

PATTERNS OF ADOPTING HIGH-QUALITY INSTRUCTIONAL MATERIALS FOR TEACHING READING IN TENNESSEE

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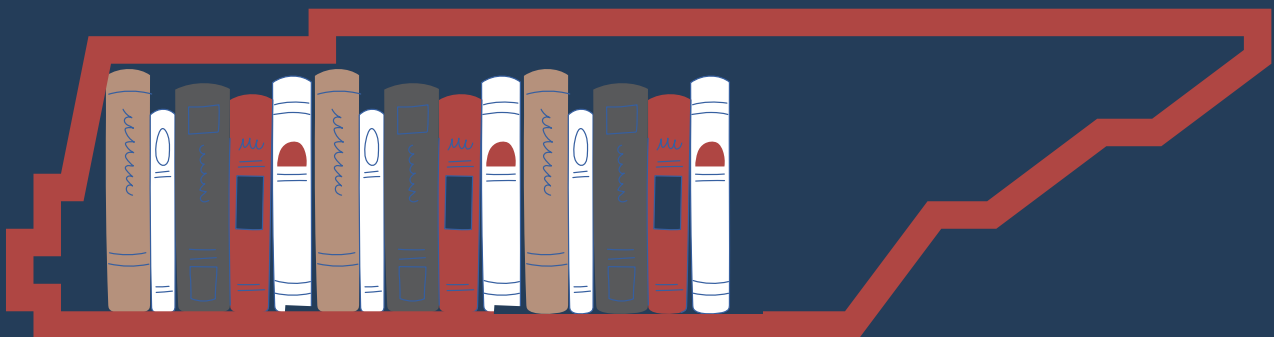


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Introduction

Tennessee follows the adoption process outlined in state law for identifying the standard edition textbooks for use in public schools. In this process, a list is recommended by the Tennessee Textbook and Instructional Materials Quality Commission and approved by the Tennessee State Board of Education. Districts must elect through a local adoption process to adopt one or more of the high-quality instruction materials (HQIMs) on the approved list or seek a waiver to use other materials. The English Language Arts (ELA) adoption process aimed to ensure that HQIMs would be used to teach students to read and that those materials would be aligned with Tennessee’s literacy standards.



The Tennessee Reading Research Center is a Reading 360 initiative housed at the University of Tennessee, Knoxville. The center was established in partnership with the Tennessee Department of Education for the purpose of evaluating and independently analyzing the effects of the Reading 360 initiative on teacher and district use of HQIMs, teachers' literacy instruction, students' literacy skills and standards-based achievement, and education preparation providers' preparation of teacher candidates to teach literacy.

This report is the result of the center's evaluation of the ELA adoption. Given that districts make individual selections of HQIMs, this evaluation explored what HQIMs were adopted and whether there were any patterns in the adoptions made across districts in the state such as by community size, Center of Regional Excellence (CORE), or student demographics. In addition, the evaluation examined the consistency of HQIM adoptions across grade bands (K-2, 3-5, 6-8, 9-10) within districts. This descriptive report will be followed by future evaluations associating the HQIMs adopted with students' year-to-year growth on the Tennessee Comprehensive Assessment Program (TCAP) in Grades 3-10. Because the TCAP is not administered above Grade 10, Grades 11 and 12 were excluded from the descriptive analyses.

Data Sources

Information for this evaluation was drawn from publicly available data sources that report aggregate characteristics of districts and their students (e.g., state district profiles, national geographical locale designations) as well as each district's Foundational Literacy Skills Plan (FLSP). In addition, the Tennessee Reading Research Center received from the Tennessee Department of Education a list of the reported HQIM adoptions by school district. All information was obtained in fall 2022, but waiver requests and FLSP changes that were pending approval at that time would not have been reflected in the data. Moreover, the purchase of materials and the timeline in which that happened might have been different from the reported adoption of the HQIM on file. Therefore, this report is limited to what was known in fall 2022 and may not reflect all changes that have taken place since the data were obtained.

Frequency of HQIM Adoption

The number of districts adopting each HQIM is reported by grade band in Table 1. Some materials were not designated for all grade levels, as shown by the not applicable (N/A) notation in the table. There were four HQIMs on the approved list that were not adopted by any district; it is possible that those materials were not adopted because they were designed or had approval for limited grades. Bedford Foundations of Language and Literature was only for Grades 9-10, Cengage Reach for Reading was only for kindergarten (K) and Grade 6, Open Up Book Worms was only for Grade 3, and Scholastic Literacy was only for Grades 5-6. As will be discussed in the later analysis, districts tend to adopt HQIMs that can be implemented across grade bands.

In each grade band, some materials were adopted more frequently than others. For example, Table 1 shows that Amplify CKLA was adopted by more districts for Grades K-2 (33%) and 3-5 (25%) than any other option, and Benchmark Advance was the second most frequently adopted HQIM in Grades K-2 (23%) and 3-5 (22%). The latter is not available above Grade 6, which may account for its lack of adoption in the middle grades. Savvas myPerspectives was adopted most frequently for Grades 6-8 (26%) and 9-10 (50%). Amplify's ELA was the second most common HQIM in Grades 6-8 (20%). McGraw Hill Study Sync was a distant second in frequency for Grades 9-10 (11%); however, more districts were missing from the adoption list for these grades (21%). Finally, the only grade band for which there was a noticeable count of waivers was K-2, but this still represented a relatively small percentage of the total data (9%).

**IN EACH GRADE
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**Table 1. Number of Districts Adopting Each HQIM by Grade Band
(based on data obtained in fall 2022)**

| HQIM | Grade Band | | | |
|--|------------|-----|-----|------|
| | K-2 | 3-5 | 6-8 | 9-10 |
| Amplify CKLA or ELA | 48 | 36 | 29 | N/A |
| Bedford Foundations | N/A | N/A | N/A | 0 |
| Benchmark Advance ^a | 33 | 32 | 0 | N/A |
| Cengage Reach for Reading ^b | 0 | 0 | 0 | N/A |
| College Board SpringBoard | N/A | N/A | 0 | 6 |
| EMC Mirrors and Windows | N/A | N/A | 0 | 3 |
| Great Minds Wit and Wisdom ^c | N/A | 21 | 9 | N/A |
| HMH Into Reading or Into Literature ^d | 14 | 7 | 7 | 9 |
| LearnZillion Expeditionary Learning | 9 | 7 | N/A | N/A |
| LearnZillion GuideBooks ^e | N/A | 9 | 13 | N/A |

**Cntd. Table 1. Number of Districts Adopting Each HQIM by Grade Band
(based on data obtained in fall 2022)**

| HQIM | Grade Band | | | |
|---------------------------------------|------------|-----|-----|------|
| | K-2 | 3-5 | 6-8 | 9-10 |
| McGraw Hill Wonders or Study Sync | 20 | 18 | 16 | 16 |
| Open Up Book Worms ^f | 0 | N/A | N/A | N/A |
| Open Up Expeditionary Learning | 7 | 12 | 2 | N/A |
| Savvas myPerspectives | N/A | N/A | 37 | 73 |
| Scholastic Literacy ^g | N/A | 0 | 0 | N/A |
| Waiver | 13 | 2 | 0 | 0 |
| Wiley Paths to College and Career ELA | N/A | N/A | 4 | 1 |
| Multiple materials | 0 | 0 | 11 | 2 |
| “Blanket adoption” ^h | 0 | 0 | 3 | 4 |
| Missing ⁱ | 1 | 1 | 14 | 31 |

Note.

- a. Benchmark Advance was approved for Grades K-6, not for Grades 7-8;
- b. Cengage Reach for Reading was only approved for Grades K and 6, not for any grades in between or after;
- c. Great Minds Wit & Wisdom was approved for Grades 3-8, not for K-2;
- d. HMH was not approved for Grade 3, but some districts may have applied for a waiver to adopt it in that grade;
- e. LearnZillion GuideBooks were approved for Grades 3-8, not for K-2;
- f. Open Up Book Worms was only approved for Grade 3;
- g. Scholastic Literacy was approved for Grades 5-6, not for Grades K-4 or 7-8;
- h. “Blanket adoption” = districts indicated they were adopting all of the materials on the approved list and would decide which ones to purchase at a later date;
- i. “Missing” = the number of districts unaccounted for when assuming each column should add up to the 145 districts in the state that were included in this report, but this may include districts that do not have schools in one or more of the grade bands;
- j. N/A = the materials were not designed or approved for that grade band.

Consistency of Adoption Across Grades

Districts can adopt different HQIMs at different grade levels, which might mean that students follow a different scope and sequence in literacy skill instruction as they change grade levels or are exposed to different strategies for skill development.

Year-to-year potential variations in these instructional elements might be helpful (e.g., offering recursive instruction or practice, fostering flexibility in applying skills) or harmful to students' development (e.g., creating gaps in skill instruction, causing confusion or conflicting approaches), depending upon the materials, how the materials are implemented, and what students' individual needs are. To determine whether further investigation might be needed into the potential for benefit or harm, the first analyses explored the extent to which students were being exposed to a consistent HQIM series across grade bands.



Each pairwise combination of grade levels was checked as follows:

- **Does K-2 HQIM equal 3-5 HQIM adoption?**
- **Does K-2 HQIM equal 6-8 HQIM adoption?**
- **Does K-2 HQIM equal 9-10 HQIM adoption?**
- **Does 3-5 HQIM equal 6-8 HQIM adoption?**
- **Does 3-5 HQIM equal 9-10 HQIM adoption?**
- **Does 6-8 HQIM equal 9-10 HQIM adoption?**

To determine the percentage of consistency between each pair of grade bands, a consistency score was computed in which a zero (0) indicated the HQIM was not the same in a given comparison, and a one (1) indicated the materials were the same. Then, the number of consistent pairs was summed and divided by the number of districts. Results are displayed in Table 2 and reveal that the greatest consistency was across the elementary grades, with 71% of districts adopting the same HQIMs in K-2 and 3-5. There was less consistency when moving from upper elementary to middle school (33% adopted the same HQIMs in Grades 3-5 and 6-8) or from middle to high school (43% adopted the same HQIMs in Grades 6-8 and 9-10). It was rare that the same HQIM vendor was adopted in elementary and in high school. Yet, this might be expected from the high percentage of secondary schools adopting Savvas myPerspectives because the materials are only for Grades 6-12.

Table 2. Percentage of Districts Adopting the Same HQIMs in Different Grade Bands

| Comparison Grade Bands | Percent of HQIM Consistency |
|---------------------------|-----------------------------|
| Grades K-2 to Grades 3-5 | 71% |
| Grades K-2 to Grades 6-8 | 23% |
| Grades K-2 to Grades 9-10 | 4% |
| Grades 3-5 to Grades 6-8 | 33% |
| Grades 3-5 to Grades 9-10 | 4% |
| Grades 6-8 to Grades 9-10 | 43% |

FOUR DISTRICTS ADOPTED THE SAME HQIM ACROSS ALL GRADE BANDS.

Two findings were less obvious in the table of results. First, four of the 145 districts analyzed (3%) adopted the same HQIM across all grade bands from K-10. Second, 12 districts (8%) did not adopt the same HQIMs in any two or more of the grade bands. Due to the high number of districts with missing adoption data for middle and high school, this latter finding may be an overestimate.



12 DISTRICTS DID NOT ADOPT THE SAME HQIM IN ANY TWO OR MORE GRADE BANDS.

Patterns in the Adoption of High-Quality Instructional Materials (HQIMs)

Presumably, approval at the state level would designate that all HQIMs on the list for a particular grade band provided comparable opportunities for students to learn the skills and content necessary for mastering Tennessee’s literacy standards. That is, all approved instructional materials are designated as being of “high quality.”

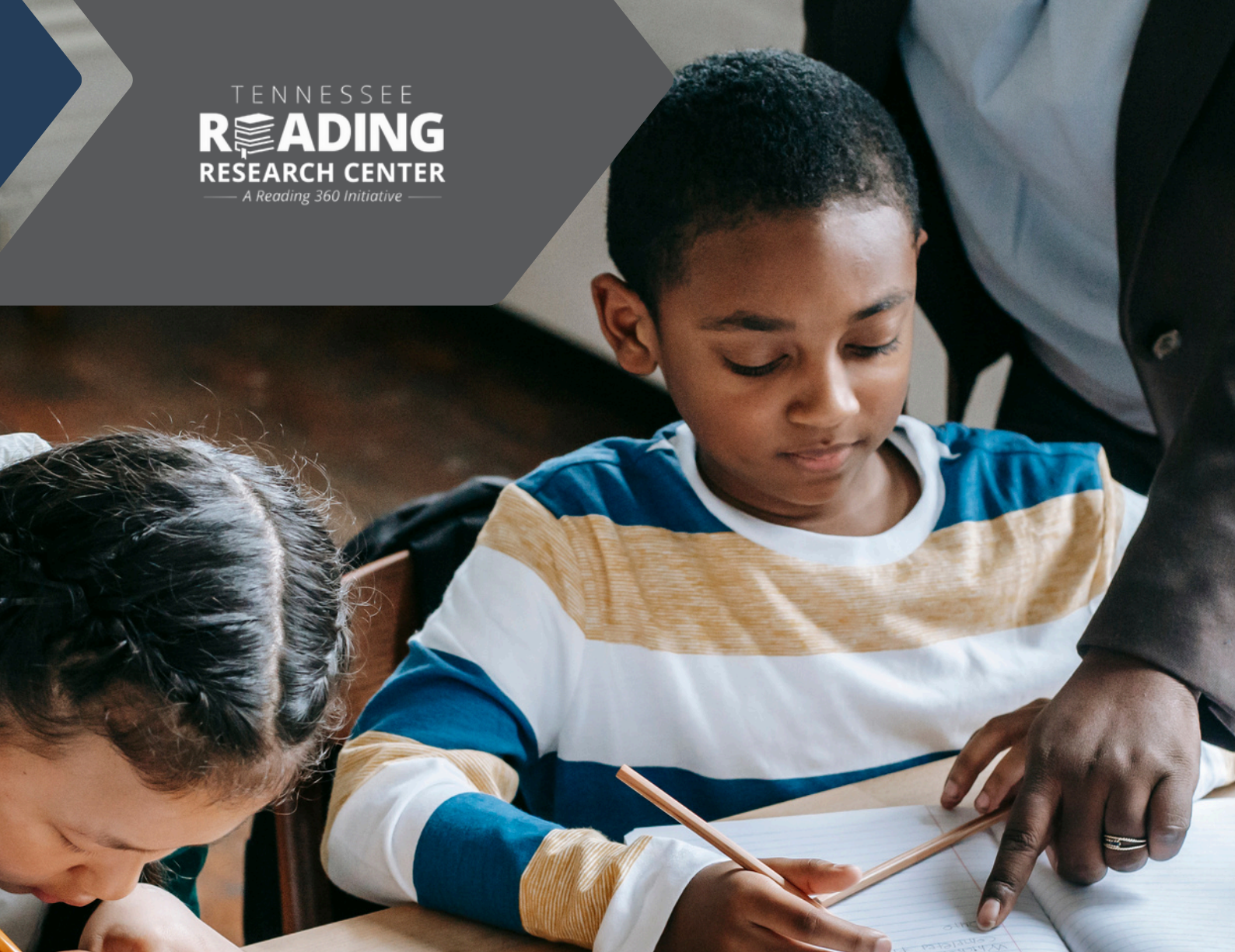
Therefore, the next analyses explored other factors that might be associated with a district’s choice of which HQIM to adopt in each grade band. It is important to note that this was a purely quantitative examination of patterns in the publicly available district characteristics and did not include any original data collection through surveys or interviews of districts regarding their decision-making process. Thus, a degree of unexplained variation in HQIM adoption should be expected because the districts’ actual reasoning and other qualitative factors are not known nor included in the statistical models.



The next analyses explored other factors that might be associated with a district’s choice of which HQIM to adopt in each grade band.

In total, 37 predictor variables were investigated to see if they were associated with patterns in the HQIM adoptions across Tennessee districts. The grouping categories for those variables included:

- **HQIM at a contiguous grade band,**
- **Other Tier 1 literacy instructional materials adopted,**
- **Universal reading screener and other early reading assessments administered in the district,**
- **District location in a Center of Regional Excellence (CORE) region,**
- **U.S. designation for geographic size of primary district location (e.g., large city, midsize suburban, fringe town, rural remote, etc.),**
- **Percent of students in the district residing in each geographic size designation,**
- **Number of students in the district in the analyzed grade band,**
- **Percent of students in the district representing different racial and ethnic groups,**
- **Percent of students in the district designated as an English learner, having a disability, or economically disadvantaged, and**
- **District participation in the Early Literacy Network (ELN) or Literacy Implementation Network (LIN) for ongoing professional development.**



**From the list above,
four variables were
removed from
Grades 6-8 and
8-10 analyses
because they only
applied to
elementary
schools.**

- universal reading screener
- other early reading assessments
- other Tier 1 literacy materials
- district participation in the ELN



There were a defined number of HQIM options at each grade with some materials demonstrating a high frequency of adoption, so classification and regression tree (CART) analyses were used instead of multiple regression. In addition to being nonparametric, CART has the advantage of not requiring a pre-specified prediction equation. Rather, the data are partitioned along predictors, moving from those that explain more to those that explain less of the outcome (i.e., HQIM adoption, in this case). Each predictor point can be displayed as a yes/no decision or other dichotomous decision such as percent proficient is greater/less than 63%. The decision forms a branch in the tree as the prediction path is continued. The end point of each pathway in the tree is the final HQIM adoption for the district(s) that had all the characteristics in the decision points along that pathway.



To begin the analyses, all variables were measured for importance by the strength of their prediction, overall prediction accuracy, and sensitivity and specificity for determining each HQIM. Sensitivity and specificity results for each HQIM in each of the final trees are provided in the appendix. Variables of low or no importance to a decision were then removed, and the process was repeated until the most parsimonious and logically valid tree was found. Finally, a random forest classifier was used as a robustness check. This analysis identifies important variables for a grade band to compare with those in the CART analysis. In all grade bands, the random forest classifier analyses mirrored the variable importance results of the CART analyses.



The sections that follow present the results of the CART analyses by grade band, starting with the lowest grade levels and moving upward. To avoid misinterpreting the results, it is important to keep two things in mind.

- 1. No qualitative data were gathered about the reasons why districts chose the HQIMs they did. The “decision points” in the CART analyses simply indicate quantifiable characteristics of the districts or the students in those districts that were statistically related to an HQIM adopted. It is not known if those characteristics were discussed by the districts or consciously considered when determining which HQIM to adopt.**
- 2. The trees produced by the CART analyses are not intended to be used as a tool for future use in choosing an HQIM to adopt. Rather they are intended to identify aspects worthy of further exploration for understanding how and why districts choose particular HQIMs.**



With respect to the latter point, CART analyses typically involve splitting the data into a training and testing set for the purposes of cross validation. The training set is used to fit a prediction model, and the remaining data in the testing set then verifies the model. However, as noted, it was not the intent of the analyses reported here to predict or guide future HQIM adoption, so the data were not split into the two sets. Rather, all data were used to fit the CART models.

CART RESULTS FOR GRADES K-2 HQIM ADOPTION

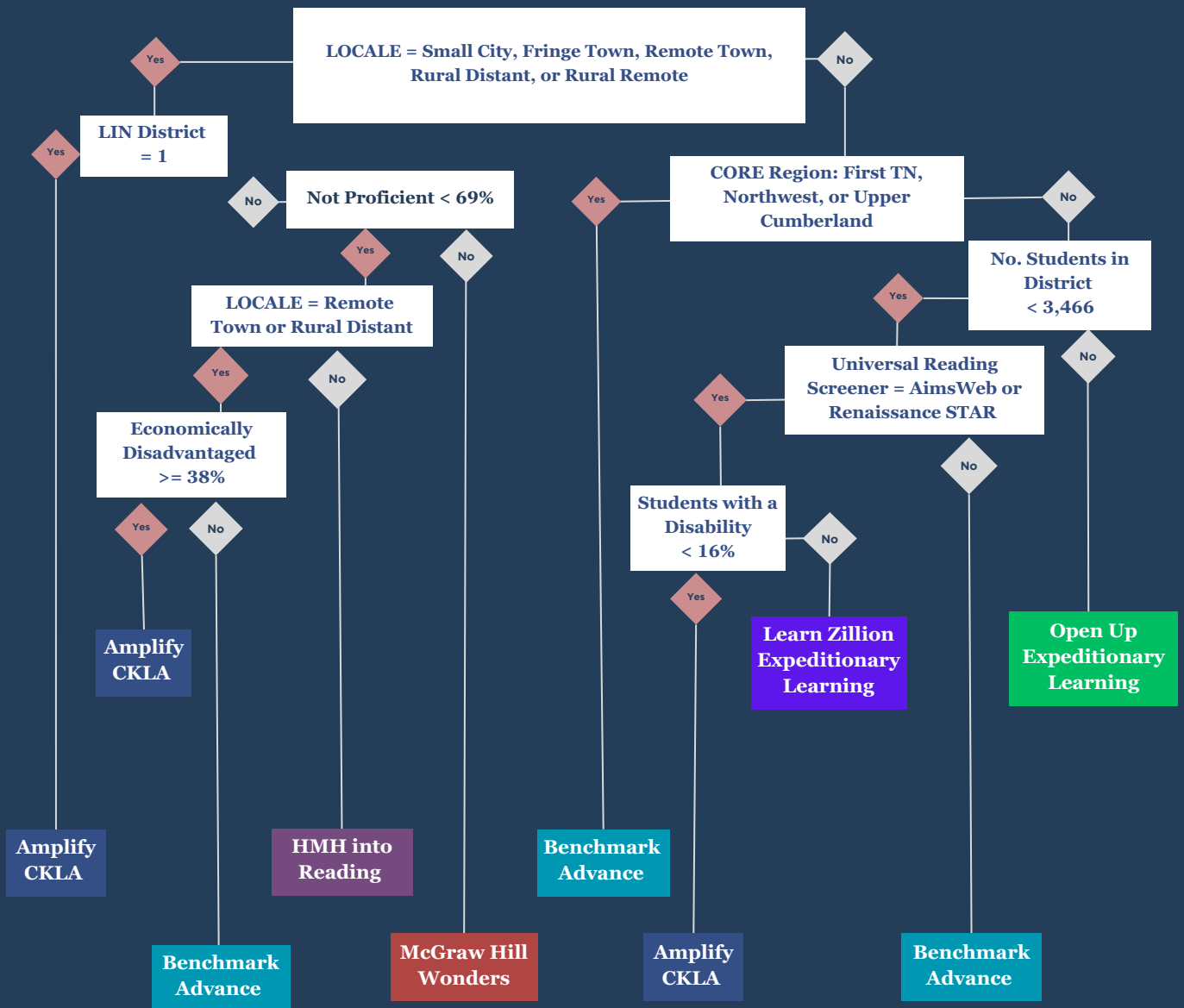
Given that 71% of districts adopted the same materials for grade bands K-2 and 3-5, the strongest predictor of what was adopted in K-2 was the HQIM adopted in Grades 3-5. Total prediction accuracy was 81% ($\kappa = .76$ after correcting for chance) when the CART model included the Grades 3-5 HQIM, additional Tier 1 materials, primary geographical locale, and percentage of students not scoring proficiently in reading. Nevertheless, this model did not predict the adoption of LearnZillion Expeditionary Learning in nine districts.

It is possible that districts adopt an HQIM for K-5 as a whole and not in separate elementary grade bands, so the next CART model was estimated without including the Grades 3-5 HQIM as a predictor. The variables that were identified as important in this model were additional Tier 1 materials, primary geographical locale, number of students in K-2 in the district, the universal reading screener adopted, and the percentage of students not scoring proficiently in reading. The total prediction accuracy of this model was slightly lower at 69%, and it did not predict the adoption of HMH Into Reading (n = 14 districts) or LearnZillion Expeditionary Learning (n = 9 districts). Two additional models were estimated by pruning the predictors (e.g., excluding additional Tier 1 materials), both of which failed to predict at least one HQIM.

Therefore, the model was estimated again with the variables that had been identified as important, but the Grades 3-5 HQIM and the 13 districts with waivers to use materials not on the approved list were excluded. After pruning variables, the final CART model included eight predictors: primary geographical locale, CORE region, whether the district participated in the state-sponsored LIN, percentage of students not scoring proficiently in reading, percentage of economically disadvantaged students, number of K-2 students in the district, universal reading screener adopted, and percentage of students having a disability. The total prediction accuracy of this model was 59% ($\kappa = .46$ after correcting for chance) and predicted all HQIMs.

The resulting tree (see Figure 1) shows the district characteristic at the starting point from which the branches of yes/no responses to that and the subsequent characteristics indicated in the grey boxes eventually culminate in an HQIM adopted at the end of the pathway, as indicated in the colored boxes. Using one pathway as an example, the strongest predictor of adopting Amplify CKLA was if a district primary was located in a small city, fringe town, remote town, rural distant, or rural remote area. This is shown in the left, or “yes” response, branch from the initial characteristic. Continuing along a pathway from that branch, the prediction of adopting Amplify CKLA was predicted by a district participating in the LIN.

Figure 1. Final Decision Tree for HQIM Adoption in Grades K-2




There also was a pattern of adopting Amplify CKLA among districts that were not in the LIN, had fewer than 69% of students not scoring proficiently in reading, primarily were located in a remote town or rural distant area, and had 38% or more of students classified as economically disadvantaged. However, as shown in Figure 1, different HQIMs were in the terminal point of other branches off those predictors. For example, McGraw Hill Wonders was predicted by a district not participating in the LIN but having more than 69% of students not scoring proficiently in reading. Note that the predictors along a pathway are in a progressively decreasing magnitude of importance to that pattern for the final HQIM decision.

The right or “no” response branch from the initial characteristic in Figure 1 meant that the districts primarily were located in a large or midsize city, any size suburban area, distant town, or rural fringe area. Following branches along this pathway, adopting Benchmark Advance was predicted by a district being in the First TN, Northwest, and Upper Cumberland CORE regions. There also was a pattern of adopting Benchmark Advance among districts that were not in those CORE regions, had fewer than 3,466 K-2 students, and did not use AimsWeb or Renaissance STAR for the universal reading screener.

CART RESULTS FOR GRADES 3-5 HQIM ADOPTION

Similar to the K-2 results, the strongest predictor of what was adopted in Grades 3-5 was the HQIM adopted in K-2. As noted earlier, this was not surprising when 71% of districts adopted the same materials for grade bands K-2 and 3-5. The total prediction accuracy of this model was 77% ($\kappa = .71$ after correcting for chance) when including only the K-2 HQIM as a predictor, but it did not predict the adoption of LearnZillion Guidebooks (n = 9 districts), likely because these materials are not for K-2. In addition, the model did not predict the two districts with waivers to adopt materials not on the approved list.

Excluding the K-2 HQIM as a predictor, the CART model estimated with additional Tier 1 materials, CORE region, primary geographical locale, number of students in Grades 3-5 in the district, and the district performance rating had a total prediction accuracy of 67% ($\kappa = .60$ after correcting for chance). However, it did not predict the adoption of LearnZillion Expeditionary Learning (n = 7 districts) or the two waivers. Excluding additional Tier 1 materials as a predictor further reduced the total prediction accuracy to 47% and did not predict four HQIMs: Great Minds Wit and Wisdom (n = 21), Open Up Expeditionary Learning (n = 12), LearnZillion Expeditionary Learning (n = 7), and LearnZillion GuideBooks (n = 9).

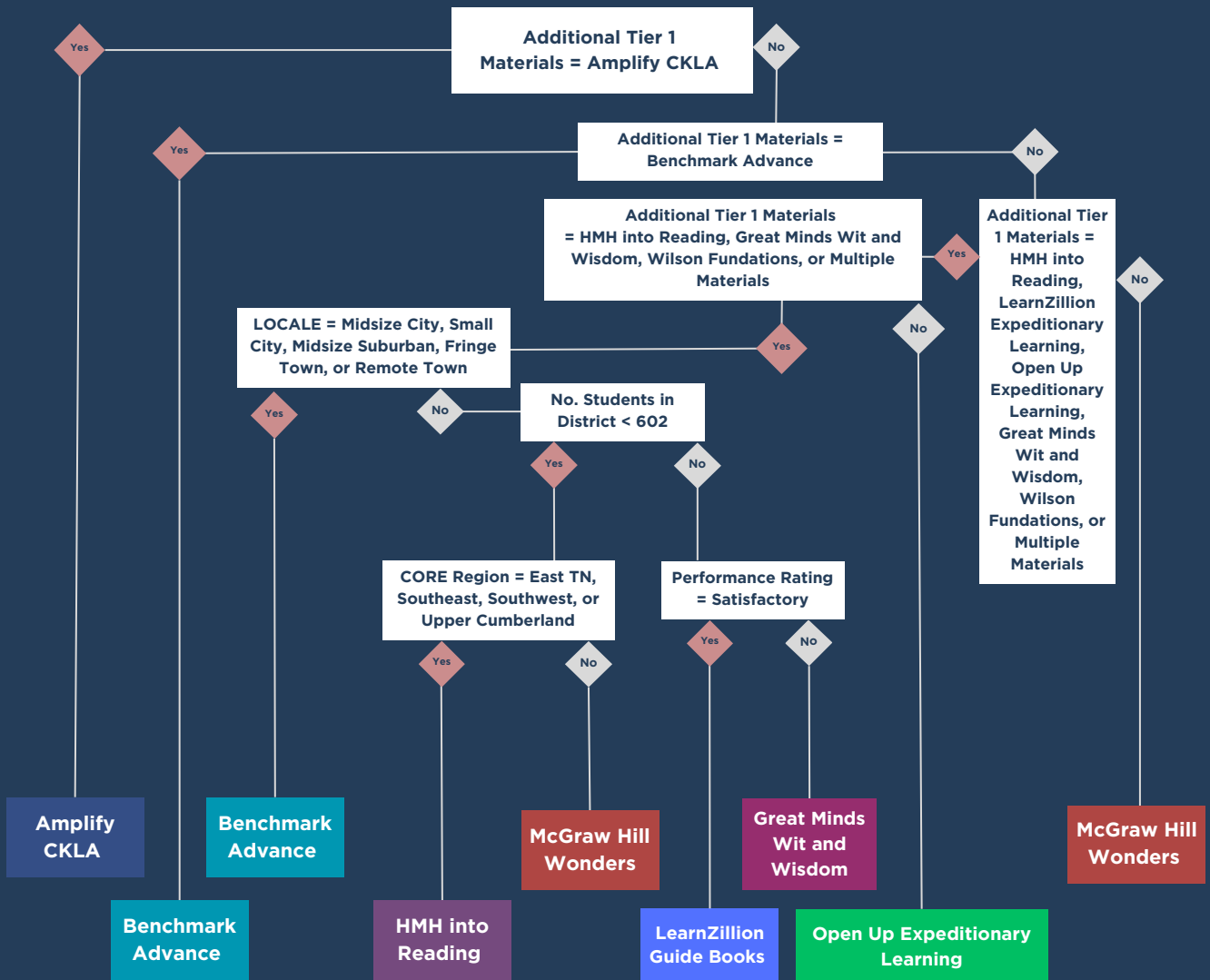


Predictor variables contributing to the patterns of adoption in this model: additional Tier 1 materials, primary geographical locale, number of students in Grades 3-5 in the district, CORE region, and the district performance rating.

Therefore, another model was estimated excluding K-2 HQIM as well as the two districts with a waiver, which were not predicted in the original model. The total prediction accuracy of this model was 68% ($\kappa = .61$ after correcting for chance), but the model still did not predict LearnZillion Expeditionary Learning ($n = 7$ districts). The predictor variables identified as contributing to the patterns of adoption in this model included additional Tier 1 materials, primary geographical locale, number of students in Grades 3-5 in the district, CORE region, and the district performance rating. In the resulting tree (see Figure 2), the district characteristic at the starting point was whether Amplify CKLA was used for additional Tier 1 materials. It may be that supplemental materials offered by the vendor were not as likely to be implemented by districts that did not also adopt Amplify CKLA for their official HQIM. This could explain why the “no” branch for the characteristic revealed patterns for adopting other HQIMs.

A similar scenario existed for the next characteristic, whether the district adopted Benchmark Advance for additional Tier 1 materials. Whereas the “yes” branch for this characteristic was associated only with Benchmark Advance being the official HQIM adopted, the “no” branch accounted for other HQIM adoptions along this pathway. However, there still was a pattern of adopting Benchmark Advance among districts that used HMH Into Reading, Great Minds Wit and Wisdom, Wilson Foundations, or multiple additional Tier 1 materials if those districts were also primarily located in a midsize city, small city, midsize suburb, fringe town, or remote town.

Figure 2. Final Decision Tree for HQIM Adoption in Grades 3-5



Additional Tier 1 materials were often supplements to the core HQIM adopted. Because no qualitative data were gathered from the districts, it is not possible to know whether the HQIM decisions were influenced by the availability of additional Tier 1 materials connected to the core HQIM, so the tree should not be interpreted as indicating a sequential or causal order of characteristics. Rather, the CART model indicates the cluster of characteristics associated with an HQIM adoption.



CART RESULTS FOR GRADES 6-8 HQIM ADOPTION

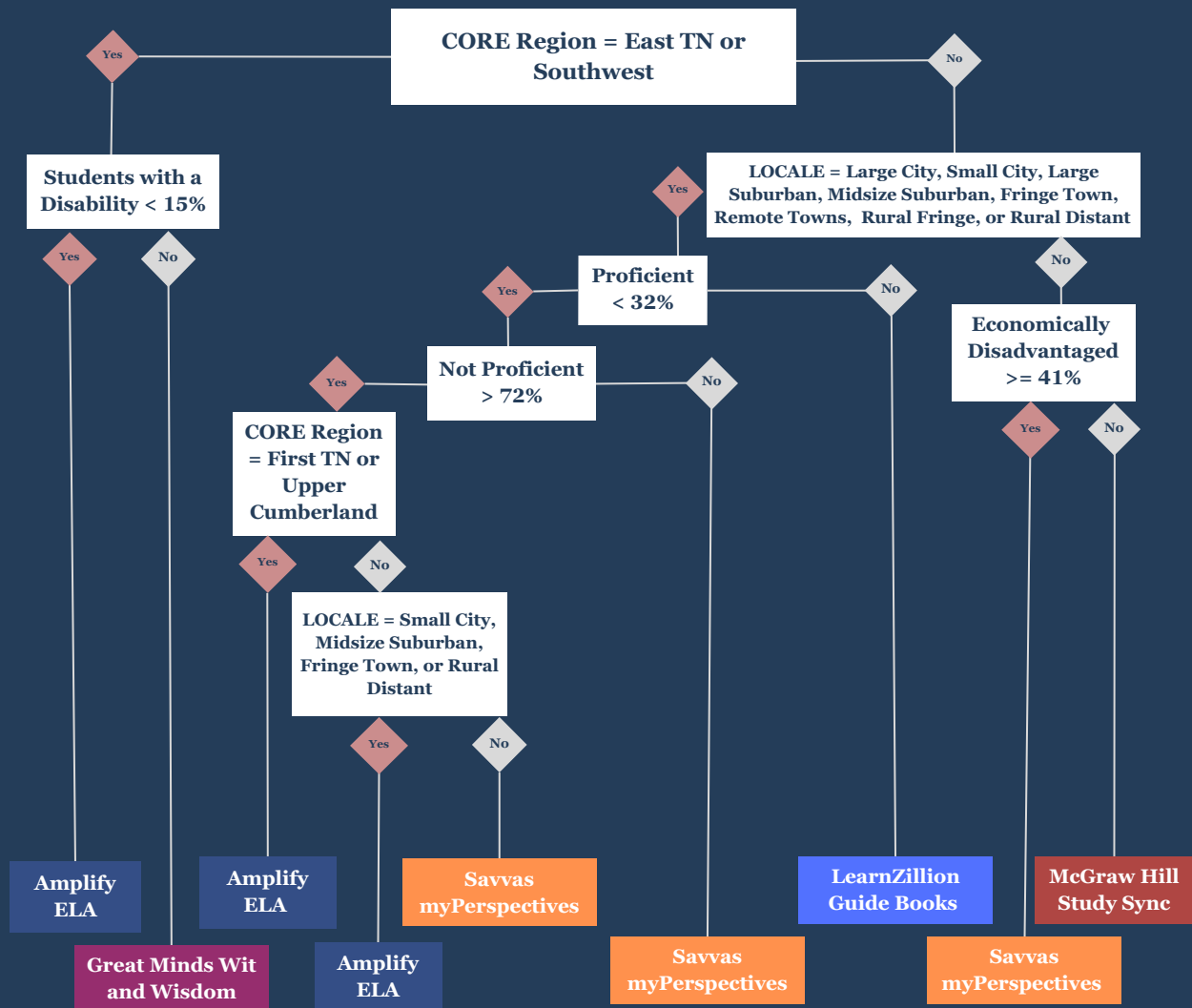
The first CART model tested for the 6-8 grade band included all applicable predictor variables, including the HQIM adopted in Grades 9-10. The variables that were identified as important to the HQIM decision included: the materials adopted in Grades 9-10, CORE region, percentage of Black/Hispanic/Native American students, total number of students in the district, primary geographical locale, percentage of economically disadvantaged students, and percentage of students reading proficiently. This model had a total prediction accuracy of 51% ($\kappa = .39$ after correcting for chance). However, it did not predict districts with a “blanket adoption” (n = 3), Open Up Expeditionary Learning (n = 2), Wiley Paths to College and Career ELA (n = 4), Great Minds Wit and Wisdom (n = 9), or multiple materials (n = 11).

Although the consistency of HQIM between the 6-8 and 9-10 grade bands was lower than was found for elementary, 41% of the districts still adopted the same materials in both middle and high school. To remove the influence of a common adoption across the secondary grades from the prediction, a model was estimated that removed the variable for the Grades 9-10 HQIM and excluded the outlier districts that adopted Open Up Expeditionary Learning (n = 2) and Wiley Paths to College and Career (n = 4).

This model also removed the districts that had a “blanket adoption” (n = 3) and those that adopted multiple materials (n = 11). The variables included were: CORE region, geographical locale, percentage of students with a disability, percentage of students reading proficiently, percentage of economically disadvantaged students, percentage of students not reading proficiently, number of students in Grades 6-8 in the district, total number of students in the district, district performance rating, percentage of students identified as English learners, and percentage of Black/Hispanic/ Native American students. The total prediction accuracy was 51% ($\kappa = .37$ after correcting for chance). However, the model did not predict districts that adopted HMH Into Literature (n = 7).



Figure 3. Final Decision Tree for HQIM Adoption in Grades 6-8





The resulting decision tree (see Figure 3) shows that the characteristic at the starting point was whether a district was in either the East Tennessee or Southwest CORE. One pathway for the districts that were in these CORE regions indicated that those with fewer than 15% of students with a disability adopted Amplify ELA, whereas those with more students with a disability adopted Great Minds Wit and Wisdom.

Districts included in this model that were along the right pathway of the tree were in the First Tennessee, Mid Cumberland, Northwest, South Center, Southeast, or Upper Cumberland CORE regions. The patterns of adoption then diverged by primary geographic location and predicted adoption of four different HQIMs. For example, districts that were in midsize cities, small suburbs, distant towns, or rural remote areas with 41% or more of their students identified as economically disadvantaged adopted Savvas myPerspectives. Those on this pathway with fewer students identified as economically disadvantaged adopted McGraw Hill Study Sync.

Remember that two HQIMs were not included in this model (Open Up Expeditionary Learning, Wiley Paths to College and Career) and one HQIM was not predicted by this model (HMH Into Literature). Although these accounted for relatively few adoptions (13 districts total), when added to the 14 districts whose HQIM adoptions were missing from the state data, the unaccounted-for data totaled about 19% of the districts in the state. Thus, the characteristics and the patterns they form could differ if more data could be included.

CART RESULTS FOR GRADES 9-10 HQIM ADOPTION

The first CART model tested for the 9-10 grade band included all applicable predictor variables, including the HQIM adopted in Grades 6-8. The variables that were identified as important to the HQIM decision included: the materials adopted in Grades 6-8, CORE region, percentage of Black/Hispanic/Native American students, primary geographical locale, and the state performance rating of the district. This model had a total prediction accuracy of 70% ($\kappa = .40$ after correcting for chance). However, it did not predict districts with a “blanket adoption” (n = 4), Wiley Paths to College and Career ELA (n = 1), College Board SpringBoard (n = 6), EMC Mirrors and Windows (n = 3), or adopting multiple materials (n = 2).

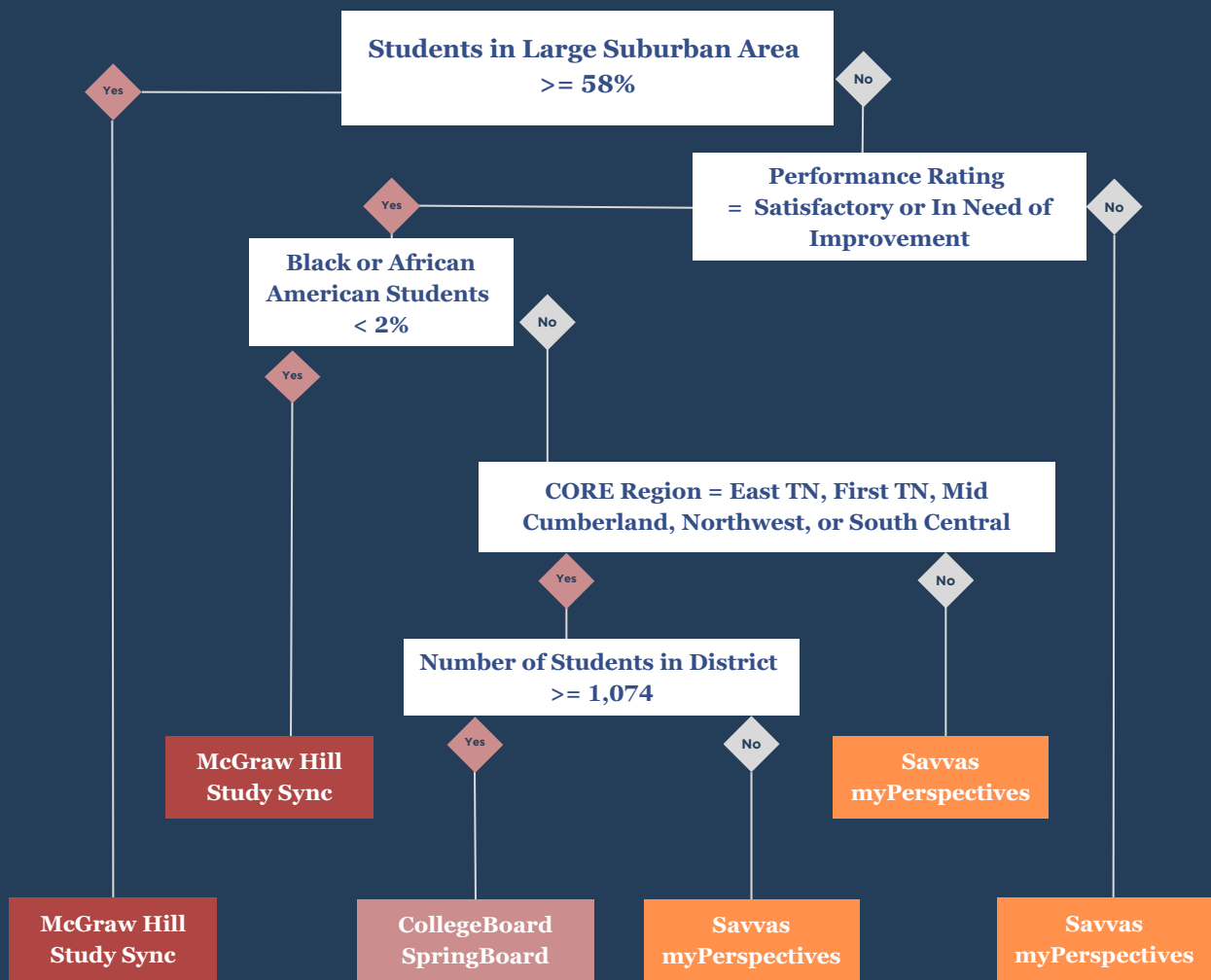
As noted previously, 41% of the districts adopted the same materials in both middle and high school. To remove the influence of a paired middle and high school adoption from the prediction of the Grades 9-10 HQIM, a model was estimated that removed the variable for the Grades 6-8 HQIM. This included the variables: percentage of students in a large suburban area, district performance rating, percentage of Black or African American students, CORE region, and number of Grades 9-10 students in the district. The total prediction accuracy was 68% ($\kappa = .32$ after correcting for chance).

However, the model did not predict districts that adopted Wiley Paths to College and Career ELA (n = 1), “blanket adoption” (n = 4), EMC Mirrors and Windows (n = 3), HMH Into Literature (n = 9), or districts that adopted multiple materials (n = 2). Each of these represents a small number of districts, but a larger number of districts were missing from the adoption data (n = 31).

The resulting decision tree (see Figure 4) shows that the characteristic at the starting point was whether 58% or more of the students resided in a large suburban area. Districts included in the model who were on the “yes” pathway for this characteristic adopted McGraw Hill Study Sync. This HQIM also was predicted when there were fewer students residing in a large suburban area if the district also had a performance rating of Satisfactory or In Need of Improvement and fewer than 2% of students identified as Black or African American. Most other pathways in the tree indicated Savvas myPerspectives was adopted.



Figure 4. Final Decision Tree for HQIM Adoption in Grades 9-10



It is important to note that, together, the unaccounted-for data totaled 50 districts compared to the 95 districts included in this model. The latter adopted one of three HQIMs: College Board SpringBoard (n = 6), McGraw Hill Study Sync (n = 16), and Savvas myPersepctives (n = 73). As was noted in the Grades 6-8 results, CART analysis for Grades 9-10 that could include more data likely would reveal different characteristics and resulting patterns of adoption.



Summary of All Findings

Based on data obtained in fall 2022, the evaluation of HQIM adoption patterns revealed several key findings. First, there were variations across grade bands, with certain materials being more frequently adopted than others. Amplify CKLA and Benchmark Advance emerged as popular choices for Grades K-2 and 3-5, whereas Savvas myPerspectives was commonly adopted for Grades 6-8 and 9-10. Consistency in HQIM adoption across grade bands indicated that the greatest consistency occurred between K-2 and 3-5 grade bands, followed by 6-8 and 9-10 grade bands. Only four districts adopted the same HQIM across all grade bands, and 12 districts did not adopt the same HQIMs in any two or more of the grade bands. The latter suggests that instructional approaches may have varied across grades, which could present challenges to maintaining continuity for students. The number of missing district adoptions in the upper grade bands and possible changes to adoptions across grade levels that occurred after data were obtained in fall 2022 could mean that the potential issue is overstated. Therefore, subsequent evaluation analyses will rely upon updated data and consider the role that consistency of HQIM might play in students' reading performance across time.

Given the differences in HQIM adoptions across districts, the CART analyses explored potential associations between HQIM adoption and various district characteristics. After removing the influence of HQIM adoptions in neighboring grade bands, several variables were common in the patterns of adoption identified.

These included: CORE Region, primary geographic location of the district, some student demographics, students' reading proficiency levels, and other materials implemented. However, it is important to note that the specific variables and combinations of variables forming the pathways were different within and across the grade bands. Moreover, the CART analyses were based solely on quantitative data, and the specific decision-making process and qualitative factors considered by districts were not directly captured. Finally, just because two districts may have adopted the same HQIM does not necessarily mean that those materials were implemented in the same way. Additional information is needed to understand the variations in how districts prepare for and support the implementation of HQIMs.

This evaluation provides a descriptive overview of the HQIM adoption landscape in Tennessee and sets the stage for future analyses associating HQIMs with students' year-to-year reading growth. The findings highlight the need for further investigation into the reasons behind district choices, ways in which the materials are implemented, and the impact of different HQIM on student outcomes.

Appendix

Tables 3, 4, 5, and 6 present the sensitivity, specificity, and balance accuracy for the final CART model by grade band. *Sensitivity*, also known as the true positive rate, measures the proportion of positive cases (actual HQIM adoptions, in this case) correctly detected by the model. *Specificity*, also known as the true negative rate, measures the proportion of negative cases (HQIMs that were not adopted, in this case) correctly identified by the model. *Balance accuracy* is the arithmetic mean of sensitivity and specificity. Balance accuracy can be a better judge of performance when one class (i.e., HQIM) appears more frequently than other classes.

Table 3. Sensitivity and Specificity Results for the HQIM in the Grades K-2 CART Model

| HQIM | Sensitivity | Specificity | Balance Accuracy |
|-------------------------------------|-------------|-------------|------------------|
| Amplify CKLA | 0.786 | 0.826 | 0.806 |
| Benchmark Advance | 0.444 | 0.905 | 0.675 |
| HMH Into Reading | 0.636 | 0.940 | 0.788 |
| LearnZillion Expeditionary Learning | 0.571 | 0.959 | 0.765 |
| McGraw Hill Wonders | 0.571 | 0.876 | 0.724 |
| Open Up Expeditionary Learning | 0.571 | 0.975 | 0.773 |

Table 4. Sensitivity and Specificity Results for the HQIM in the Grades 3-5 CART Model

| HQIM | Sensitivity | Specificity | Balance Accuracy |
|-------------------------------------|-------------|-------------|------------------|
| Amplify CKLA | 0.962 | 0.907 | 0.934 |
| Benchmark Advance | 0.744 | 0.971 | 0.858 |
| HMH Into Reading | 0.250 | 0.970 | 0.610 |
| LearnZillion Expeditionary Learning | N/A | 0.951 | N/A |
| LearnZillion GuideBooks | 0.333 | 0.956 | 0.644 |
| McGraw Hill Wonders | 0.640 | 0.983 | 0.812 |
| Open Up Expeditionary Learning | 0.545 | 0.955 | 0.750 |
| Waiver | N/A | 0.986 | N/A |
| Great Minds Wit and Wisdom | 0.636 | 0.943 | 0.789 |

Note. N/A indicates the HQIM was not predicted by the model and thus the statistics cannot be calculated.

Table 5. Sensitivity and Specificity Results for the HQIM in the Grades 6-8 CART Model

| HQIM | Sensitivity | Specificity | Balance Accuracy |
|--|-------------|-------------|------------------|
| Amplify ELA | 0.500 | 0.873 | 0.687 |
| HMH Into Literature | N/A | 0.937 | N/A |
| LearnZillion Guidebooks | 0.300 | 0.901 | 0.601 |
| McGraw Hill Study Sync | 0.412 | 0.904 | 0.658 |
| Savvas myPerspectives | 0.697 | 0.821 | 0.759 |
| Great Minds Wit and Wisdom | 0.364 | 0.950 | 0.657 |
| <i>Note.</i> N/A indicates the HQIM was not predicted by the model and thus the statistics cannot be calculated. | | | |

Table 6. Sensitivity and Specificity Results for the HQIM in the Grades 9-10 CART Model

| HQIM | Sensitivity | Specificity | Balance Accuracy |
|---|-------------|-------------|------------------|
| Wiley Paths to College and Career ELA | N/A | 0.991 | N/A |
| Blanket adoption | N/A | 0.965 | N/A |
| College Board SpringBoard | 0.375 | 0.972 | 0.673 |
| EMC Mirrors and Windows | N/A | 0.974 | N/A |
| HMH Into Literature | N/A | 0.921 | N/A |
| McGraw Hill Study Sync | 0.389 | 0.906 | 0.648 |
| Savvas myPerspectives | 0.761 | 0.769 | 0.765 |
| N/A | N/A | 0.982 | N/A |
| <i>Note.</i> N/A indicates the HQIM was not predicted by the model and thus the statistics cannot be calculated. “Blanket adoption” means that the district identified all the HQIMs on the approved list would be adopted. | | | |



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