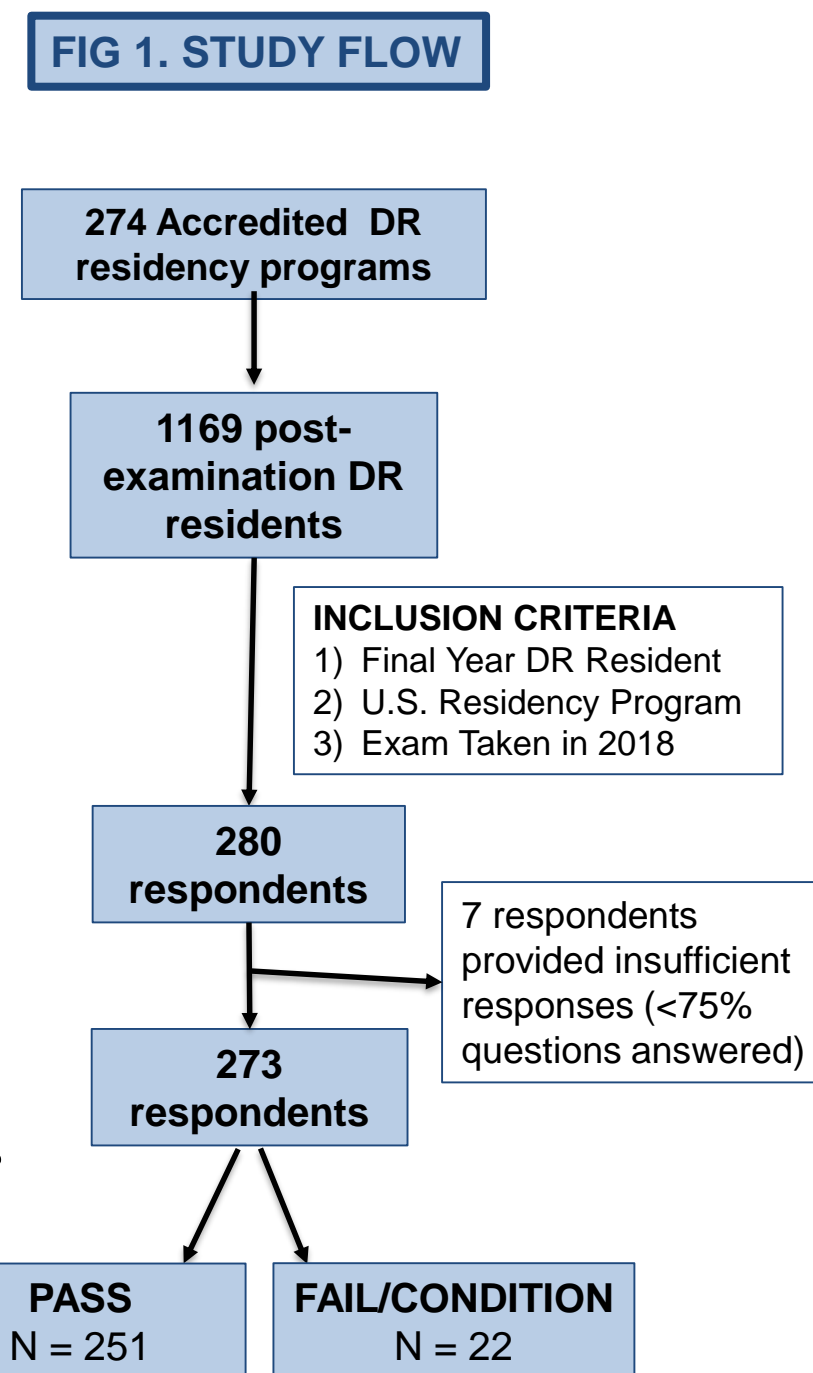
Conducted a national, questionnaire-based study. A Questionnaire was created and distributed to all final year radiology residents at ACGME-accredited U.S. programs who had taken the ABR Core in the Summer 2018 cycle (e.g. Inclusion Criteria)

Questionnaire collected data regarding demographics, prior testing, preparedness, performance, respondent characteristics, and free-text response. Data was cleaned to remove impossible responses (e.g. Step 1 Score of 800).

Respondents categorized as "Pass" or "Fail/Conditional Fail"

Bivariate and multivariate statistical analysis was performed to evaluate for statistically significant predictors of examination success

Significance was assigned at  $P < 0.05$ .



## Results

1,169 first-time examinees in 2018 → 273 respondents → **23.4% response rate**

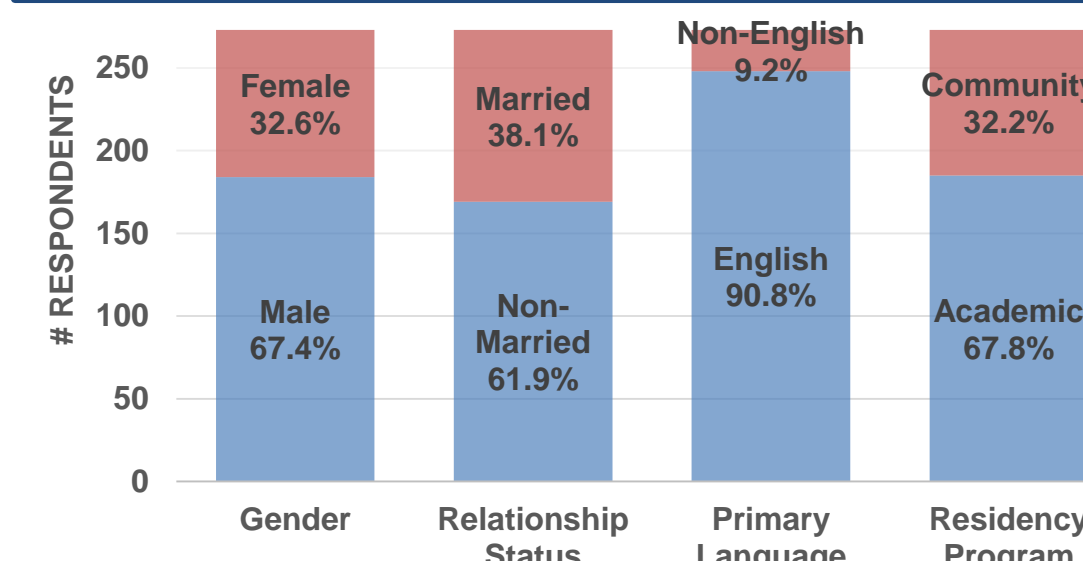
**Our sample is generalizable to the overall radiology resident population:**

1. Similar first-attempt pass rate (91.9% in study vs. 90% reported)
2. Similar average ABR Core score among pass-examinees (480 vs. 475)
3. Similar % of female representation (32.6% vs. 26.8%) (**Fig. 2**)
4. Similar geographic distribution of residents (**Fig. 3**)

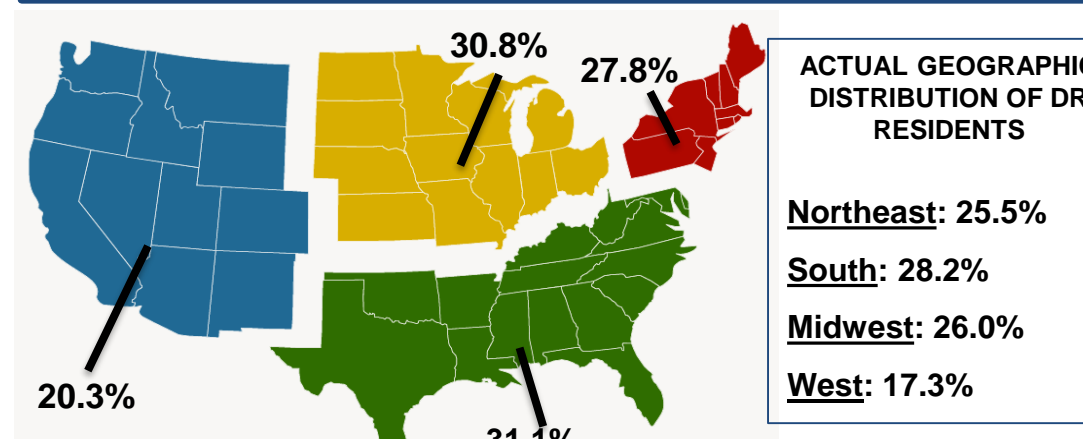
**Free-Text Responses:** many respondents (>20%) cited mental health concerns, work-related burnout, and lack of support from programs that impaired preparation (**Fig. 4**)

EXAMINATION PERFORMANCE PREDICTORS			
POSITIVE PREDICTORS		NEGATIVE OR INSIGNIFICANT PREDICTORS	
Academic residency program	$p = 0.0188$	Higher total # months spent studying	OR: 0.46 95%CI: 0.27-0.78 $p = 0.004$
Higher USMLE Step 1 score ( <b>Fig. 5</b> )	$p = 0.0042$	Protected study weeks	$p = 0.408$ – not significant
Higher USMLE Step 2 CK score	$p = 0.00022$		
Higher In-Training Examination score ( <b>Fig. 6</b> )	$p = 0.0033$	Did not report major life stressor prior to exam	$p = 0.00381$
Higher total # practice questions	$p = 0.00107$	Lower # of night call weeks prior to examination	OR: 1.32 95%CI: 1.05-1.69 $p = 0.020$
Used both MCQ and oral questions	$p = 0.00148$		
Higher # hours / night of sleep	$p = 0.00156$		

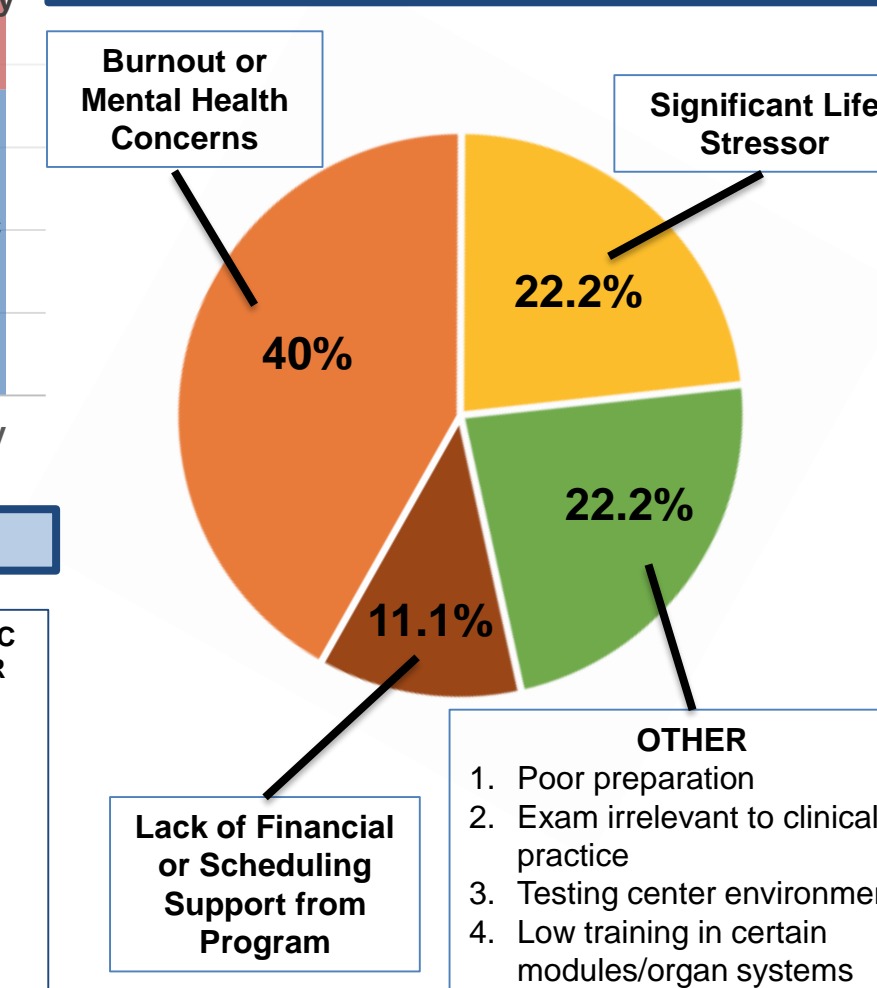
**FIG 2. Demographics and Respondent Features (N = 273)**



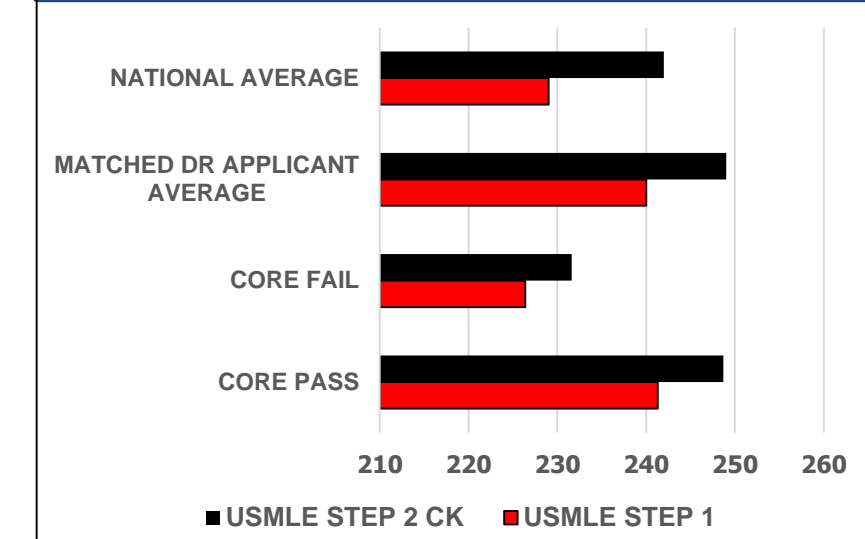
**FIG 3. Geographical Distribution of Respondent Residents**



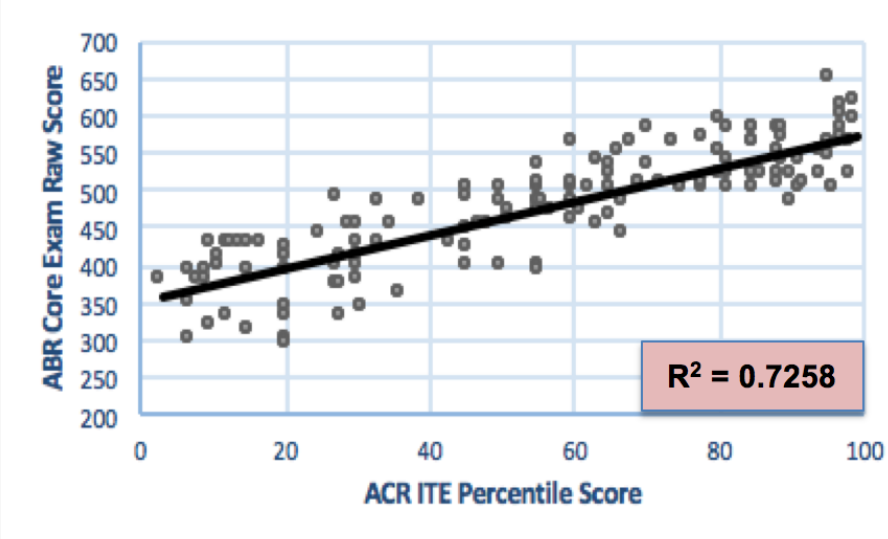
**FIG 4. Perceived Reasons for Poor Performance – Free Text Responses (N = 45)**



**FIG 5. USMLE SCORES AND CORE EXAM RESULT**



**FIG 6. IN-TRAINING EXAM AND ABR CORE EXAM SCORE CORRELATIONS**



## Discussion and Take-Away Points

Performance on prior standardized examinations (Step 1, Step 2 CK, ITE) strongly predict success on the ABR Core Exam, justifying their use in the residency match screening process.

Academic programs may offer advantages in exam preparation, possibly due to more faculty, more financial resources, higher conference attendance, and higher volume and variety of pathology, higher number of didactics sessions.

Short-term, high-quality studying is more important than duration of studying. No specific resource or set of resources can guarantee success.

Programs and residents should work toward alleviating psychosocial stressors, including emphasis on psychosocial health and reduction of work stress (e.g. night call) prior to the exam, to maximize performance.

**Strengths:** high response rate with large sample size

**Limitations:** poor accuracy of recall, exaggeration of responses, personal motives/bias, preferential completion by successful examinees

**Future Studies:** prospective studies that follow residents and investigate the effect of novel teaching techniques and emphasis on certain subjects.

## References

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