



# Evaluating AAMC PREview™ Scores with Admissions Data

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Welcome, thank you for joining this course in our series on **Local Validation Research: Evaluating the use of AAMC PREview™ Exam Scores at Your School – Is Local Validation Right for You?**

These courses were developed to provide information and guidance that may help you and your school decide whether and how to conduct your own research to evaluate the validity and usefulness of PREview scores in your admissions process.

In this course, we cover Using Existing Admissions Data alone to evaluate the PREview exam at your school.



## Learning Objectives

**By the end of this course, you will be able to:**

1. Explain the purpose of a study exploring the relationship between PREview™ scores and other admissions data at your school.
2. Review available admissions data and determine its usefulness.
3. Understand how to evaluate the relationships between PREview scores and other admissions data.
4. Describe how to analyze data to study construct validity study at your school.
5. Interpret these results and make inferences from these analyses.
6. Describe possible next steps to determine whether PREview scores add value to the admissions process.



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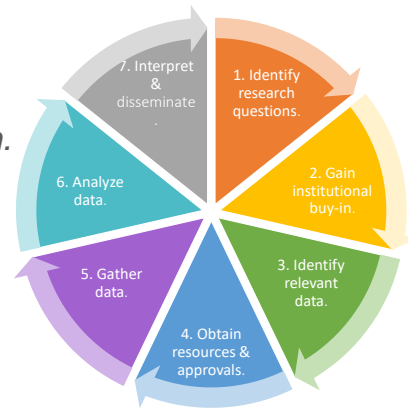
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By the end of this course, our goals for you are to be able to:

1. Explain the purpose of a study exploring the relationship between PREview scores and admissions data at your school.
2. Review available admissions data and determine its usefulness.
3. Understand how to evaluate the relationships between the PREview test and other admissions data.
4. Describe how to analyze data to study construct validity at your school.
5. Interpret these results and make inferences from these analyses.
6. Describe possible next steps to determine whether PREview scores add value to the admissions process.

## Study Checklist

- 1. Identify your research questions.
- 2. *Gain institutional/leadership buy-in.*
- 3. Identify relevant admissions data.
  - Methodological
  - Conceptual
- 4. *Obtain resources and approvals.*
- 5. Gather your data.
- 6. Analyze data.
- 7. Interpret & disseminate your findings.



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These are the high-level steps involved in studying how PREview scores may relate to your admissions process.

Course 101 addressed the importance of gaining institutional/leadership buy-in to the success of your research, so we won't discuss that further in this course. But, of course, to get leadership buy-in, you are going to have to communicate the benefits of doing the research; that is, you must determine what research questions you are looking to address and why.

In Course 101, we also discussed the need to obtain resources including a project team that includes a data analyst, data analysis software, IT support to pull data, and IRB approval. As a result, we may touch on some of these topics but won't go into them in depth.

## Identify Your Research Questions

How does incorporating PREview scores into your admissions process affect your applicant pool?

How do PREview scores relate to other admissions data?

Other?

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We propose two research questions that are likely to be of interest to most schools, though you may certainly have others.

A key distinction between research questions discussed in this course compared to other validation courses is the research we discuss here will rely primarily or exclusively on applicant data. Unless you also are exploring the research questions we cover in other courses, you won't need to gather information about the performance of students you admitted to answer the questions onscreen.

Q1 - How does incorporating PREview scores into your admissions process affect your applicant pool? AAMC research across multiple schools found that overall, accepting PREview scores did not affect applicant volume, the ratio of in-and-out-of-state applications, or have much affect on applicant demographic characteristics. But results could differ for your school to the extent that your applicant pool or processes differ from those of the schools in the AAMC study.

Q2 - Knowing how the PREview test is similar to and different from other measures can shed light on whether it could fill gaps in the existing process while also:

- Helping you find more well-rounded students,

- Identifying red flags you were unable to spot before.

It can also show you whether PREview scores can be used to replace or simplify data gathering by other more expensive or time-consuming measures.

It also shows what PREview scores measure relative to other admissions data.

The AAMC has studied some of these questions at a national level. But to answer how PREview scores relate to your admissions data and/or fit into your school's process, you need to conduct a local study.

# How Does Incorporating PREview Scores Affect Your Applicant Pool?

## Does incorporating PREview scores affect:

- How many are applying?
- Who is applying?
- Who has a PREview score?
- Who is interviewed?
- Who is accepted?

## Possible methodologies:

- Compare applicant pools from years when PREview scores were and were not required/recommended (2+ cohorts of data).
- Compare applicants from same year who did and did not take the PREview exam.

## Data needed (all applicants):

- Admissions – only PREview scores.
- Demographic data of interest to your institution's values/mission.

## Analysis - Examine potential differences in proportions.



How does incorporating PREview scores into your admissions process affect your applicant pool? Does it change any of these characteristics with respect to who is applying?

**Methodologies** - Whether one or both of the suggested methodologies work for your school will depend in large part on whether PREview is required of all candidates or is recommended or optional.

**Caveats** -

- (PRE/POST) Consider that other factors might affect differences across years. We suggest you use more than one year of data both pre-PREview exam and post-PREview exam, or repeat your post-PREview analysis in a second year. This is especially crucial for analyses which incorporate comparisons with the 2020-2021 admissions cycle year, a COVID-affected cycle that resulted in anomalous outlier-level boosts in application volumes.
- (DID/DIDN'T TAKE) Similarly, things such as economic conditions might affect who takes and does not take the PREview exam (when it is optional) in a given year. Comparing who did and did not take the PREview exam when it is optional will

provide only limited insights into what might happen if you make it required

- One of the nice things about this first research question is that the only admissions data you will need are PREview scores, plus possibly a list of the applicants who made it to the interview stage or were accepted.
- The other relevant data you will require are applicant demographic data, including variables like sex, age, SES, race/ethnicity, and country of origin. There may be many demographic variables available in your data, and part of prioritizing your research questions will include prioritizing which demographic variables are of interest to you.
- From an analytical perspective you primarily will be comparing differences in proportions – e.g., are some groups more or less likely to apply when PREview scores are required, or are higher SES applicants more likely to take the PREview exam when it is optional?



## How do PREview Scores Relate to Other Admissions Data?

- Why study?
  - The AAMC PREview exam was designed to measure pre-professional competencies.
  - Intended to be used holistically in combination with other data, assessing the full range of core competencies to help provide a more well-rounded view of applicants and the factors that lead to their success.
- How does it...
  - Relate to what we think it should?
  - Not relate to what we think it shouldn't?
  - Relate to other sources where we don't know what to expect?
- How well do PREview scores improve your prediction of student success?



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This question is what we will be spending most of the remaining time discussing.

The PREview exam is intended to measure pre professional competencies such as Service Orientation, Social Skills, Teamwork, Resilience and Adaptability, and Reliability and Dependability. It intentionally was designed not to measure some other things, especially purely academic constructs that are already successfully evaluated by other measures like the MCAT<sup>®</sup> exam and UGPA.

When considering the PREview exam and this other admissions data, you may want to understand how PREview scores relate to other admissions data to answer these questions:

- Do they relate to what we think they should?
- Or, perhaps not relate to what we think they shouldn't?
- Do they relate to other sources, where we don't know what to expect?
- Do they improve your prediction of student success?

The AAMC has researched some of these questions at a national level, but to answer how PREview scores relate to your admissions data and/or fit into your school's process, you need to design a local study.



## Identify Relevant Admissions Data: Practical and Methodological Considerations

Accessible	Useable	Widely available	Quality
<ul style="list-style-type: none"><li>• Already have</li><li>• Can retrieve</li></ul>	<ul style="list-style-type: none"><li>• In existing form (e.g., PREview exam, UGPA, MCAT® exam)</li><li>• Need recoding/transforming (e.g., letters of recommendation)</li><li>• Not useable</li></ul>	<ul style="list-style-type: none"><li>• Will most applicants have scores?</li></ul>	<ul style="list-style-type: none"><li>• Reliability/Quantifiability</li><li>• Variability</li></ul>

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Now let's look at the characteristics of what might make for useful admissions data. Review the admissions data you have against these criteria to determine whether they will be useful or not.

First, to be useful, the data have to be accessible - that is, it is either data you have, can retrieve, or can collect with a reasonable amount of effort.

Next is the question of whether the data are useable, or what it will take to make them useable. Data such as PREview scores and MCAT scores probably will be useable in their existing forms. Interview results may or may not be, depending on how your school collects, documents, and stores these data. Other, more qualitative data such as experience, letters of recommendation, or personal statements may need to be converted to numeric scores to be useable, if that has not already been done.

By widely available, we mean that you should or could have this data for most applicants. Measures that are available on only a small subset of students may not prove very useful because you would have very little data to analyze, particularly if you were comparing two such measures. We recognize that some admissions data

will be available on only a subset of applicants because earlier steps were used to reduce the applicant pool. That is OK.

To be useful in this research, the predictors you use should be reliable, that is, fairly stable measures over time. For standardized tests like the PREview exam and MCAT exam, that is not a concern as their reliabilities are good. For things such as interview scores, it may be useful to examine the extent to which different raters of the same applicant provide ratings that agree, if those data are available.

- In the case we discussed of qualitative data that may need to be transformed to a numeric form, it will be important that the measure be reliably quantifiable. That is, not only can it be converted to a numeric score, but it can be done in a way where different people would agree on how things are quantified. More on this a little later.

Finally, to be useful in this research, there must be variability in the scores. If almost everybody has the same score on something, it will not be related to other measures.

# Identify Relevant Admissions Data

## Conceptual Considerations

<i>Do PREview scores. . .</i>	<b>Admissions Data to Include</b>	<b>Examples of Admission Data</b>
<i>Relate to what we think it should?</i>	Conceptually similar (personal and professional) measures	Interview (traditional, MMI) Experiences Letters of Recommendation Personal Statement
<i>Not relate to what we think it shouldn't?</i>	Academic measures	MCAT Scores UGPA
<i>Relate to other sources where we don't know what to expect?</i>	Unspecified or multi-constructs	Other school-specific assessments
<i>Improve your ability to predict student success (have incremental validity) over what else you are using?</i>	All + outcome measures	



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The extent to which PREview scores are related or unrelated to your admissions data depends on whether your admissions data captures the same competencies, and as just mentioned, whether these competencies are captured reliably and with enough variation.

PREview scores are *not* intended to measure academic readiness for Medical School, rather they are intended to complement academic metrics to help medical schools see a more complete picture of an applicant.

The admissions data you choose to include will depend on the specific research questions you want to answer. In order to truly understand what the PREview exam measures and what the PREview exam does not measure relative to other admissions data at your school, and in order to determine how it adds value over the other assessments you use, it will be important to include all assessments that are used at your school, particularly assessments that meet the standards of being accessible, quantifiable, reliable, and showing variability.

## Admissions Data Evaluation Example

	Conceptually Aligned with PREview score	Sample	Sample size	Reliable	Quantifiable	Variability	Include in Study?
MCAT exam total score	No	All applicants	10,000	Yes	Yes	Yes	Include
Personal Statement	Maybe	~70% applicants	6,930	No	No	Some	Exclude
Interview: Oral Comm	No	Interviewees only	1,000	Somewhat	Yes	No	Exclude
Interview: Teamwork	Yes	Interviewees only	1,000	Somewhat	Yes	Some	Include
Acceptance decision	Somewhat	Interviewees only	1,000	Yes	Yes	Yes	Include

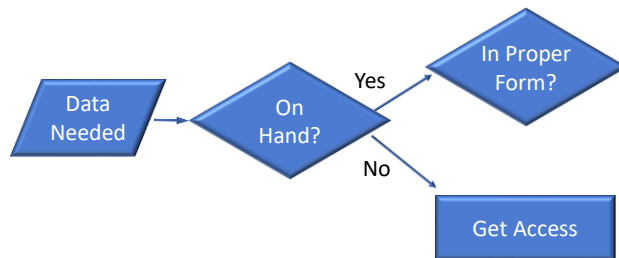
Here is a table of example admissions data and methodological and conceptual considerations regarding each.

So, for example, although MCAT scores are not conceptually aligned with PREview scores, because they apply to all applicants and are reliable, quantifiable, and show variability, they could be included in the study to demonstrate the distinction between PREview scores and MCAT scores.

Conversely, interview scores related to Oral Communication are not conceptually aligned with PREview scores, apply to interviewees only, and are potentially only somewhat reliable or not variable, so they could be excluded from your study.

Interview ratings may also reflect either MMI Station scores or structured or unstructured interview ratings.

## Gather Your Data – Accessible/Useable



- **Proper Form**

- Data should be transformed into numeric scores.
- Process of transforming should be systematic and reliable.

- **Access**

- Getting permission.
- Being specific about data needs.

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We've discussed the issue of data being accessible and useable when we talked about Identifying Relevant Admissions Data.

- Some data you need may be on hand, that is, you can directly download it or otherwise access it.
  - If you can directly access the data, the next question is whether it is in the proper form. That is, is it a numeric variable where there is some order to it, such as higher scores indicating more or better of something.
    - This would be the case with measures such as UGPA, MCAT scores, and PREview scores. It may be the case with interview scores or other measures as well
    - However, there may be other admissions data where this isn't the case, for example if your school doesn't systematically assign scores to letters of recommendation, personal statements, or records of experience, or perhaps other data in student files. For these data to be useful in the analyses we are discussing, they need to be transformed into numeric scores and this needs to be done systematically and reliably. In other words, different people scoring the same information should be looking for the same

things and should wind up with similar scores. If different raters differ too much, the scores may be more reflective of the raters than the applicants. So for example, if you decide to convert letters of recommendation into a 1-5 scale score, raters will need to be carefully trained to make use of a well-developed rubric with detailed examples to classify student into each of those 5 categories.

- Other data you may need to get access to from other sources, including perhaps your IT department, AAMC, or another assessment vendor. Once you get the data, the process is like what we described above. However, there are two issues about getting access to other data that are important to consider.
  - First you may need permission to get data from other sources, so that needs to be part of your planning and timeline.
  - Second you must be very specific about what data you need. This includes:
    - Who – for which applicants, which time period?
    - In what format? Do you want the data in Excel, Access, Word, or some other file format? How do you want duplicate cases handled (e.g., use most recent record)?
    - Which variables at what level or in what format? For example, do you need item or dimension level data or just a total score? Will the data be in a numeric format or not? Will you need a key or data dictionary to understand what different data mean?
      - An important point to consider here—and with the data you have on hand too—is how you are going to link together different pieces of information about an applicant. We are going to cover this topic more in the next slide, but the important point when requesting data from others is that you will have to figure out what linking variables are available and be sure to request ones that you need.

# Gather Your Data – Linking Data

MOCK DATA: FOR ILLUSTRATIVE PURPOSES ONLY

AAMC ID	Stu_ID	Name	Race
*****0905	95-0602	Willima Smith	White
*****8424	98-3211	Billy Smith	Black
*****3373	99-1299	Will Smith	Black
*****2468	88-2113	G. William Smith	White

AAMC ID	Date	Name	PREview exam score
*****0905	9/22/2022	William H. Smith	5
*****8424	10/7/2022	W. Elizabeth Smith	7
*****3373	11/3/2022	Everett W. Smith	8
*****2468	5/17/2022	George Smith	4
*****2468	12/12/2022	George W. Smith	6

Ultimately, will need all data for each participant to be linkable.

- One row per participant

Stu_ID	Name	Interview - Teamwork
95-0602	Smith, Bill	1
98-3211	Smith, Wilhelmina	3
99-1299	Willis Smith	2



Another important consideration for gathering your data is being able to link it.

All this data may be worthless if you are not able to connect data from different sources. Some shared variable or variables unique to each candidate but shared across sources of data is critical to your research success.

Names may be used but are often problematic. Multiple people may have the same name, the same person may have different variations of their name in different data sets, or there may be typos in one version of a name.

AAMC ID should be common and available for all candidates. Other forms of ID include AMCAS ID or email address.

It also may be necessary to have more than one matching variable and to match different data sets on different variables. As shown here, the interview data (green) had Student ID, while the PREview data did not (orange; people taking the Preview exam were not students yet) but did have AAMC ID. Fortunately, the demographic data from student files had both variables, otherwise it may have been difficult to accurately match the test and performance data.

You or your data analysts will likely have dig in deeply to understand what is available and what problems might occur



## Analyze Data

- Data merging
- Data cleaning
- Identify appropriate analysis

Research Question	Analysis
How does incorporating PREview scores into your admissions process affect your applicant pool?	<ul style="list-style-type: none"><li>• Differences in proportions (e.g., Chi-square test), size, and direction</li><li>• Statistical significance</li></ul>
How do PREview scores relate to other admissions data?	Degree of relationship (e.g., correlation coefficients)



This is where your data analyst or analyst team really earn their money. There is only so far we can go in advising you what to do when we don't know the data you will have, but we can provide an overview of some important considerations.

**Date merging** – This is simply putting all of your data from different sources together in a single line of data based on one or more linking variables.

- Handling one-to-many matches – which do you use?
  - Multiple (disagreeing) demographics,
  - Multiple occurrences of same predictor variable,
  - Multiple occurrences of same outcome variable.
- Handling missing data/unmatched cases when there shouldn't be any if (e.g., interview score but no MCAT exam or PREview test scores; inability to match some of the data you have because you don't have a good linking variable). This may require some detective work.

For data cleaning, you need a plan for:

- Missing or out of range (impossible) values,
- Reasons for dropping applicants from the analysis.

For identifying appropriate analysis:

- If your research question is, How does incorporating PREview scores into your admissions process affect your applicant pool?
- Consider examining differences in proportions with a Chi-square test and looking for the size and direction of differences, as well as statistical significance.

If your research question is, How do PREview scores relate to other admissions data?

- Consider examining the degree of the relationship (through, for example, correlation coefficients).

# Interpret Results – Chi Square

MOCK DATA: FOR ILLUSTRATIVE PURPOSES ONLY

Research Question	Analysis
<i>How does incorporating PREview scores into your admissions process affect your applicant pool?</i>	<ul style="list-style-type: none"> <li>Differences in proportions (e.g., Chi-square test), size, and direction</li> <li>Statistical significance</li> </ul>

	Race/Ethnicity				Total
	Asian	Black OR African American	Hispanic Or Latino	White	
<b>Pre- PREview</b>	30 (10%)	33 (11%)	12 (4%)	216 (74%)	291
<b>Post- PREview</b>	34 (12%)	42 (14%)	11 (4%)	205 (70%)	292
<b>Total</b>	64 (11%)	75 (13%)	23 (4%)	421 (72%)	583

Chi-Square Tests			
	Value	df	p (2-sided)
Pearson Chi-Square	1.65	3	0.64
N of Valid Cases	583		



In terms of interpreting the results, an important consideration about a comparison of differences or a correlation coefficient is whether it is “statistically significant.” In your research, very few of the differences or correlations you find will exactly equal 0. Statistical significance pertains to the question of whether a given result is far enough away from zero to represent something that is a real, potentially meaningful finding. An in-depth discussion of significance testing is beyond the scope of this session, but the question it answers is “What is the likelihood that this result is due to chance?” When that likelihood is less than a certain amount (commonly 0.05, or 5%), most researchers are willing to accept that the result is different from 0. A chi-square test of differences can help you determine whether the differences in proportions are statistically significant.

If you find statistical significance, you can then look at the size and direction of differences with respect to the research question about changing applicant pools, or the size and pattern of the correlations for the question about PREview scores and other applicant data.

In order to provide a complete story and round out the checklist steps we shared earlier, we will provide examples of the results you might find for the research

questions we discussed.

In the case of the Race/Ethnicity results shown (which are made up for illustrative purposes) it looks like there is a slight increase in the proportion of Black applicants and a decrease in the proportion of White applicants applying after PREview scores were implemented, but the results of the analysis are not statistically significant (the value of “P” in the second table is greater than 0.05) The results are close enough to significant that this might be something worth keeping an eye on, but for the time being we would conclude that implementing PREview scores did not change the applicant pool.

# Interpret Results - Correlations

MOCK DATA: FOR ILLUSTRATIVE PURPOSES ONLY

Research Question	Analysis	1	2	3	4	5	6	7	
How do PREview exam scores relate to other admissions data?	Degree of relationship (e.g., correlation coefficients), size and pattern of relations	1. PREview score	1.00						
		2. MCAT score	0.22	1.00					
		3. UGPA	0.14	0.69	1.00				
		4. Interview: Working w/ Others	0.28	0.11	0.08	1.00			
		5. Interview: Integrity	0.24	0.09	0.12	0.45	1.00		
		6. Work Experience	0.11	0.22	-0.07	0.14	0.03	1.00	
		7. LORs	0.08	0.32	0.47	0.16	0.14	0.22	1.00



A review of the pattern of correlations shown (also made up for illustrative purposes) shows that PREview scores are most strongly correlated with interview scores pertaining to personal and professional competencies, and less related to academic measures, work experience, and letters of recommendation. The results here also would suggest that letters of recommendation are more likely to reflect academic competencies. Again, however, we want to stress that this is made up data.

When disseminating research findings, it is critical to know your audience. It is easy to overdo it in terms of different analyses and statistics. Most audiences have a few key questions in which they are interested—and limited time and attention—and those questions should be the focus of the information you share, along with any guidance you can provide to avoid misinterpreting the results. Especially if your audience is not overly savvy about research and statistics, a good approach can be to start with the headlines or key takeaways and work down from there, as opposed to the approach in published academic research of building the case, providing all the details, and ending up at the conclusions.

At the same time that we urge you not to overdo it in what you present, it is a good idea to overprepare, having additional information in your back pocket just in case

your audience asks for information you did not present.

## Summary



Research questions covered in this course can be explored without gathering or collecting medical student performance data.



Practical and Methodological Considerations will help determine which other admissions data (besides PREview scores) to include in your research



Potential analysis techniques depend on your research question and may include:

*Chi-Square*  
*Correlations*

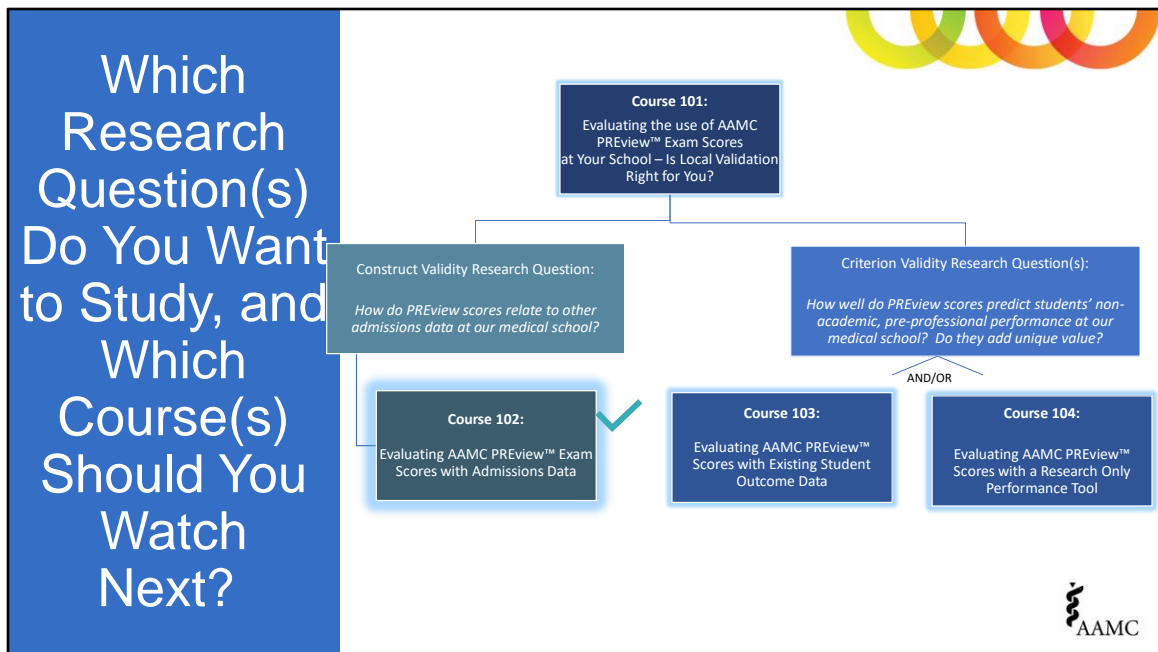


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### In Summary:

- Research questions covered in this course can be explored without gathering or collecting medical student performance data.
- Practical and Methodological Considerations will help determine which other admissions data (besides PREview scores) to include in your research.
- Potential analysis techniques depend on your research question and may include: Chi-Square tests and Correlations.



Examining how PREview scores might affect the makeup of your applicant pool or how it relates to other admissions data are only two broad research questions you may want to address.

Two other courses AAMC is offering—103 and 104—address how to conduct research to understand how PREview scores relate, that is predict, important student outcomes. They also address how to take the research we talked about here (regarding the relationship between PREview scores and other admissions data) to the next step by examining whether PREview scores can improve student selection by providing incremental predictive validity over and above the other sources of admissions data you are using.

Course 103 specifically addresses how to conduct research to understand how PREview scores predict important student outcomes using existing student performance outcomes at your school, whereas Course 104 describes how (and why you might want to) do this research using a research only performance tool.