

## Introduction

The Maryland High School Assessments (HSAs) consist of end-of-course tests in Algebra/Data Analysis, Biology, English, and Government. The HSAs are referred to as “end-of-course” tests because students take each test when they complete the appropriate coursework.

Students who entered 9<sup>th</sup> grade in the 2005-2006 school year or subsequent school years are required to earn satisfactory scores on all four content areas measured by the HSAs or Modified High School Assessments (Mod-HSAs) in order to earn a Maryland High School Diploma<sup>1</sup>. Results from the Algebra, Biology and English administrations are used in the MSDE Adequate Yearly Progress (AYP) reports, required under the No Child Left Behind Act (NCLB). Information on the interpretation of scores is provided to students, parents, schools and other stakeholders via the Maryland State Department of Education (MSDE) website

Starting in May 2008, MSDE test administrations include the Mod-HSAs. The Mod-HSAs are a modified version of the HSAs; they are designed for special education students with Individualized Education Programs (IEPs). The Mod-HSAs may be taken in place of one or more of the HSAs. Eligibility to take the Mod-HSAs will be determined by a student’s IEP and evidence of progress in learning course content.

The Mod-HSAs assess the same skills as the HSAs. Mod-HSA items were derived from banked HSA items, but the question format was simplified. For example, the Mod-HSA assessments contain selected response (SR) items only, the SR items have three answer options instead of four, and the items have reduced reading load and simplified graphics. All items are based on content outlined in Maryland’s Core Learning Goals (CLGs).

Mod-HSA forms are designed to provide a total test score and a subscore for each reporting category. They are administered both online and in paper format. The eventual goal is to have most students test online, with only special forms (Braille, Kurzweil<sup>TM</sup>, and Large Print) administered on paper.

### *Development of Mod-HSA Test Forms*

Two Mod-HSA field test forms per content area were developed for a May 2008 administration. Of the items administered, 50 subsequently were selected to comprise each of two pre-equated operational forms that would be used to score students participating in this administration and to comprise forms to be used in subsequent administrations.

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<sup>1</sup> More information on state graduation requirements is available on the Maryland State Department of Education Web site at <http://www.marylandpublicschools.org/MSDE/testing/hsa/>.

The field test forms contained 94 to 99 items each. Each form included 70 to 75 modified-HSA field test items that differed across the forms and a set of 24 common HSA items designed to serve as an external anchor for linking purposes. The 24-item external anchor was used to link the Mod-HSA items to the HSA scale and did not count toward students' final scores.

In May; Form 108 was administered on paper and online, Form 208 was administered online only. There was also a Summer administration, and two forms were administered for each content area. Form 308 served as the primary form and was administered online and, as an accommodation, on paper; Form 408 served as a make-up form and was administered online.

Following item analyses, calibration, and linking, the 50-item operational forms were selected by MSDE to comprise each operational form. These forms were used to score the present and future administrations. The item parameters estimated during the May 2008 administration are used to generate scores on these forms, so no calibration or equating will be needed in future administrations.

In the future, the operational Mod-HSAs will be administered at the same time as the HSA, that is, in each October, January, April, May, and Summer (July/August).

#### *Description of Target Groups and Linking Samples*

To obtain data that could be used to link the Mod-HSA to the HSA scale, two groups of students took the Mod-HSA in May 2008. The first group was the *Target* population, which were students identified by MSDE as being eligible to take the Mod-HSAs. These students took the Mod-HSA instead of the regular HSA. The second group of students was the *Linking* sample, which consisted of regular HSA examinees identified by MSDE to take the Mod-HSA in the same content area as their May HSA. The data provided by this second group of examinees were used to calibrate the Mod-HSA field test forms and to equate these forms. As an incentive to participate in the Linking sample, these HSA students received the higher of their two scores on the Mod-HSA and regular HSA.

Students from the Target population, taking the paper version of the Mod-HSA, took Form 108, while Forms 108 and 208 were spiraled at the school level for the students taking the online version of the test. For the Target population, data resulting from the paper and online versions of the Mod-HSAs were combined for the analyses of Form 108 described in this report.

All students in the Linking sample took Form 108 or 208 of the Mod-HSAs online. The forms were spiraled at the school level to ensure that a comparable number of students took each form.

### *Equating Designs*

Two equating designs were used to align scores from the Mod-HSAs to the same scale as the HSAs: 1) common items design, and 2) common persons design. The common items design made use of the external HSA anchor sets embedded in the Mod-HSAs. The common persons design used the HSA and Mod-HSA scores of the Linking sample for the equating. The two designs were planned so that if one design was not effective, there would be an alternative approach that might be used for the purposes of aligning the Mod-HSAs to the HSA scale. These designs are explained further in Section 4 of this report.

### *Organization of the Technical Report*

This technical report contains seven Sections and four Appendices.

- Section 1 describes test development, form construction and administration details;
- Section 2 discusses the validity of the Mod-HSAs;
- Section 3 describes the item-level analyses conducted to provide information for selection of the 50-item operational forms for each content area;
- Section 4 presents item response theory calibration and scaling information;
- Section 5 describes the scoring procedures;
- Section 6 provides information related to the test characteristics;
- Section 7 presents information regarding student characteristics.

The appendices contain more detailed statistical results. Appendix A provides classical item statistics for the 50-item operational forms, for both the Target population and the Linking samples in the May administration, and for the Target population in the Summer administration. Appendix B provides classical item statistics of the field test items, for the Linking samples, by form. Appendix C presents a comparison of the results of the two equating methods used during the May administration, including summary statistics, test characteristic curves (TCCs) and conditional standard errors of measurement (CSEMs). Appendix D provides histograms of the scale score distributions by content area and by group for the May 2008 administration.

All technical support and analyses were carried out in accordance with both the *Educational Testing Service Standards for Quality and Fairness* (2002) and the *Standards for Educational and Psychological Testing*, issued jointly by the American Educational Research Association, American Psychological Association, and National Council on Measurement in Education (1999).