

# Updates on Academic Preparation Research



**Read-Ahead for  
The Diversity, Fairness, and Academic Preparation Working Group**

December 15, 2020



# Working group on diversity and academic preparation

Member	Affiliation
Michelle Albert	UCSF School of Medicine
Rhona Beaton	Union College
Julie Chanatry	Colgate University
Daniel Clinchot	The Ohio State University College of Medicine
Liesel Copeland	Rutgers Robert Wood Johnson Medical School
Francie Cuffney	Meredith College
Stephanie McClure	Meharry Medical College
Kadian McIntosh	University of Arizona College of Medicine - Tucson
Aubrie Swan Sein	Columbia University Vagelos College of Physicians and Surgeons
Doug Taylor	East Tennessee State University Quillen College of Medicine

# There are three major goals for the research on diversity and academic preparation

- ❑ Monitor trends in the diversity of MCAT examinees and group differences in their performance on the MCAT exam
- ❑ Understand how examinees, especially those from groups underrepresented in medicine, prepare for the MCAT exam and challenges they face
- ❑ Develop and disseminate information and resources to help:
  - Examinees better prepare for the MCAT exam
  - Advisors better guide their advisees on preparing for the MCAT exam

# Agenda

- ❑ Overview of 2020 test preparation results based on the Post-MCAT Questionnaire (PMQ) data
- ❑ Review differences in preparation strategies and challenges for examinees from institutions with more vs fewer resources based on 2020 PMQ data
- ❑ Discuss results about group differences in test preparation and identify next steps

# Summary of findings about test preparation from 2020 examinees who completed the PMQ

- ❑ On average, examinees spend 5-6 months preparing for the exam
- ❑ More than 80% of these examinees used AAMC's practice exams and about 60% used AAMC's section banks, question packs, and sample tests to prepare for the exam
- ❑ Most examinees (81%) started their preparation by finding out what is tested on the exam; about half discussed the test and how to prepare with an advisor or friends
- ❑ More than 60% of examinees created and used a study plan to guide their preparation
- ❑ The majority of examinees took practice exams or questions as they studied each topic tested (88%) and to identify their strengths and weaknesses (78%), test their understanding of what they had studied (81%), and assess their learning progress (83%) and readiness (79%) for the exam

# Summary of findings about test preparation from 2020 examinees who completed the PMQ (cont.)

- ❑ Three-quarters or more examinees took various strategies in their study and practice, including reviewing content they had studied throughout their preparation (83%), focused study time on weaker subjects (75%), mixed review of different topics throughout the preparation (75%), and explained why the answer choices in practice questions were correct or incorrect (75%)
- ❑ Examinees varied in their use of other strategies such as creating or using flashcards to remember important details (68%), planning time for relaxation (62%), writing notes about what was learned from memory (57%), and explaining concepts aloud or to a study partner/friend (42%)
- ❑ Most examinees prepared for the exam day by taking a timed online practice exam to mimic the exam day (90%), practicing pacing themselves during test (85%), and having a good sleep the night before the exam (79%)
- ❑ More than half examinees also prepared for the exam day by reading the MCAT Essentials bulletin (67%), practicing strategies to use break time (63%) and manage challenging questions (70%) and anxiety (67%), and going to the test site to make sure they knew how to get there (56%)

# Summary of findings about challenges for test preparation from 2020 examinees who completed the PMQ

- ❑ More than half examinees had difficulty staying confident about their performance on the exam (68%) and getting through the amount of material to be learned (60%)
- ❑ Half examinees had difficulty balancing time between test preparation and school (49%), job (51%), and family obligations (50%), learning new materials (48%) or relearning materials (49%), and finding a place to study without distraction (51%).
- ❑ About 40% had difficulty sticking to their study plan (40%) or affording test preparation courses or materials (39%)
- ❑ About one-third had difficulty preparing mentally and/or physically for the exam day (35%) or minimizing social media use during studying (34%)
- ❑ One-quarter or less had difficulty finding a mentor to provide resources, support, and guidance (26%) or getting concrete and detailed information about the exam (22%)
- ❑ About 10% had difficulty obtaining reliable/affordable internet access to use online preparation resources

# Summary of findings: group differences in strategic preparation

- There were multiple, modest differences in the use of various test preparation strategies by students at institutions with fewer vs more resources. Students at institutions with fewer resources were less likely to employ strategies to:
  - Gather information about what is tested
  - Create and follow a study plan
  - Study and practice for the exam
  - Get ready for the exam day



# Summary of findings: group differences in challenges for test preparation

- ❑ Compared with examinees from institutions with more resources, examinees from institutions with fewer resources were less likely to
  - Discuss preparation with advisors/mentors/friends
  - Afford preparation courses/materials
  - Find balance between preparation and family obligations and jobs
  - Report difficulty staying confident, relearning material, minimizing social media use during study, or preparing for the exam day

# Overview of 2020 Test Preparation Results based on the PMQ Data

# The PMQ asks examinees about themselves, their experiences, and their aspirations

- ❑ PMQ is a survey administered to all MCAT examinees
  - In 2020, over 31,000 examinees responded to the PMQ
  - Response rate is 30% to 40% in recent testing years
  - Respondents were similar to the MCAT examinee population in terms of demographic characteristics but had slightly higher MCAT scores than examinees
  
- ❑ PMQ includes questions about six topics
  - Background
  - Pre-medical experience
  - **MCAT preparation**
  - Career plans and interests
  - Financial information
  - Coursework

# 2020 PMQ Questions on Test Preparation

# The 2020 PMQ questions ask about the following topics about test preparation

- Number of months spent on preparation
- Use of test preparation resources
- Strategies used to prepare for the MCAT exam
  - Strategies to structure test preparation
  - Strategies to learn concepts tested on the exam
  - Strategies to prepare for the exam day
- Challenges when preparing for the exam
- Advice for future examinees

## Number of months spent on test preparation

**In what month and year did you start actively preparing for the MCAT exam (excluding taking regular courses)? If you took the exam more than once within the last 12 months and you were actively preparing during the entire time, please provide the month and year you **FIRST** started preparing.**

Month \_\_\_\_\_ (drop-down list of months from January to December)

Year \_\_\_\_\_ (drop-down list of years)

# What kinds of resources did you use to prepare for the MCAT exam? (Select all that apply)

## AAMC Official MCAT Products and Resources

- What's on the MCAT® Exam? Interactive tool
- The Official Guide to the MCAT® Exam (print version or e-book)
- The Online Practice Questions from the Official Guide to the MCAT® Exam
- Official MCAT® Practice Exams
- Official MCAT® Sample Test
- Official MCAT® Question Packs
- Official MCAT® Section Bank
- Official MCAT® Flashcards
- How to Create a Study Plan for the MCAT® Exam
- Practice with Exam Features (free tool to simulate the MCAT® exam test taking experience)
- How I Prepared for the MCAT® Exam testimonials
- Roadmap to the MCAT® Content in Sociology and Psychology Textbooks
- Roadmap to the MCAT® Content in Biochemistry Textbooks

# What kinds of resources did you use to prepare for the MCAT exam? (Select all that apply) (cont.)

## Other Products and Resources for the MCAT Exam

- Khan Academy's MCAT Collection
- MCAT preparation book (paper version) published by a commercial company
- MCAT preparation book (electronic version or e-book) published by a commercial company
- MCAT practice tests published by a commercial company
- Books, handouts, practice questions, or other materials from an MCAT test preparation course offered by a university, medical school, or post-baccalaureate program
- MCAT-related social media sites, blogs, and online communities
- Free online flashcard generators
- Other free MCAT preparation resources
- Other educational materials that are not specifically labeled for MCAT preparation (e.g., textbooks, course notes, online modules, journals)



# What strategies did you use to structure your preparation? (Select all that apply)

- Got started by finding out what is tested on the MCAT exam
- Discussed the test and how to prepare with an advisor or fellow students
- Created a study plan to fit my schedule
- Identified my strengths and weaknesses using a practice exam
- Focused study time on my weaker subject areas
- Planned time for relaxations/breaks
- Assessed my learning progress along the way by taking practice exam(s)
- Assessed my readiness for the exam by taking a final practice exam
- Other (please specify)

# What strategies did you use to learn the concepts tested on the exam? (Select all that apply)

- Tested my understanding of what I had studied
- Wrote down notes about what I was learning from memory
- Answered practice questions as I studied each topic
- Explained why the answer choices in practice questions were correct or incorrect
- Reviewed content I had already studied throughout my preparation
- Mixed my review of different topics throughout studying
- Explained concepts aloud or to a study partner/friend
- Created or used flashcards of important details
- Other (please specify)

# What did you do to prepare for the exam day? (Select all that apply)

- Learned about the testing day by reading the MCAT Essentials bulletin
- Took a timed online practice exam with scheduled breaks to mimic the exam day
- Practiced pacing myself so I could get through all the questions in each section without running out of time
- Practiced strategies for dealing with challenging questions to make sure I could finish the exam on time
- Planned how to make the best use of breaks on exam day
- Practiced ways to reduce my anxiety during the exam (e.g., deep breathing)
- Went to the test site in advance to make sure I knew how to get there
- Got plenty of sleep the night before the exam
- Other (please specify)

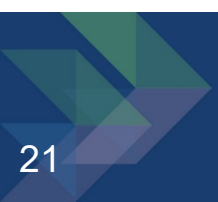
# What kinds of challenges, if any, have you had getting ready for the MCAT exam? (Select all that apply)

- Difficulty learning new material for which I lacked relevant coursework
- Difficulty relearning material I learned a while ago
- Difficulty getting concrete and detailed information about the MCAT exam
- Difficulty affording preparation courses and materials
- Difficulty balancing my time between studying for the MCAT and my job
- Difficulty balancing my time between studying for the MCAT and family obligations
- Difficulty balancing my time between studying for the MCAT and school
- Difficulty getting through the amount of materials to be learned
- Difficulty finding a place to study without distraction
- Difficulty minimizing social media use during studying
- Difficulty obtaining reliable/affordable internet access to use online preparation resources
- Difficulty finding a mentor to provide resources, support, guidance, and/or role modeling
- Difficulty preparing myself mentally and/or physically for the exam day
- Difficulty staying confident that I could do well on the MCAT exam
- Difficulty sticking to my study plan
- Other (please specify)
- None of the above

**What advice would you give to a friend about how to prepare for the MCAT exam?**

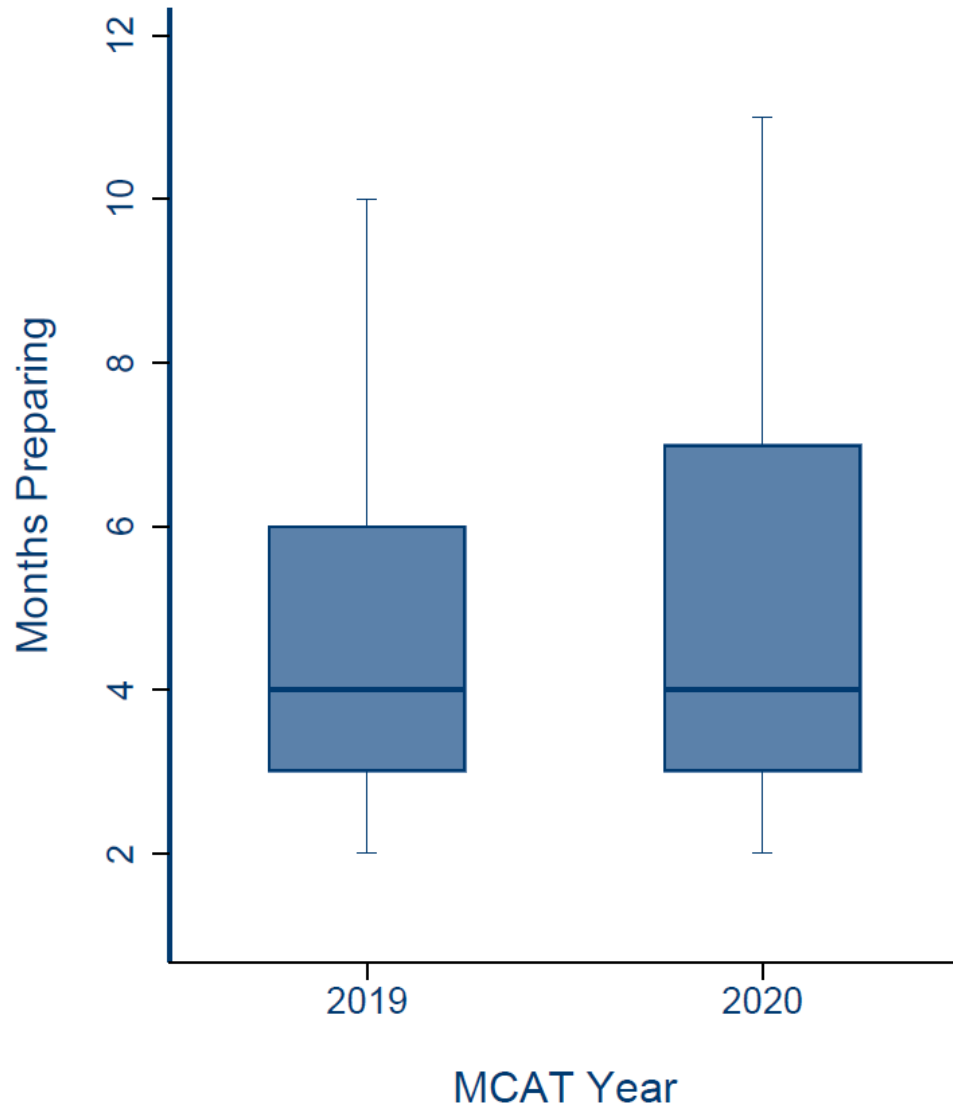
**[This is an open-ended question]**

**[Results are still under analysis and will be shared later]**



# Overall Results on Test Preparation

## Months preparing for MCAT



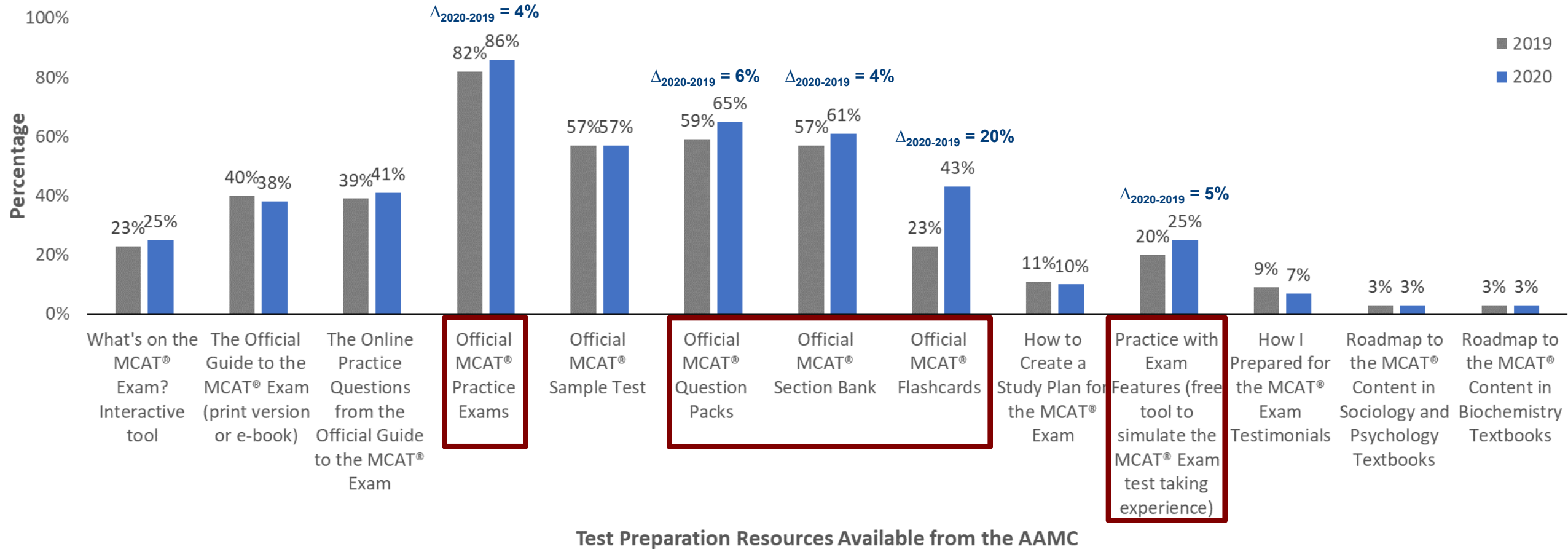
# On average, examinees spent 5-6 month preparing for the MCAT exam

- ❑ The median number of months to prepare for the exam was the same in both years
- ❑ The average number of months to prepare for the exam and associated standard deviation increased slightly from 2019 to 2020

Year	Median	Mean	SD
2020	4	5.7	5.3
2019	4	5.0	5.0

# Use of practice exams, question packs, section bank, and flashcards increased slightly from 2019 to 2020

Percentage of PMQ Respondents Who Reported Using AAMC Test Preparation Resources  
2019 vs 2020

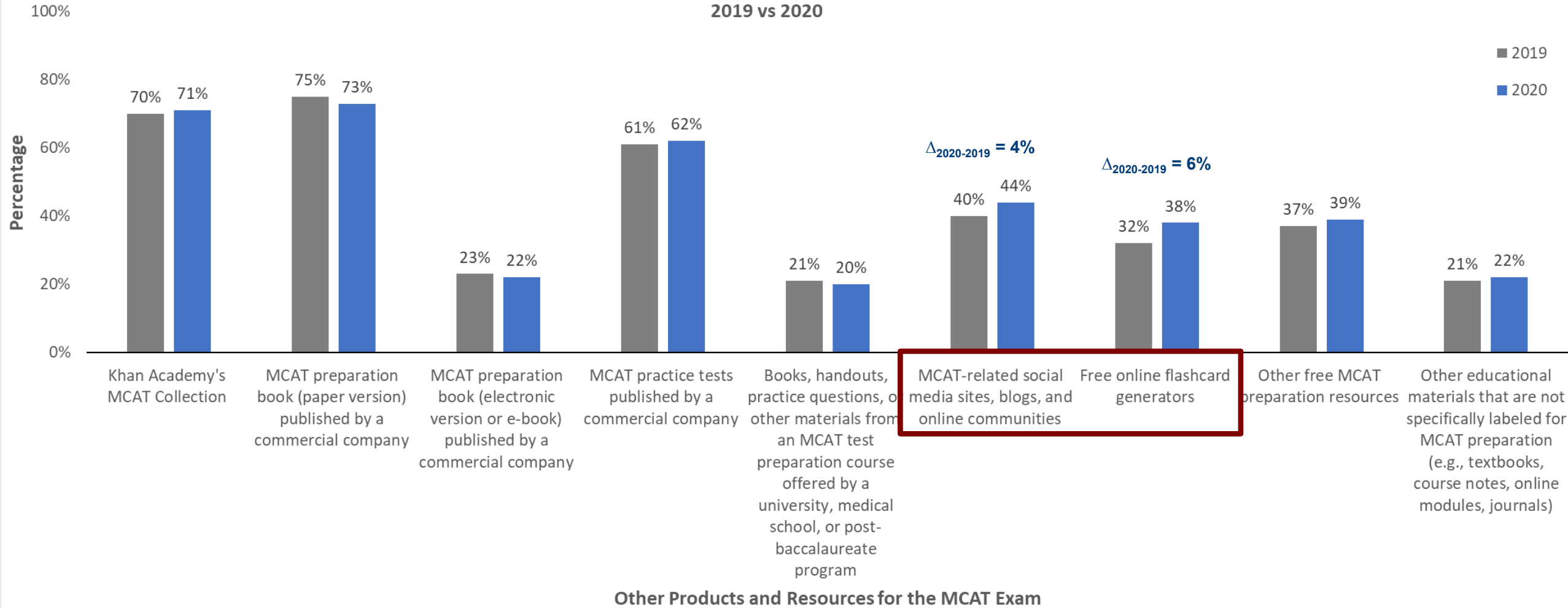


Test Preparation Resources Available from the AAMC



# Use of MCAT-related social media sites and free online flashcard generators increased slightly from 2019 to 2020

Percentage of PMQ Respondents Who Reported Using Other Products and Resources to Prepare for the MCAT Exam  
2019 vs 2020



# MVC members refined and published the model of strategic test preparation

- ❑ Swan Sein et al., refined the model and created a resource for advisors to help their students strategically prepare for the exam

Swan Sein A, Cuffney F, Clinchot D. How to help students strategically prepare for the MCAT exam and learn foundational knowledge needed for medical school. *Acad Med.* 2020;95:484.

Gather information

Assess knowledge

Create a study plan

Study & practice

Prepare for exam day

# The PMQ questions on strategy and challenge were tentatively linked to the model for strategic preparation

Gather information

Assess knowledge

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# Most examinees started by finding out what's tested; about half discussed how to prepare with others

## Gather information

Assess knowledge

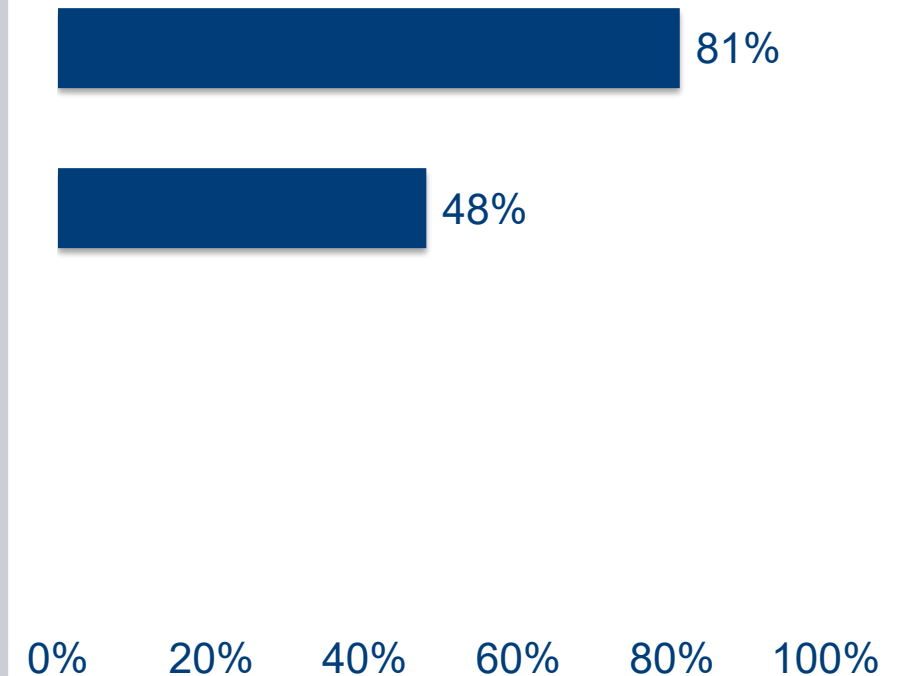
Create a study plan

Study & practice

Prepare for exam day

## Strategies

- Got started by finding out what is tested on the MCAT exam
- Discussed the test and how to prepare with an advisor or fellow students



# About a quarter of examinees had difficulty getting information about the exam or finding a mentor; 40% had difficulty affording preparation courses and materials

## Gather information

Assess knowledge

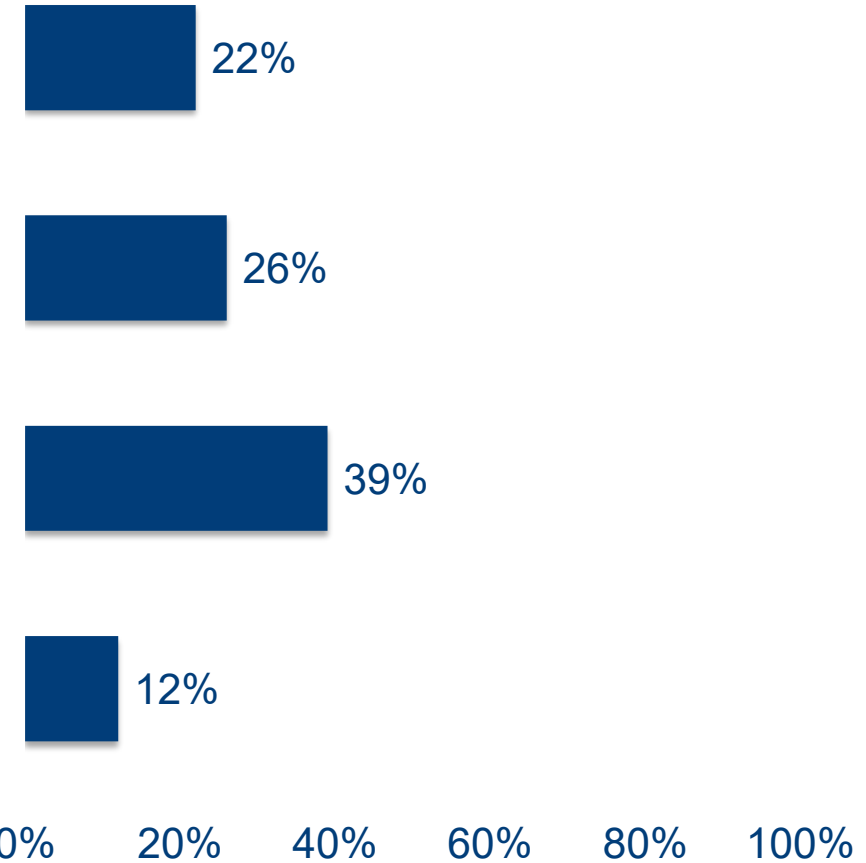
Create a study plan

Study & practice

Prepare for exam day

## Challenges

- Difficulty getting concrete and detailed information about the MCAT exam
- Difficulty finding a mentor to provide resources, support, guidance, and/or role modeling
- Difficulty affording preparation courses and materials
- Difficulty obtaining reliable/affordable internet access to use online preparation resources



# About 80% assessed strengths and weaknesses using a practice exam

Gather information

**Assess knowledge**

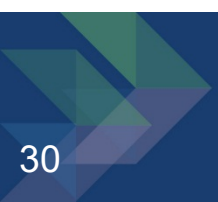
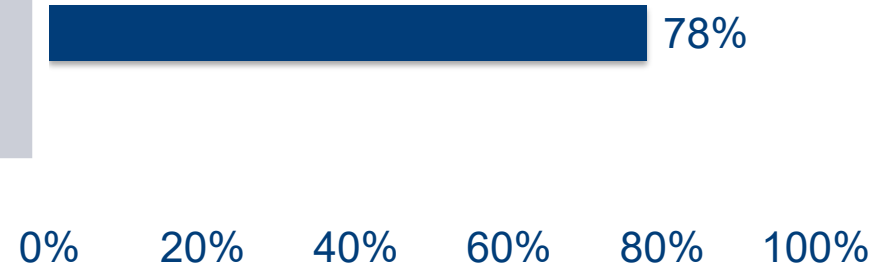
Create a study plan

Study & practice

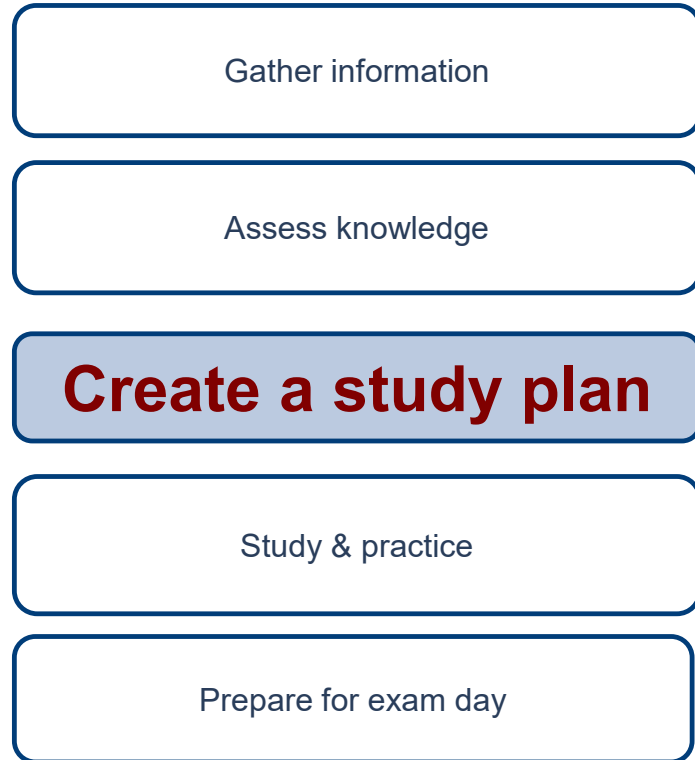
Prepare for exam day

## Strategies

- Identified my strengths and weaknesses using a practice exam

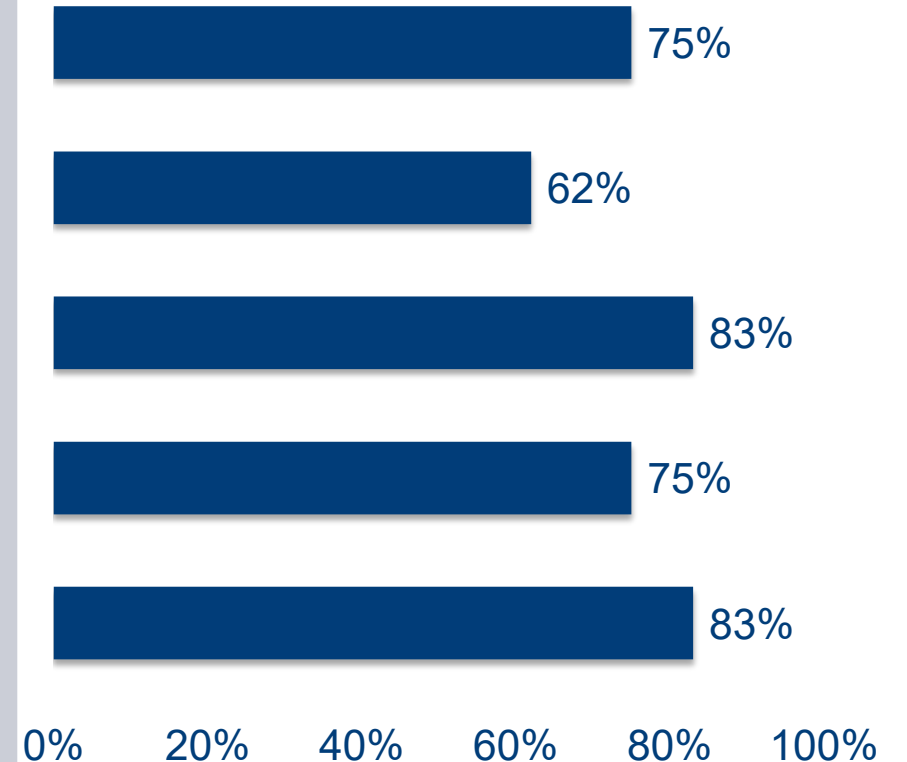


# More than 60% used a study plan to guide their preparation

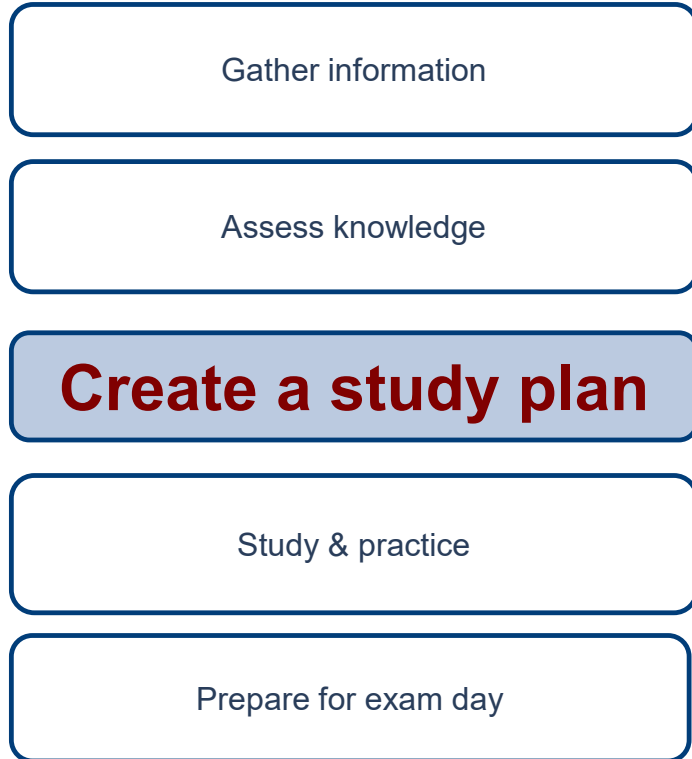


## Strategies

- Created a study plan to fit my schedule
- Planned time for relaxation/breaks
- Assessed my learning progress along the way by taking practice exam(s)
- Mixed my review of different topics throughout studying
- Reviewed content I had already studied throughout my preparation

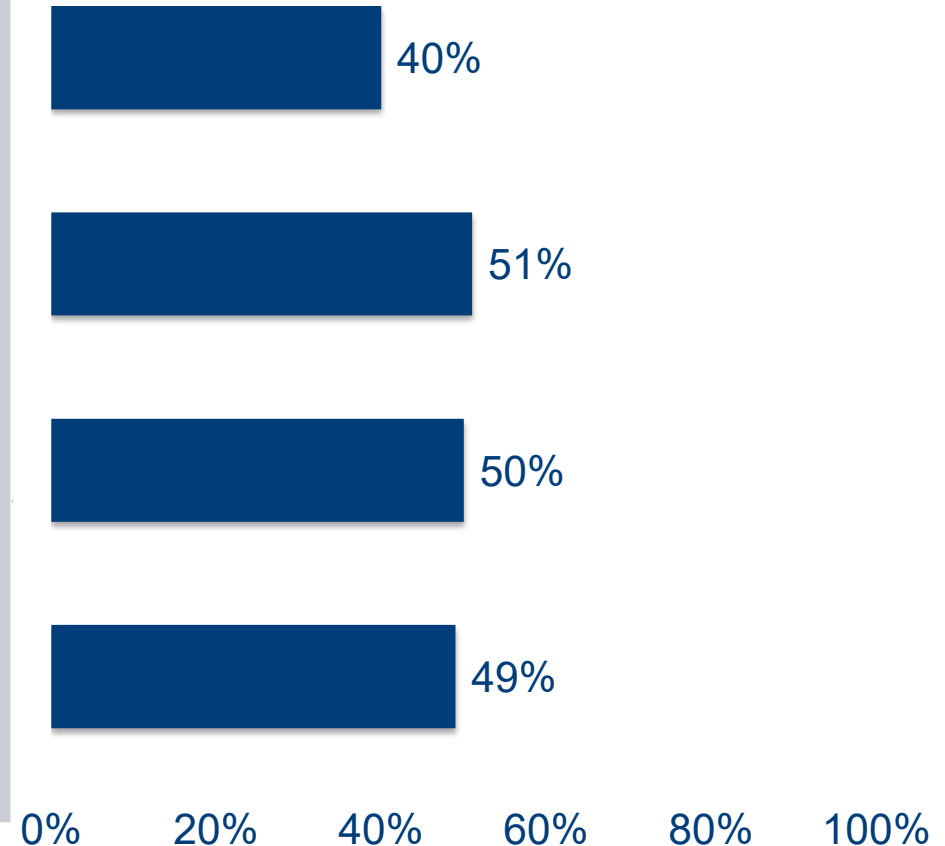


# 40%-50% of examinees reported challenges following their study plan



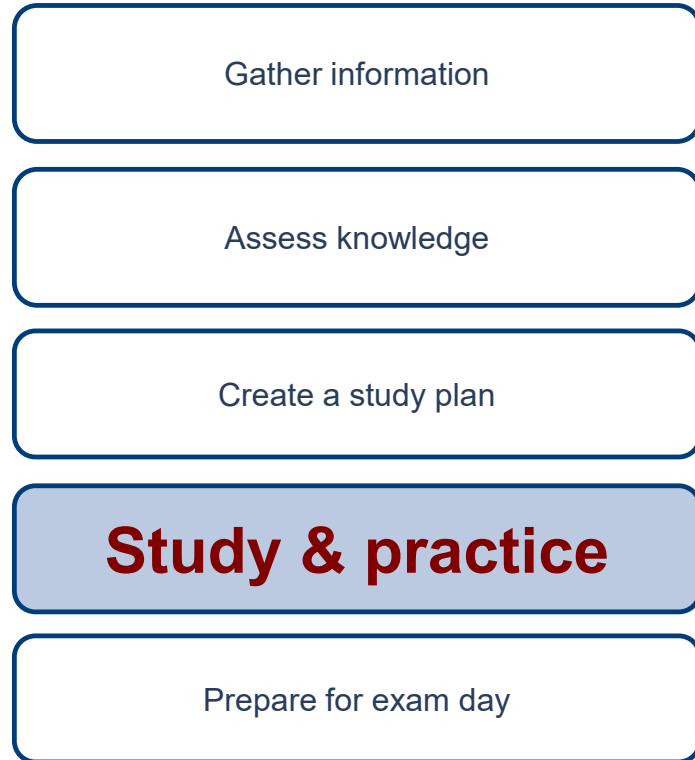
## Challenges

- Difficulty sticking to my study plan
- Difficulty balancing my time between studying for the MCAT and my job
- Difficulty balancing my time between studying for the MCAT and family obligations
- Difficulty balancing my time between studying for the MCAT and school

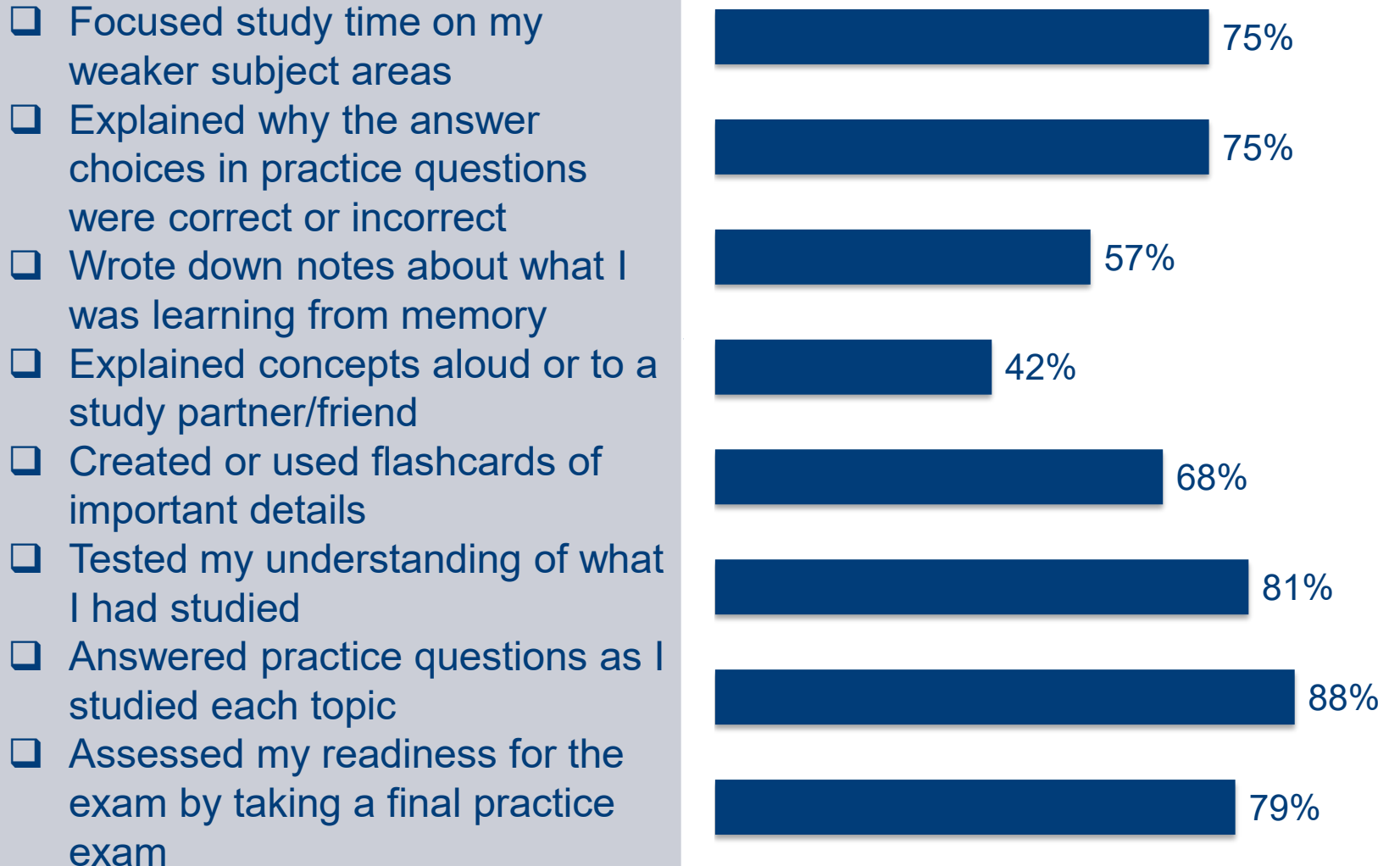




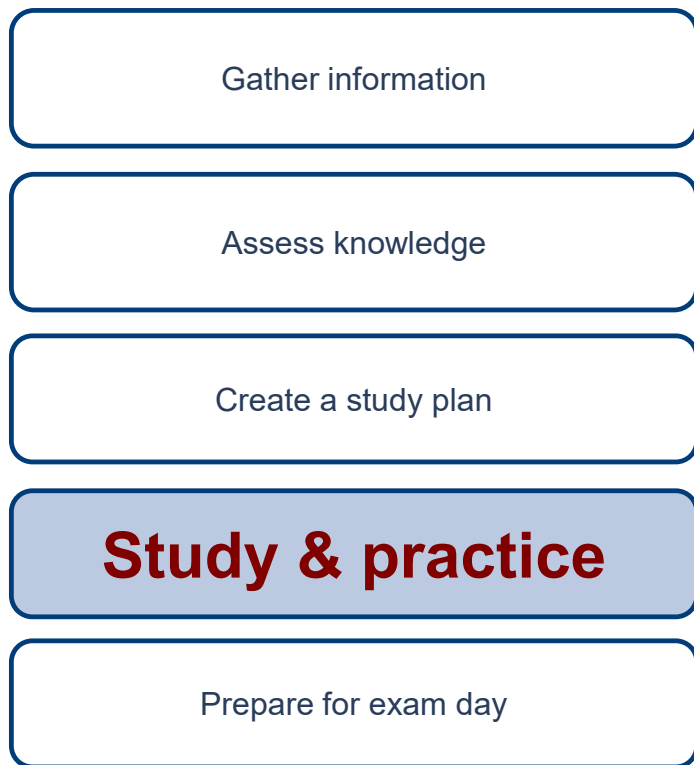
# Two-thirds or more used most strategies to study and practice



## Strategies

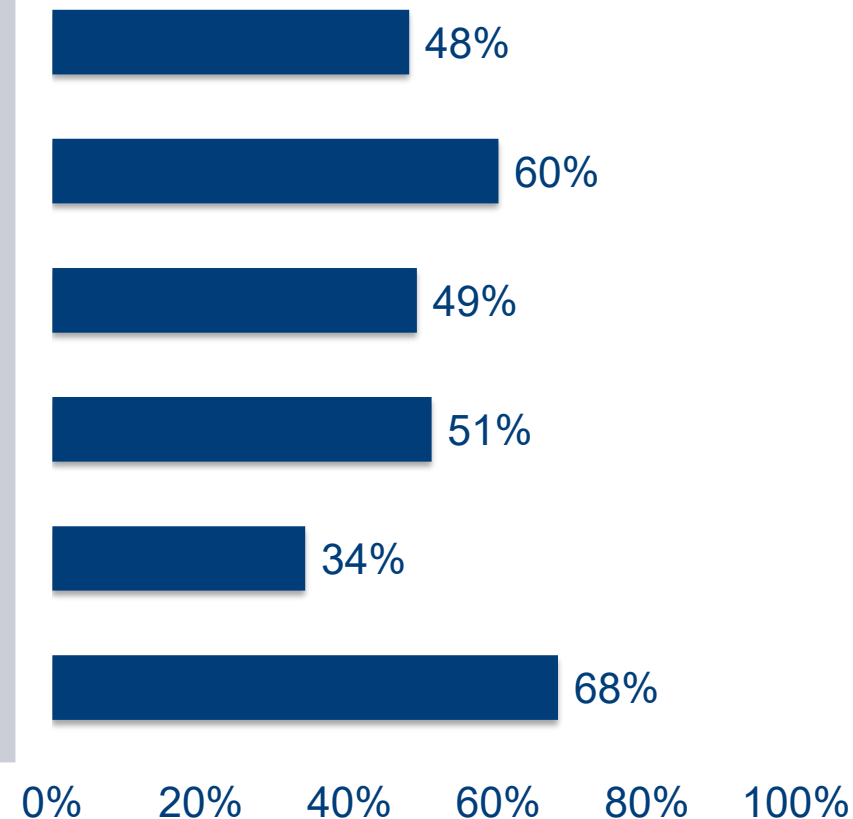


# Two-thirds had difficulty staying confident; 50%-60% experienced difficulty learning & relearning material; half reported difficulty finding a place to study without distraction

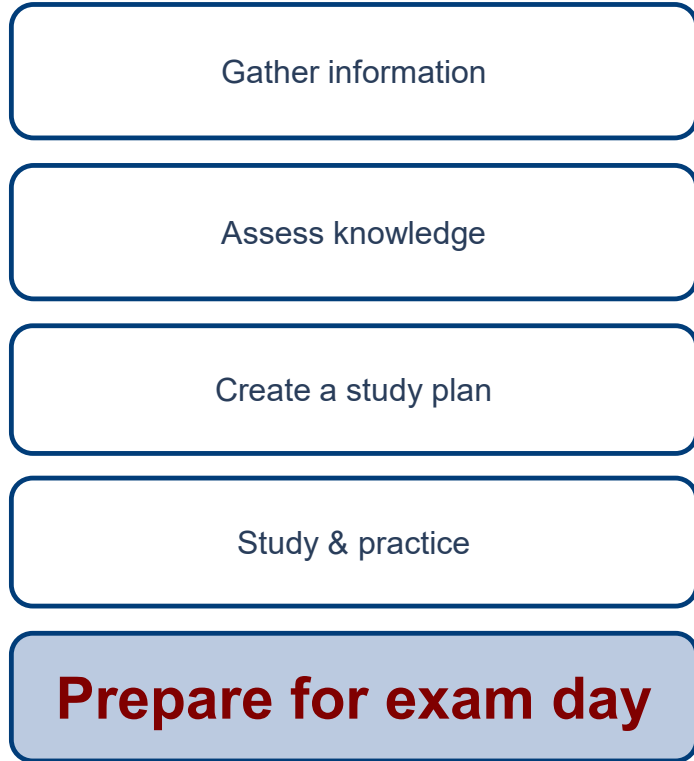


## Challenges

- Difficulty learning new material for which I lacked relevant coursework
- Difficulty getting through the amount of material to be learned
- Difficulty relearning material I learned a while ago
- Difficulty finding a place to study without distraction
- Difficulty minimizing social media use during studying
- Difficulty staying confident that I could do well on the MCAT exam

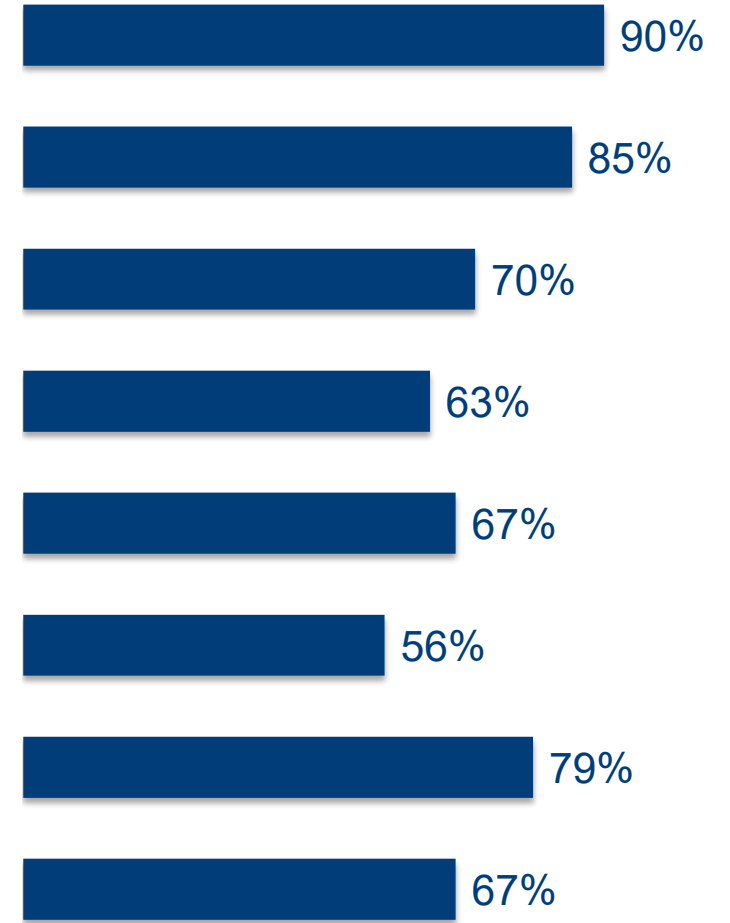


**80% or more took practice exams and ensured physical readiness for the exam; 60%-70% employed strategies to manage challenging questions, anxiety, and break time; slightly more than half visited test sites to get ready**



## Strategies

- Took a timed online practice exam with scheduled breaks to mimic the exam day
- Practiced pacing myself so I could get through all the questions in each section without running out of time
- Practiced strategies for dealing with challenging questions to make sure I could finish the exam on time
- Planned how to make the best use of breaks on exam day
- Learned about the testing day by reading the MCAT Essentials bulletin
- Went to the test site in advance to make sure I knew how to get there
- Got plenty of sleep the night before the exam
- Practiced ways to reduce my anxiety during the exam (e.g., deep breathing)



0% 20% 40% 60% 80% 100%

# Slightly more than one-third of examinees had difficulty mentally and/or physically preparing for the exam day

Gather information

Assess knowledge

Create a study plan

Study & practice

**Prepare for exam day**

## Challenges

- Difficulty preparing myself mentally and/or physically for the exam day



35%

0% 20% 40% 60% 80% 100%

# Differences in the Preparation Strategies and Challenges for Examinees from Institutions with Fewer vs More Resources



# Data from MCAT registration and the Carnegie classification of institutions of higher education are used to classify examinees into two groups of institutional resources

- ❑ Examinees provide information about their primary undergraduate institutions during MCAT registration
- ❑ Examinees' MCAT registration data are merged with the Carnegie classification of institutions of higher education data based on the ID and name of higher education institutions in the US
  - Starting in 1970, the Carnegie Commission on Higher Education developed a classification of colleges and universities to support its program of research and policy analysis
  - Data can be downloaded at <https://carnegieclassifications.iu.edu/downloads.php>

# The Carnegie classification of institutions of higher education data provide two proxy variables for institutional resources

## □ Selectivity in college admissions has 3 levels

Least selective	Selective	Highly Selective
Accept students with a wide range of scores on the college admissions tests	Admissions test scores of first-year students is at 40 <sup>th</sup> -80 <sup>th</sup> percentile of selectivity among all baccalaureate institutions	Admissions test scores of first-year students is at 80 <sup>th</sup> -100 <sup>th</sup> percentile of selectivity among all baccalaureate institutions

## □ Residential makeup of the campus has 3 levels

Primarily nonresidential	Residential	Highly Residential
Fewer than 25% of undergraduate students lived on campus and/or were enrolled full time	25%-49% of undergraduate students lived on campus and at least 50% were enrolled full time	At least half undergraduate students lived on campus and at least 80% were enrolled full time



# Examinees were classified into two groups: examinees who attend(ed) institutions with fewer vs more resources

- ❑ Fewer resources: Examinees whose primary undergraduate institutions
  - employ the least selective admissions practices (i.e., they accept students with a wide range of scores from college admissions tests)
- AND*
- have primarily nonresidential campuses (fewer than 25% of undergraduate students lived on campus and/or were enrolled full time)
- ❑ More resources: Examinees whose primary undergraduate institutions have selective or more selective admissions selective practices *AND/OR* residential campuses
- ❑ This institutional resource variable was used in the Girotti et al (2020) paper published in *Academic Medicine*



# Institutions with fewer resources may differ from institutions with more resources

- ❑ Compared with more selective institutions, less selective institutions tend to spend less money per student and have lower full-time to part-time faculty ratios and graduation rates
- ❑ Primarily nonresidential institutions are less likely to have faculty living near students or centrally located resources compared with highly residential institutions
- ❑ The least selective institutions that predominately serve commuting students may lack robust prehealth advising resources to guide premedical students about the courses needed or the full range of resources available to help them prepare for the new exam

# Students at institutions with fewer resources may differ from those at institutions with more resources

- ❑ Students at institutions with fewer resources are more likely to have no parent with a bachelor's degree or higher, to be English learners, and to be underrepresented on race/ethnicity
- ❑ Students at these institutions may have other responsibilities, including family obligations and work, that interfere with the time they have to prepare for the exam

# PMQ results for examinees from institutions with fewer vs more resources

# Examinees from institutions with fewer resources were less likely to discuss preparation with others

## Gather information

Assess knowledge

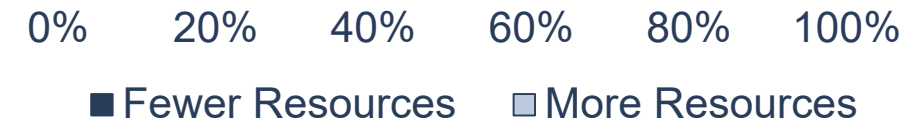
Create a study plan

Study & practice

Prepare for exam day

## Strategies

- Got started by finding out what is tested on the MCAT exam
- Discussed the test and how to prepare with an advisor or fellow students



Note: Items with 3% or higher difference by institutional resources are shown in green

# Examinees from institutions with fewer resources were more likely to have difficulty finding a mentor or affording preparation courses or materials

## Gather information

Assess knowledge

Create a study plan

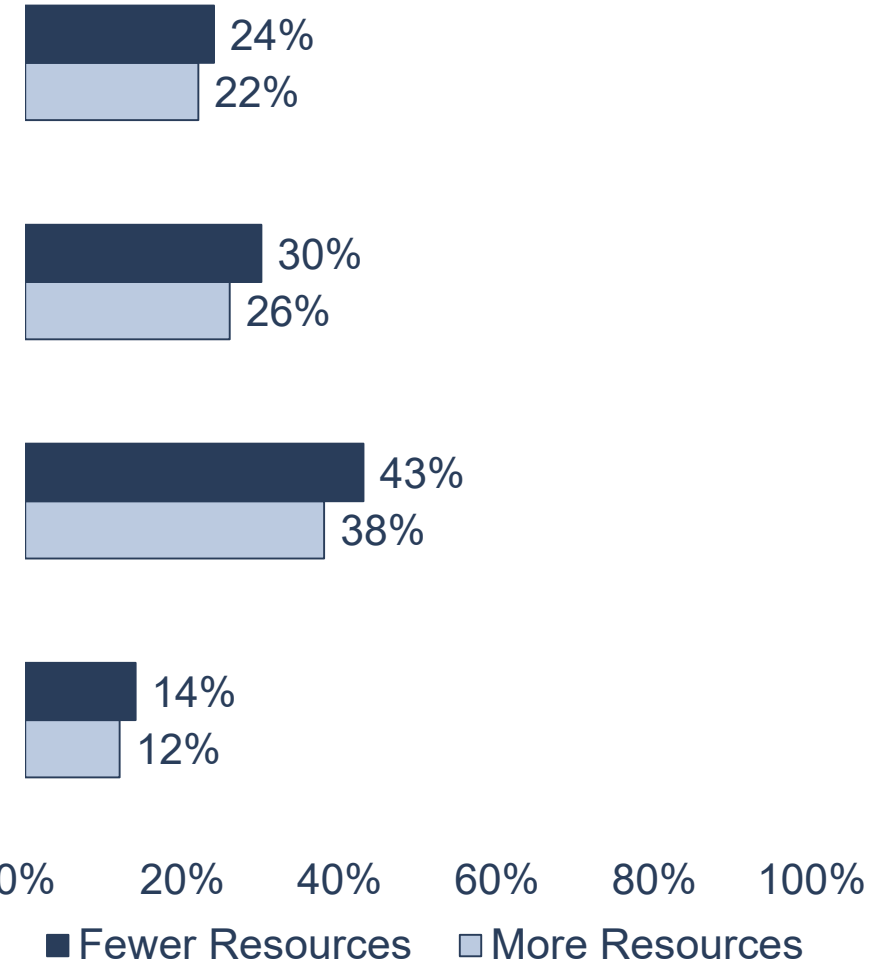
Study & practice

Prepare for exam day

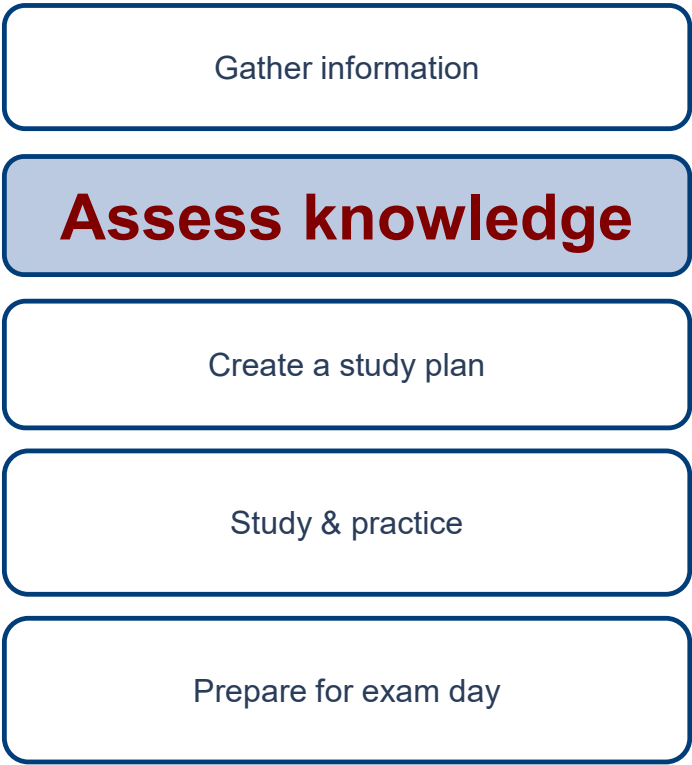
Note: Items with 3% or higher difference by institutional resources are shown in green

## Challenges

- Difficulty getting concrete and detailed information about the MCAT exam
- Difficulty finding a mentor to provide resources, support, guidance, and/or role modeling
- Difficulty affording preparation courses and materials
- Difficulty obtaining reliable/affordable internet access to use online preparation resources

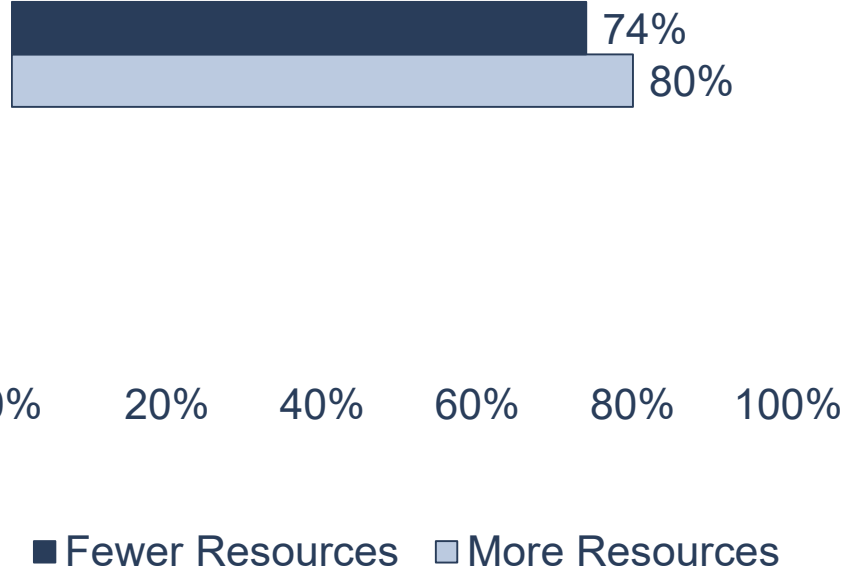


# Examinees from institutions with fewer resources were less likely to assess strengths and weaknesses using a practice exam



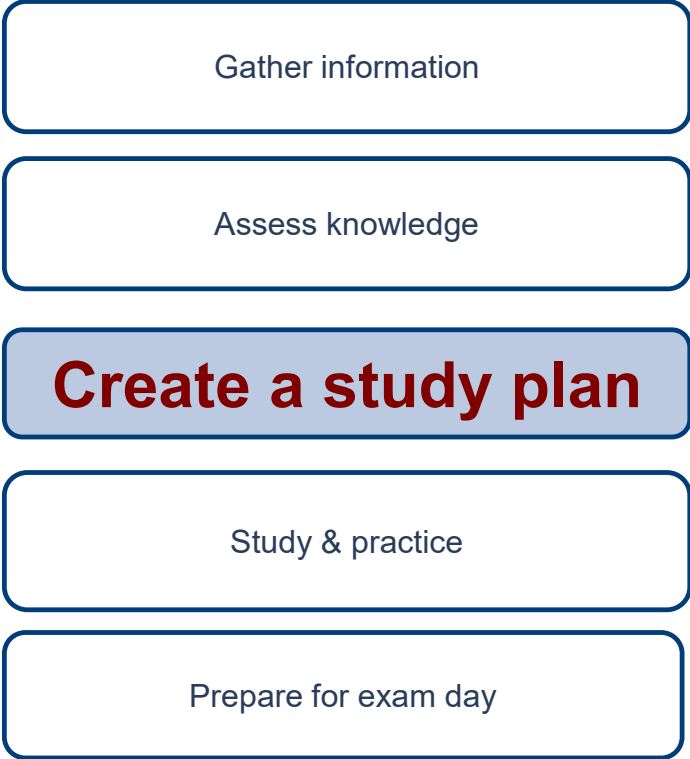
**Strategies**

- Identified my strengths and weaknesses using a practice exam



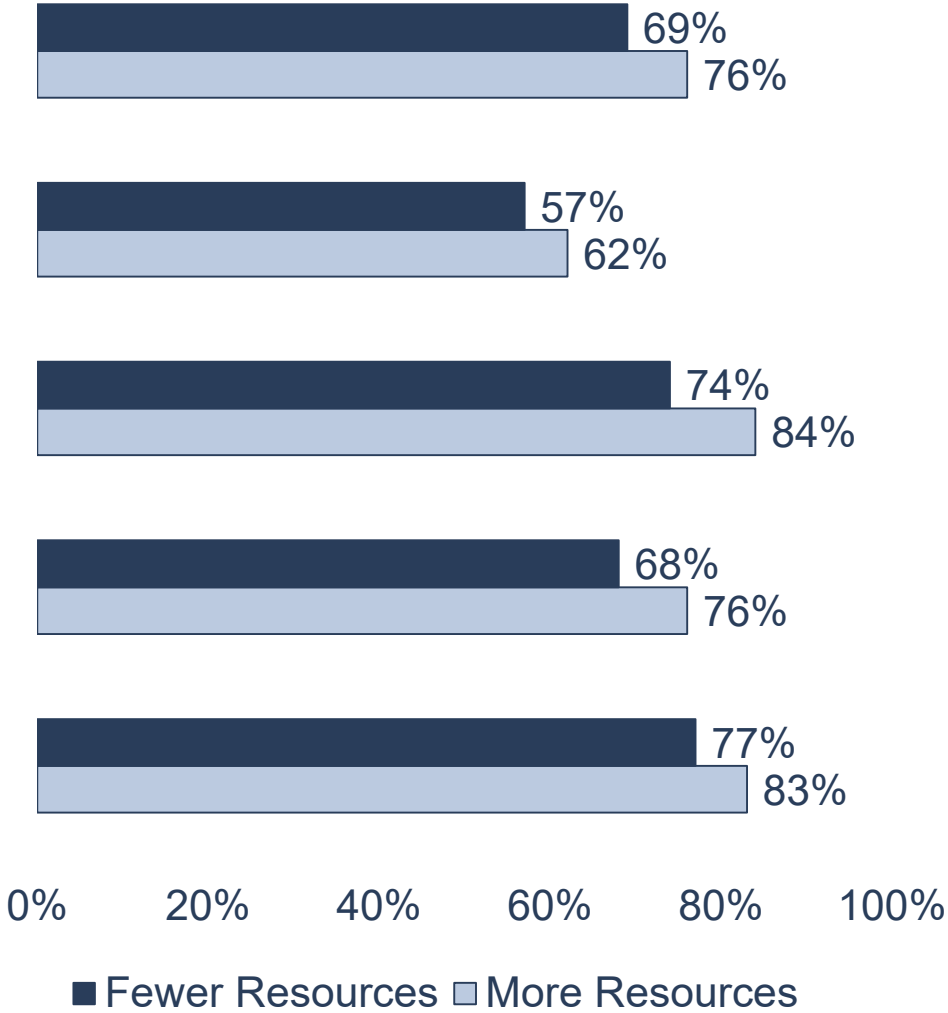
Note: Items with 3% or higher difference by institutional resources are shown in green

# Examinees from institutions with fewer resources were less likely to use a study plan to organize their preparation



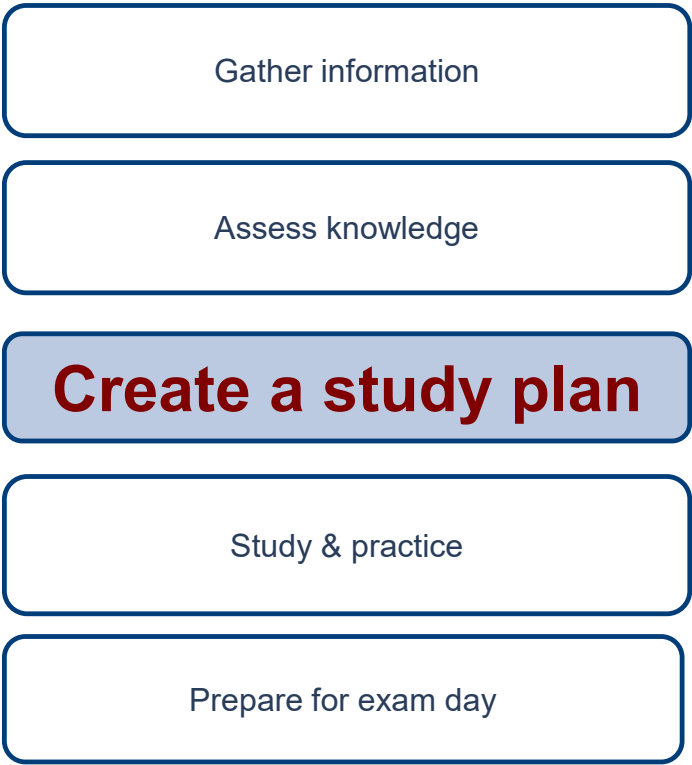
## Strategies

- Created a study plan to fit my schedule
- Planned time for relaxation/breaks
- Assessed my learning progress along the way by taking practice exam(s)
- Mixed my review of different topics throughout studying
- Reviewed content I had already studied throughout my preparation



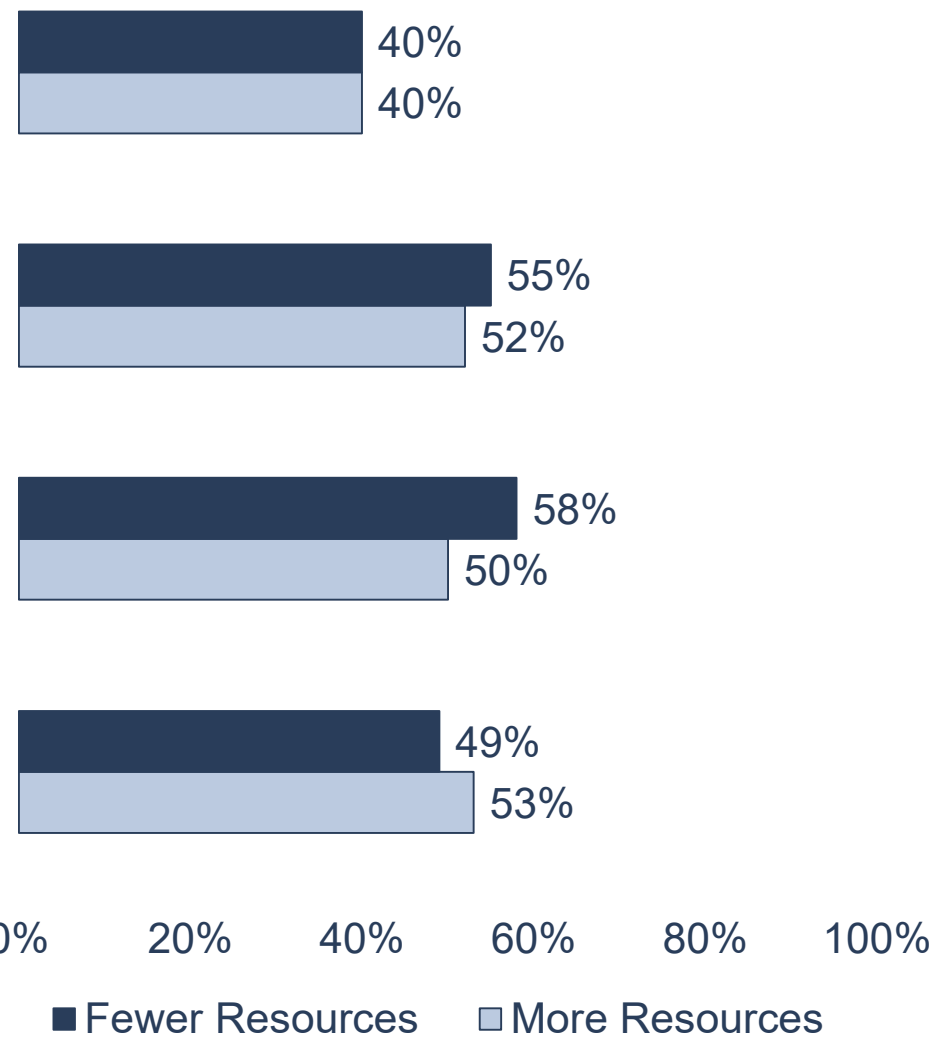
Note: Items with 3% or higher difference by institutional resources are shown in green

# Examinees from institutions with fewer resources were more likely to have difficulty balancing time between preparation and family obligations and job and less likely to have difficulty balancing preparation and school



## Challenges

- Difficulty sticking to my study plan
- Difficulty balancing my time between studying for the MCAT and my job
- Difficulty balancing my time between studying for the MCAT and family obligations
- Difficulty balancing my time between studying for the MCAT and school



Note: Items with 3% or higher difference by institutional resources are shown in green



# Examinees from institutions with fewer resources were less likely to strategically study and practice

Gather information

Assess knowledge

Create a study plan

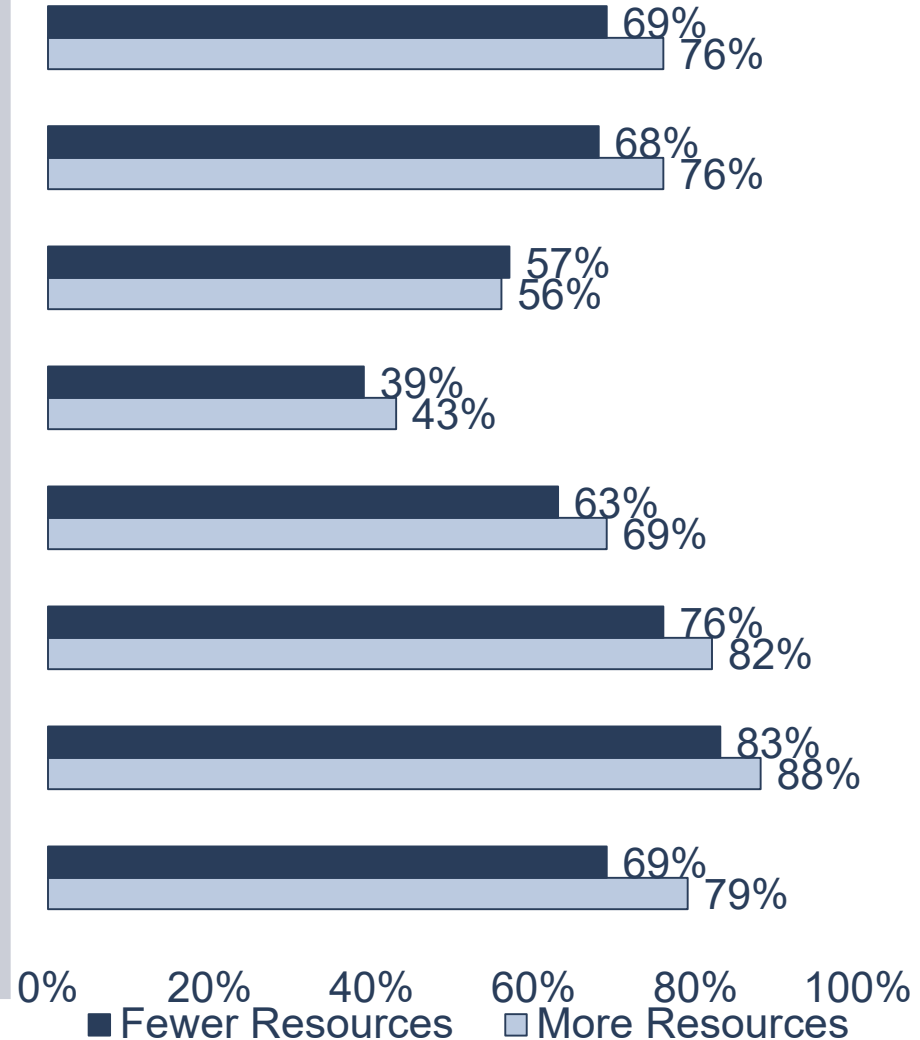
**Study & practice**

Prepare for exam day

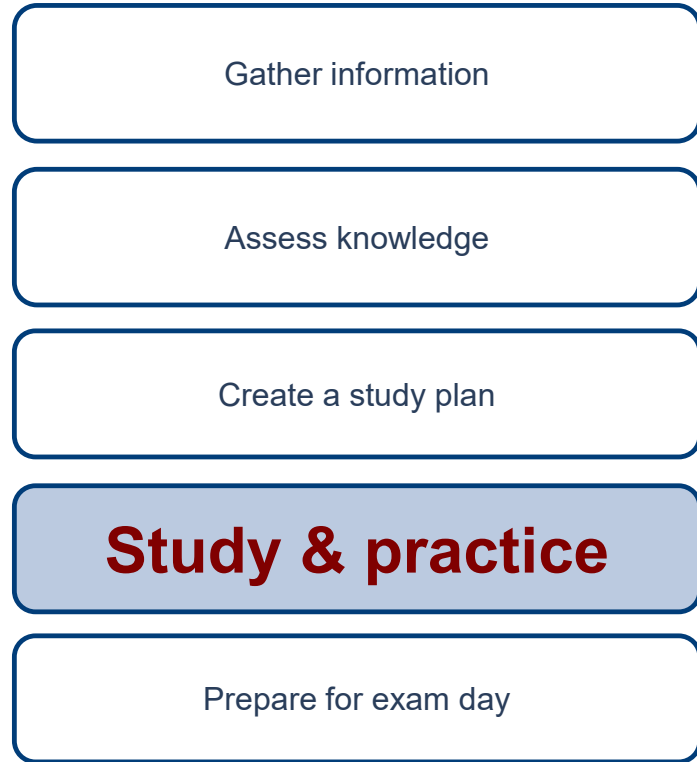
Note: Items with 3% or higher difference by institutional resources are shown in green

## Strategies

- Focused study time on my weaker subject areas
- Explained why the answer choices in practice questions were correct or incorrect
- Wrote down notes about what I was learning from memory
- Explained concepts aloud or to a study partner/friend
- Created or used flashcards of important details
- Tested my understanding of what I had studied
- Answered practice questions as I studied each topic
- Assessed my readiness for the exam by taking a final practice exam



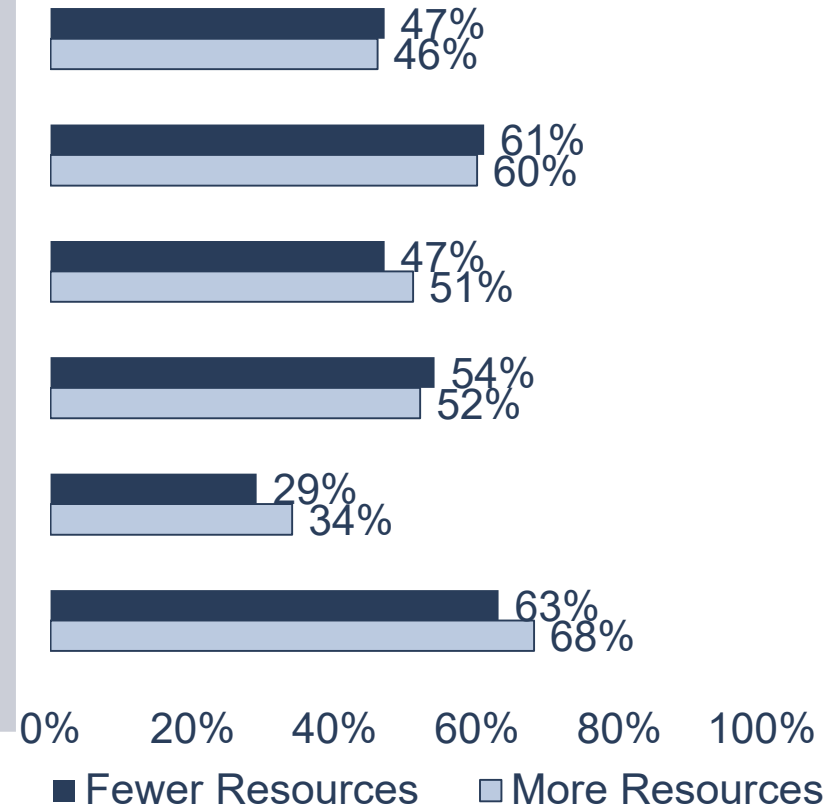
# Examinees from institutions with fewer resources were less likely to report difficulty staying confident, minimizing social media, or relearning materials



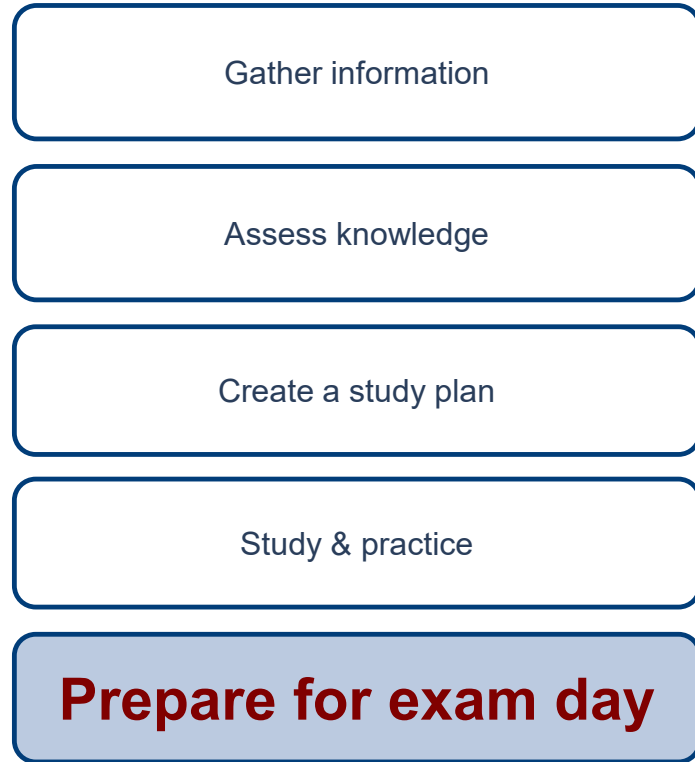
Note: Items with 3% or higher difference by institutional resources are shown in green

## Challenges

- Difficulty learning new material for which I lacked relevant coursework
- Difficulty getting through the amount of material to be learned
- Difficulty relearning material I learned a while ago
- Difficulty finding a place to study without distraction
- Difficulty minimizing social media use during studying
- Difficulty staying confident that I could do well on the MCAT exam



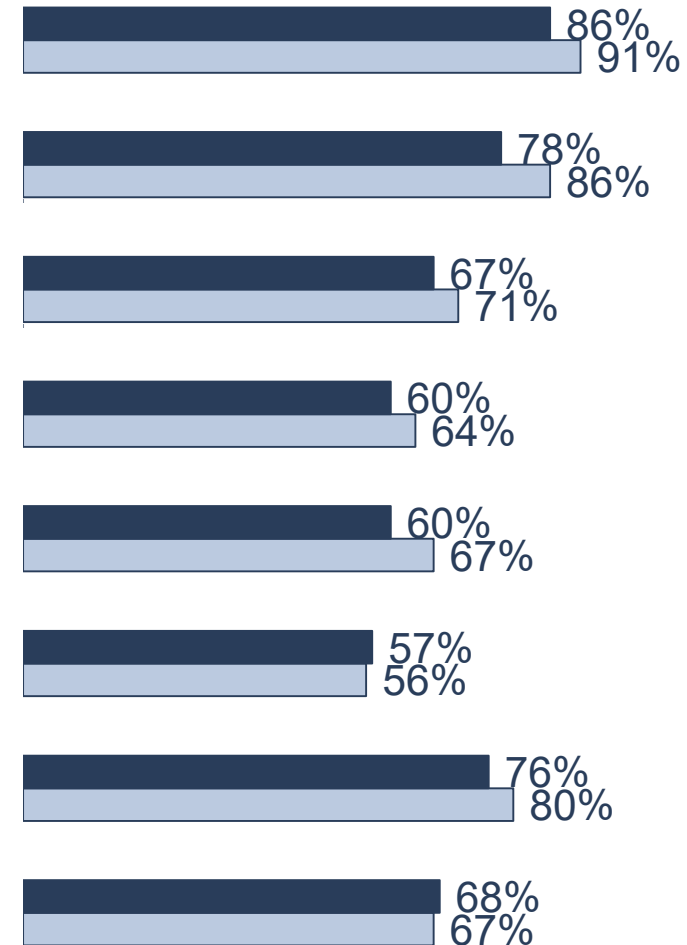
# Examinees from institutions with fewer resources were less likely to strategically prepare for the exam day



Note: Items with 3% or higher difference by institutional resources are shown in green

## Strategies

- Took a timed online practice exam with scheduled breaks to mimic the exam day
- Practiced pacing myself so I could get through all the questions in each section without running out of time
- Practiced strategies for dealing with challenging questions to make sure I could finish the exam on time
- Planned how to make the best use of breaks on exam day
- Learned about the testing day by reading the MCAT Essentials bulletin
- Went to the test site in advance to make sure I knew how to get there
- Got plenty of sleep the night before the exam
- Practiced ways to reduce my anxiety during the exam (e.g., deep breathing)



■ Fewer Resources □ More Resources

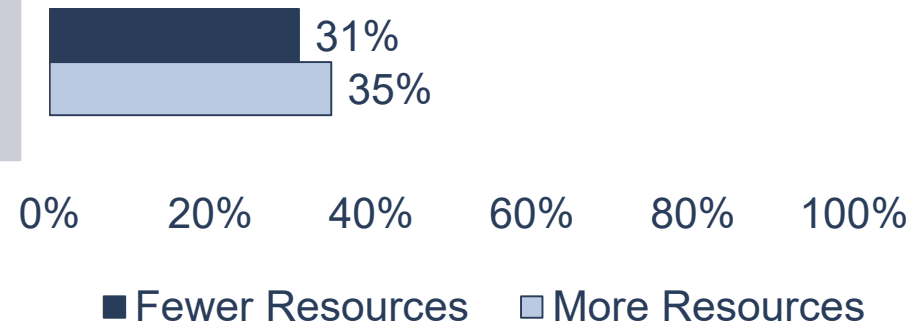
0% 20% 40% 60% 80% 100%

# Examinees from institutions with fewer resources were less likely to have difficulty preparing for the exam day

- Gather information
- Assess knowledge
- Create a study plan
- Study & practice
- Prepare for exam day**

## Challenges

Difficulty preparing myself mentally and/or physically for the exam day



Note: Items with 3% or higher difference by institutional resources are shown in green

# Discussion and Next Steps

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# Questions for discussion at the webinar

- What is your most important take-away about test preparation based on the 2020 PMQ data?
- What is the most surprising results about preparation strategies and challenges?
- Which data are important and which are less important
- What other ways you would like to examine the data?
- What are the implications of these findings?
- What resources and publications would be most helpful for examinees and prehealth advisors?

# Tentative next steps

- Develop a storyline of the next publication
- Draft a manuscript outline
- Review and revise the outline
- Draft the manuscript
- Review and revise the manuscript (multiple rounds)
- Submit the manuscript

# Report to the MVC

- Objectives
- Discussion summary
- Feedback desired from the MVC
- Next steps





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