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IQB Trends in Student Achievement 2022

The Third National Assessment
of Language Proficiency
at the End of Ninth Grade

Summary

WAXMANN

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This summary and the references contained herein reference the study report for the IQB Trends in Student Achievement 2022:

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The IQB Trends in Student Achievement 2022

1. Introduction to the study

The IQB Trends in Student Achievement provide a periodical review of the extent to which students in Germany are meeting the proficiency goals set under the educational standards of the Standing Conference of the Ministers of Education and Cultural Affairs of the States in the Federal Republic of Germany (KMK). In the language subjects German, English and French, these studies are performed in secondary level I at the end of the ninth grade. The IQB Trends in Student Achievement 2022 marks the third survey of key proficiencies in these subjects, following the IQB National Assessment in 2009 and the IQB Trends in Student Achievement in 2015.

When interpreting the findings, it should be pointed out that the target population of the IQB Trends in Student Achievement 2022 was affected by the severe restrictions on school operations instituted in recent years due to the coronavirus pandemic. In March 2020, when it was first decided to close schools in Germany, the students who participated in the study were enrolled in the 7th grade. This was followed by alternation between classroom and distance instruction, between instruction in smaller groups and instruction of the entire class, which is likely to have had a significant impact on the students' learning trajectories. Hence, it is safe to assume that the results achieved by the ninth graders in the proficiency tests administered in connection with the study also reflect, to some extent, the effects of the pandemic-related restrictions on school operations in Germany.

The evaluations that underlie the IQB Trends in Student Achievement 2022 have two areas of focus. The first concerns the extent to which the proficiency goals set by the KMK were met at the level of the federal states (Länder) in 2022 (distribution of students across the levels of proficiency). Specifically, the evaluations report the percentages of the total population of ninth-graders who do not meet the minimum standards for the first school leaving certificate (ESA)¹, on the one hand, and the minimum standards for the secondary school leaving certificate (MSA), on the other. For those ninth-graders aspiring to achieve at least the MSA, the evaluations also show the percentages of students who fall short of the minimum standards for the MSA, those who reach or exceed the normative standards for the MSA and those who reach the optimal standards for the MSA. The second focus of the evaluations is to address the extent to which the results have changed over time (trend), with results available for three survey dates: 2009, 2015 and 2022. The trend analyses focus on changes in the proficiency levels achieved by ninth-graders in the periods 2009–2015 and 2015–2022. A comparison of the results for these periods can also offer indications of the extent to which changes that occurred between 2015 and 2022 reflect the possible effects of pandemic-related restrictions on school operations, or whether they also represent a continuation of trends that had already

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- 1 The Standing Conference has now begun using the term “First school leaving certificate [Erster Schulabschluss]” (ESA) in lieu of “Lower secondary school leaving certificate [Hauptschulabschluss]” (HSA). This change has been incorporated in the study report for the IQB Trends in Student Achievement 2022.
 - 2 The IQB Trends in Student Achievement studies regularly provide an inventory of metrics indicative of the degree to which educational standards are being met. Therefore, the trend analyses are comparisons of the results of cross-sections of different cohorts of students. While these offer reliable indications of emergent problem situations, they cannot be interpreted in a causal way. Changes are always the outcome of a complex interplay of a variety of conditions that might reflect not only the effects of crises such as the coronavirus pandemic but also changes in the composition of the student body, ongoing developments in curricular requirements, changes in school organization, etc.

begun between 2009 and 2015. Given the design of the study, however, it is not possible to ascribe changes that have occurred over time to specific causes in any clear way.²

Another analytical focus of the IQB studies relative to educational monitoring concerns the extent to which differences in students' proficiencies correlate with certain background characteristics. The studies investigate differences in proficiency between girls and boys (gender disparities), correlations between social background characteristics and the proficiency levels attained (social disparities) and performance differences between adolescents from immigrant families and adolescents without an immigration background (immigration-related disparities). While it is unrealistic to expect an educational system to completely reconcile dissimilar initial conditions, it remains a generally accepted aim of education policy to reduce the disparities associated with students' background characteristics to the greatest extent possible. With this in mind, the results of the three surveys from 2009, 2015 and 2022 were compared in an effort to identify the extent to which these disparities had evolved.

The IQB Trends in Student Achievement 2022 study also considered in greater depth the individual questions that affect not just the results of teaching and learning processes but also the key conditions that these processes entail. As mentioned at the outset, the coronavirus pandemic led to a shift in one central framework condition of the processes of school education that had previously seemed self-evident: Over longer periods of time, instruction did not occur exclusively in a face-to-face classroom setting. In order to at least begin to take this drastic change into account, the surveys of school administrators, teachers and students identified a variety of aspects implicated in distance learning and in at-home learning conditions. Alongside a description of the survey results, these aspects were also factored into analyses of the proficiency levels achieved – including analyses of social and immigration-related disparities. The survey also examined motivational characteristics of the ninth-graders (subject-related self-concepts and interests), characteristics of teaching quality in the subject German and aspects of the education and training of teachers of German and English.

In what follows, after presenting some background information on the IQB Trends in Student Achievement 2022, we present figures and tables of the main results of the study for the subjects German and English³ along with a concise summary.

Proficiency tests and questionnaires

- In the subject German, test items were used for the domains *reading*, *listening* and *orthography* as defined in the educational standards of the Standing Conference.
- In the subject English, test items were used in the proficiency domains *reading comprehension* and *listening comprehension*.
- All of the test items were developed under the oversight of the IQB by teachers from throughout Germany who had been trained and advised by experts in teaching methodology and educational research. The test items were extensively tested prior to their use in the IQB Trends in Student Achievement.
- Following the tests, students completed a questionnaire. Questionnaires were also presented to the parents of the adolescents who took part in the study, to their teachers of German and English and to school administrators. The questionnaires for parents and students offered a particularly useful source of information on the socio-demographic characteristics of adolescents and their families and on a variety of learning conditions that are central to the reporting.

³ The subject French was only included in the IQB Trends in Student Achievement 2022 in six of the states; given the special composition of the student body, it was not possible to make cross-state statements about the results. Consequently, the subject French will not be addressed further in this summary.

Target populations and samples

- The IQB Trends in Student Achievement 2022-study is designed to generate statements about students in the 9th grade, both throughout Germany as a whole and in the individual German states. The target population in the subject German comprises all ninth-graders in regular schools, including schools for special education. The only students excluded from this target population are those with special educational needs in the area “mental development” and students who had received less than one year of instruction in German at the time the test was administered.
- The target population in the subject English is largely similar to the target population in the subject German, except that the results for English only refer to those ninth-graders who had received continuous instruction in the subject English since no later than the 5th grade.⁴ This was true for nearly all of the ninth-graders in regular schools. Exceptions to this exist mainly in special needs schools in several of the German states, and in regular schools in the state of Saarland.
- To map the target populations, representative samples were generated based on a multi-stage, random selection process in which, for reasons of the feasibility of surveys under test conditions at special education schools, only children with special educational needs in the areas “learning,” “language” and “emotional and social development” were considered.
- The evaluations for the subject German draw on data from a total of 32,990 ninth-grade students from 1,610 schools. Most of these students were also presented with test items in the subject English; the analyses on the subject English are based on data from 31,159 students from 1,542 schools.

Participation rates⁵

- In public schools, participation in the proficiency tests for the IQB Trends in Student Achievement 2022 was mandatory. Participation in the tests was voluntary for some private schools, on the other hand, depending on the legal specifications in the states.
- Test sessions on the subjects German and English were carried out at a total of 97 percent of the schools selected for the sample in Germany as a whole. School participation is also high in the individual states, with participation of at least 89 percent in each state.
- The rate of student participation in the proficiency tests is around 90 percent in Germany as a whole, with rates of at least 82 percent in the individual states.
- By contrast, rates of participation for students and their parents are lower and vary more widely between states, as completing the questionnaires was voluntary for students in some states and for parents in all states. After combining key socio-demographic data from the survey of students and parents, these data being particularly important for the analyses of social and immigration-related disparities (e.g., parental occupation and education, the country of birth of adolescents and their parents), this portion of the survey resulted in a participation rate of roughly 82 percent nationwide. The rate was less than 80 percent in four states, however.
- As in 2009 and 2015, for some states the reliability of the results for social and immigration-related disparities is thus significantly limited in the IQB Trends in Student Achievement 2022 owing to a lack of responses. Consequently, reports of these results are impossible or incomplete or must be interpreted with caution. The results indicate which states and analyses are affected by this.

4 It is assumed that the Standing Conference’s educational standards for the first foreign language apply to ninth-graders who have received five or more years of English instruction.

5 The rates of participation indicated here are weighted rates and reflect the proportion of the population represented by the sample.

2. Notes on the presentation and interpretation of the findings

Reporting metric (point scale)

- The reporting metric was chosen in the individual proficiency domains for the subject German in such a way that in 2015 it had a mean value of $M = 500$ points and a standard deviation of $SD = 100$ points in the overall population of ninth-grade students in Germany.
- For the subject English as well, a mean value of $M = 500$ points and a standard deviation of $SD = 100$ points were set for 2015, with these values applied to those ninth-graders who had received instruction in the subject English since the fifth grade at the latest.

Proficiency levels and their relationship to school leaving qualification

- The substantive interpretation of the students' test performance is based on models of proficiency levels that can be used to describe the requirements that students are in a position to fulfill if they have achieved a certain test result.
- These models also make it possible to determine the extent to which adolescents' proficiency levels meet the targets defined in the educational standards and proficiency-level models in the respective subject and domain of proficiency (minimum standard, normative standard, normative standard plus, optimal standard). With this in mind, students' test scores are assigned to the respective proficiency levels (cf. Table 1.1).
- Because secondary level I entails educational standards for two school qualifications, a distinction must be made between proficiency expectations for the ESA and proficiency expectations for the MSA. Accordingly, the proficiency-level models for the subjects German and English specify different minimum, normative and optimal standards for these two qualifications.
- This is taken into account in the analyses, first through an examination of the extent to which *all* ninth-graders of the respective target population a) meet the minimum standards for the ESA and b) meet the minimum standards for the MSA.⁶
- A second analytical step shows the extent to which the minimum, normative and optimal standards for the MSA are met in the subpopulation of ninth-graders who aspire to achieve at least the MSA (MSA population).⁷
- All of the analyses of achievement of educational standards excluded those ninth-grade students with special educational needs who were pursuing an *alternative curriculum*, as they are subject to learning objectives different from those defined in the educational standards.

6 The relevance of the minimum standards for the ESA stems from the fact that these standards comprise proficiency goals that *all* students should meet by the test date at the end of the 9th grade. Above and beyond this, it is helpful to study the rate of achievement of minimum standards for the MSA for all ninth-graders. In school tracks that lead to the ESA, for example, it is often possible to acquire the MSA directly afterwards, which is increasingly regarded as a standard qualification. The ninth-graders tested as part of the IQB Trends in Student Achievement 2022 still have one year to meet the MSA standards, however. This should be taken into account when interpreting the results.

7 The advantage of this presentation is that it retains the relationship to the school leaving qualification, as only those students who actually aspire to the qualification of the MSA are measured against the requirements for the MSA. Still, when interpreting state differences in these results, it should be noted that the share of students pursuing the MSA or a higher qualification varies between states.

Table 1.1: Proficiency-level models and standards in secondary level I in the subjects German and English

Proficiency level	Test score			Standard ESA	Standard MSA
	German Reading	German Listening	German Orthography		
V	from 660	from 630	from 640		Optimal standard
IV	580–659	550–629	550–639	Optimal standard	Normative standard plus
III	500–579	460–549	460–549	Normative standard plus	Normative standard
II	420–499	390–459	390–459	Normative standard	Minimum standard
Ib	350–419	320–389	310–389	Minimum standard	
Ia	below 350	below 320	below 310		
	English Reading comprehension	English Listening comprehension			
C1	from 700	from 740			Optimal standard
B2.2	650–699	675–739			
B2.1	600–649	610–674		Optimal standard	Normative standard plus
B1.2	550–599	545–609			Normative standard
B1.1	500–549	480–544			
A2.2	450–499	415–479		Normative standard plus	Minimum standard
A2.1	400–449	350–414		Normative standard	
A1.2	350–399	285–349		Minimum standard	
A1.1	below 350	below 285			

Notes. ESA = First school leaving certificate; MSA = Secondary school leaving certificate.

Mean proficiencies

- In addition to the analyses relating to proficiency levels, mean values were calculated based on the reporting metric (score scale) and indicate which proficiencies the students have acquired on average. Furthermore, dispersion measures were calculated to describe the degree of variance between students with respect to the proficiency levels achieved.
- The evaluations of the mean values and standard deviations of the proficiency levels achieved relate to the total population of ninth-grade students, including adolescents with special educational needs in regular schools and in schools for special education, regardless of whether the instruction they received was based on educational standards or was provided in pursuit of other educational goals.⁸

⁸ For the subject English, however, the restriction applies here, too, that the analyses only include those ninth-graders who received English instruction since 5th grade or earlier.

- Given the higher numbers of cases that underlie the individual significance tests in the comparisons of means, there are more differences in statistical significance involved in these analyses than in the comparisons in achievement of educational standards.
- The expected increase in learning over the course of a school year can be enlisted to provide a substantive classification of differences in mean proficiencies. Corresponding estimates indicate that the increase in learning in the subject German achieved at the end of secondary level I between the 9th and 10th grades accounts for around 20 points in *reading*, roughly 15 points in *listening* and approx. 15 points in *orthography* as well on the reporting metric. In the subject English, between the 9th and 10th grades, one can expect an increase in learning of about 40 points each in *reading comprehension* and *listening comprehension*.⁹
- Standardized mean differences or effect sizes (d) can also be calculated. These create a context for the differences identified in two groups' common standard deviation. This indicator can be used to facilitate direct comparisons of group differences, even if the dispersion of the values in the groups varies. There is a broad consensus that statistically significant differences starting at a value of $d = 0.20$ are not negligible.

Significance tests

- All of the parameters identified in the analyses are based on random samples. Accordingly, any conclusions about the overall target population always involve a certain degree of uncertainty.
- Statistically significant differences and trends are labeled as such in the results. Most analyses are based on very large numbers of cases; here, even very small differences can reach a level of statistical significance. When considering small subpopulations, on the other hand, it may occur that even relatively large differences are not statistically significant.
- Even if no reliable substantive interpretation is possible in the case of non-significant results, any signs of trends in patterns of results should not be ignored, particularly if major differences are found in different analyses.

Interpretation of trends

- When interpreting the trend analyses, it should be noted that in 2009 – in contrast to 2015 and 2022 – no schools of special education were included in the survey, and that consequently the target populations described above cannot be fully mapped for 2009 with respect to the subjects German and English.
- Consequently, analyses of changes in the proficiency levels achieved between 2009 and 2015 must not take students with special educational needs into account. For the period 2015–2022, on the other hand, statements can be made about the complete target populations, including students with special educational needs in regular schools and in schools for special education.
- Thus, the relevant presentation of results offers two values for 2015 that are relevant for the trend for the periods 2009–2015 (*excluding* students with special educational needs) and 2015–2022 (*including* students with special educational needs). Although the results of the trends mentioned are not directly comparable with one another, calculations for 2015 and 2022 suggest that excluding students with special educational needs does not lead to fundamentally different patterns of results. Hence, in spite of the limitations described, it is acceptable for the analyses of trends to compare the developments between 2009 and 2015, on the one hand, and 2015 and 2022, on the other.

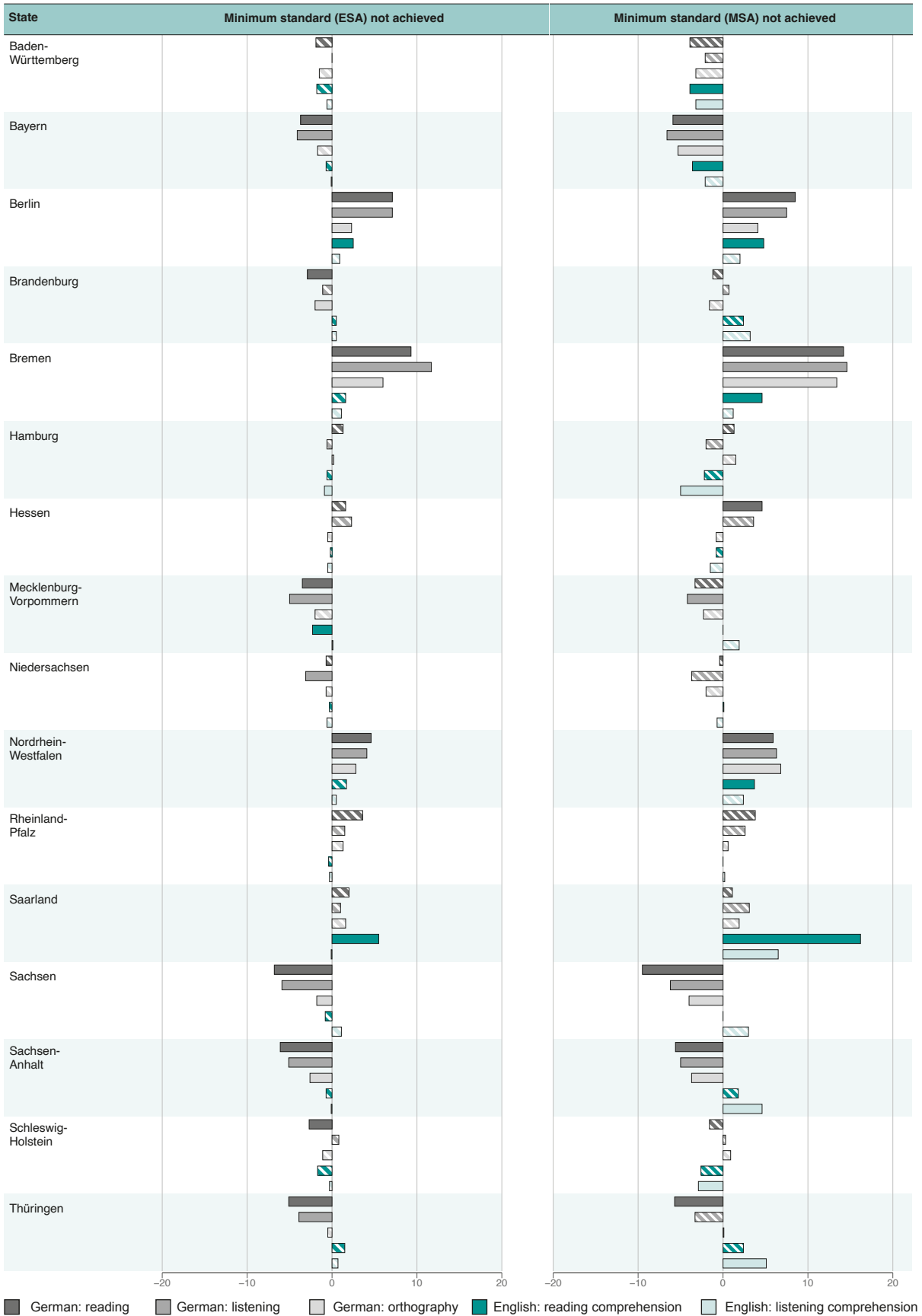
⁹ These values only provide a rough orientation, however. It should be pointed out specifically that learning gains over the course of secondary level I are not constant. For instance, it can be assumed that, on average, significantly greater learning gains are observed in the subjects of both German and English at the beginning of secondary level I than at the end of secondary level I.

3. Achieving the educational standards in the states

3.1 Achieving the educational standards in 2022

- Of the **total population** of ninth-graders in German schools, in the subject German, the minimum standards for the ESA / MSA are missed by roughly 15 / 33 percent of students in the domain of *reading*, nearly 18 / 34 percent of students in the domain of *listening* and around 8 / 22 percent of students in *orthography*. Among the **MSA population**, nearly 49 percent of students meet or exceed the normative standard for the MSA in *reading*, around 53 percent of students in *listening* and fully 65 percent of students in *orthography*.
- The results for English are much better. In that subject, in Germany as a whole, nearly 9 / 24 percent of ninth-graders (total population) fall short of the minimum standard for the ESA / MSA in *reading comprehension* and around 2 / 14 percent in *listening comprehension*. In the **MSA population**, nearly 60 percent of students achieve or exceed the normative standard for the MSA in *reading comprehension* and almost 63 percent of students in *listening comprehension*.
- Figure 3.1 provides an overview of the extent to which, among the total population of ninth-graders, the percentages of students who fall short of the respective minimum standard for the ESA or MSA differ in the individual states from the respective value identified for Germany as a whole. Figure 3.2 presents the corresponding results for the MSA population, indicating the percentages of students who fall short of the minimum standards for the MSA, who meet or exceed the normative standards for the MSA or who meet the optimal standards. Bars that point to the right show that the percentage in the respective state is greater than in Germany as a whole; if a bar points to the left, that shows that the percentage for the state in question is lower than the nationwide percentage.
- In the subject German, the states of Bayern and Sachsen have particularly strong results when compared to Germany. The entire cohort of ninth-graders in Sachsen-Anhalt, and in some cases in Mecklenburg-Vorpommern and Thüringen as well, is also particularly successful in meeting the minimum standards in German. Particularly weak results in the subject German are registered almost uniformly in Berlin, Bremen and Nordrhein-Westfalen. In the subpopulation of ninth-graders aspiring to the MSA, the results relative to the normative and optimal standards are also less favorable in Mecklenburg-Vorpommern than in Germany as a whole.
- In the subject English, meeting the minimum standards for the ESA shows a level of success across most states that is similar to the success rate for the total population of ninth-graders in Germany as a whole. Relative to the minimum standards for the MSA, on the other hand, in some cases the results are significantly better or significantly weaker than Germany-wide. Particularly striking deviations can be seen among the subpopulation of students who aspire to earn the MSA. In Bayern and Hamburg, these students achieve significantly better results than students nationwide, and the results in Rheinland-Pfalz and Schleswig-Holstein are also particularly good when compared to Germany as a whole. In the states of Berlin, Brandenburg, Mecklenburg-Vorpommern, Saarland, Sachsen, Sachsen-Anhalt and Thüringen, on the other hand, the deviations from the values for Germany as a whole are often unfavorable.

Figure 3.1: Percentages of ninth-graders in the states in 2022 who fail to meet the minimum standard for the ESA or the minimum standard for the MSA, expressed as a deviation from the respective percentage for Germany as a whole (in percentage points)



Note. Hatched bars indicate statistically non-significant differences.

Figure 3.2: Percentages of ninth-graders in the states in 2022 aspiring to achieve at least the MSA and fail to meet the minimum standard for the MSA, reaching or exceeding the normative standard for the MSA or reaching the optimal standard for the MSA, expressed as a deviation from the respective percentage for Germany as a whole (in percentage points)



Note. Hatched bars indicate statistically non-significant differences.

3.2 Changes in achievement of the educational standards (Trends)

- Figures 3.3 through 3.5 show the trend results for the periods 2009–2015 and 2015–2022. Bars pointing to the right indicate that the percentage of adolescents who fall short of or meet the corresponding standard in the respective state has increased during the period in question, while bars that point to the left indicate a decrease in that percentage.
- In the subject German, although the results had worsened slightly between 2009 and 2015 in Germany as a whole, the changes were not very large and were not consistent across states. The findings for the period 2015–2022, on the other hand, are unambiguous and largely consistent: The requirements associated with the educational standards in the subject German were met by a smaller share of ninth-graders in 2022 than in 2015.
- Throughout Germany, in the **total population**, between 2015 and 2022 the percentage of ninth-graders who fell short of the minimum standard for the ESA / MSA in the subject German increased by roughly 6 / 9 percentage points in *reading*, by some 10 / 16 percentage points in *listening* and by around 4 / 9 percentage points in *orthography*. In the **MSA population**, the share of students meeting at least the normative standard for the MSA fell by nearly 9 percentage points in *reading*, by fully 19 percentage points in *listening* and by almost 12 percentage points in *orthography*.
- Positive trends for the subject English had already been observed in the period 2009–2015; these continued and in some cases intensified in the period 2015–2022, both in Germany as a whole and in nearly all of the states. The overall pattern in these findings suggests that the results improved significantly between 2015 and 2022, especially in the medium and upper performance range, and remained largely unchanged in the lower performance range.
- In the **total population** in Germany, the percentage of students falling short of the minimum standard for the ESA in English increased by a good 1 percentage point in *reading comprehension* and showed no change in *listening comprehension*. The proportion of ninth-graders who fell short of the minimum standard for the MSA fell by nearly 3 percentage points in each of the two proficiency domains studied. In the **MSA population**, the percentages of students meeting or exceeding the normative standard increased significantly, rising by 11 percentage points in *reading comprehension* and by roughly 10 percentage points in *listening comprehension*.
- The trends vary mainly between the school subjects and less between the states, with significant variance across states in the resulting percentages of students falling short of the minimum standards or reaching the normative and optimal standards in 2022, depending on the baseline.

Figure 3.5: Changes in the percentages of ninth-graders in the states striving to achieve at least the MSA and reaching the optimal standard for the MSA (in percentage points)



4. Mean proficiencies

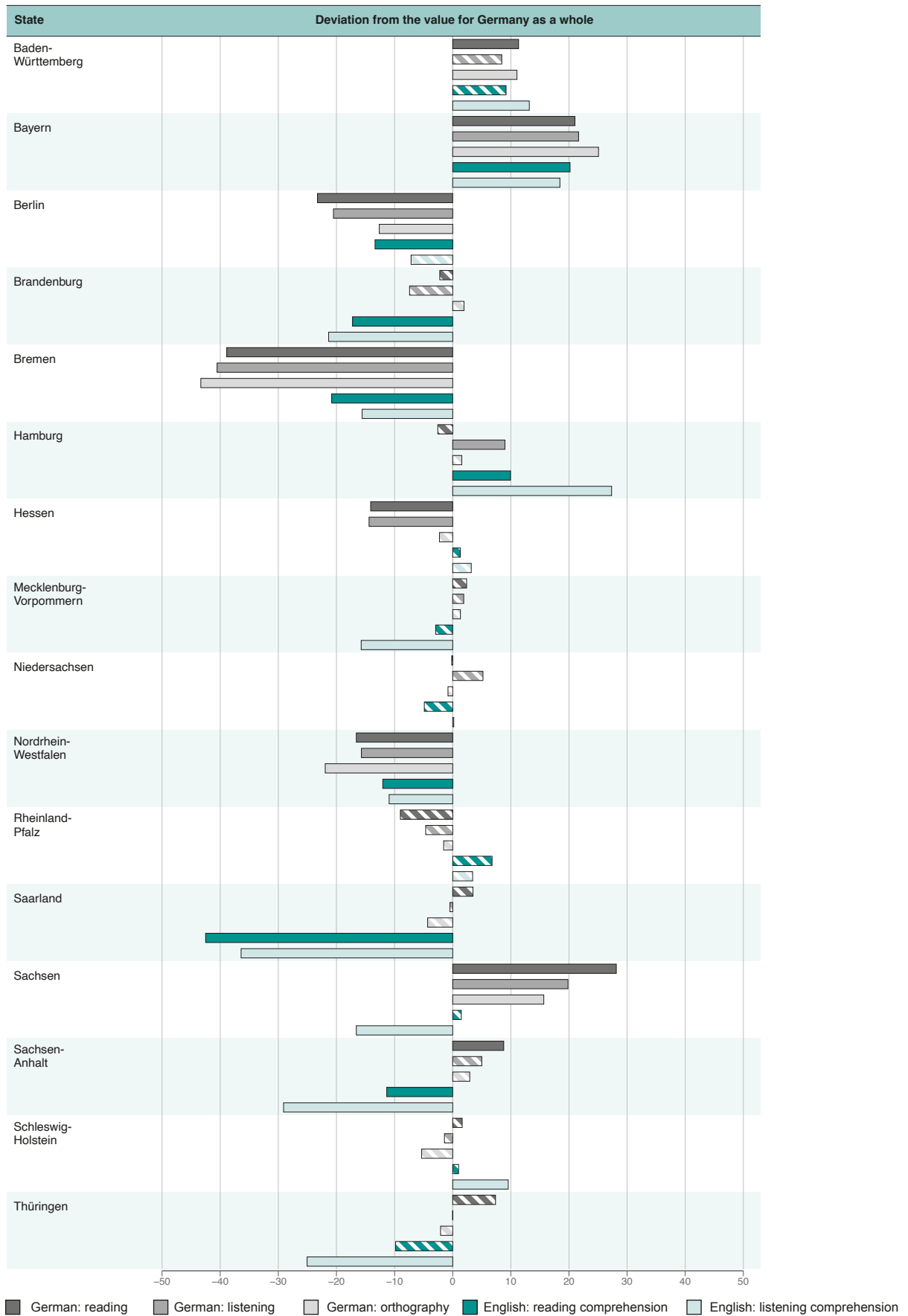
4.1 Mean proficiencies achieved in 2022

- In the subject German, the average proficiency scores achieved in 2022 in Germany overall stand at 475 points in *reading*, 456 points in *listening* and 469 points in *orthography*. In the subject English, the mean was 522 points in *reading comprehension* and 523 points in *listening comprehension*.
- Figure 4.1 shows the extent to which students' mean proficiency scores in the individual states deviate from the Germany-wide mean for 2022. As expected, the patterns of results are quite similar to those for achieving the educational standards (cf. Section 3).
- In the subject German, consistently significant positive deviations from the respective national mean can be seen in Bayern and in Sachsen. Mean values significantly higher than the German national average can be seen in multiple proficiency domains in the subject German in the state of Baden-Württemberg (in *reading* and *orthography* as well as in *listening comprehension* in the subject English) and in Hamburg (in *listening* in the subject German and in both proficiency domains in the subject English).
- By contrast, mean values are significantly lower than the national mean across the board in Bremen and Nordrhein-Westfalen, and nearly across the board in Berlin. In Hessen, significantly lower means are achieved in *reading* and *listening* in the subject German than those measured in Germany as a whole. In the field of *listening comprehension* in English, a lower level of proficiency is achieved in all of the eastern German states (except for Berlin) than in Germany as a whole; in the states of Brandenburg and Sachsen-Anhalt, this is also the case in the domain *reading comprehension*. Moreover, there are significantly lower levels of proficiency in Saarland in the subject English, in both *reading comprehension* and *listening comprehension*; these lower levels are also particularly pronounced.

Adjusted means

- For the IQB Trends in Student Achievement 2022 adjusted mean values were also calculated; this accounts for differences in the composition of the student body between the states and for changes between the survey dates.
- If, on average, central background characteristics (family socioeconomic status and cultural capital, immigration background, family language) were as pronounced in all states in 2022 as in Germany as a whole, the mean values for the states would tend to converge somewhat more closely. Such an adjustment has a substantial impact only in a handful of the states, however.

Figure 4.1: Deviations from the German national mean of the mean proficiency scores achieved by ninth-grade students in 2022 in the states (in points on the reporting metric)



4.2 Changes in mean proficiencies (Trends)

- Figure 4.2 shows the trend results for the average proficiency scores achieved for the periods 2009–2015 and 2015–2022.
- In the subject German, the mean values achieved in 2022 throughout Germany as a whole are significantly lower across all proficiency domains than they were in 2015 (*reading*: –25 points, *listening*: –44 points, *orthography*: –31 points).
- Even within the states themselves, there are significant negative trends in the subject German almost across the board for the period 2015–2022, with declines in *listening* being the most pronounced in most of the states. By contrast, changes in the subject German between 2009 and 2015 were much less uniform, and not all states were affected by downward trends. The changes between 2015 and 2022 are also considerably greater than the changes observed between 2009 and 2015.
- In the subject English, on the other hand, the trends are nearly all positive (*reading comprehension*: +22 points, *listening comprehension*: +23 points in Germany overall). Significant increases in English proficiency had already occurred between 2009 and 2015; in Germany, these increases were similar to those seen between 2015 and 2022.

Adjusted trends

- The negative trends in the subject German could have been expected even in the absence of changes in key background characteristics (family socioeconomic status and cultural capital, immigration background, family language) within the states between the survey dates of 2015 and 2022. Only some of the previously significant trends are no longer significant after the adjustment.
- Accordingly, in none of the states can the trends be attributed entirely to changes in the composition of the student body.

Figure 4.2: Changes in ninth-grade students’ mean proficiency scores in each state (in points on the reporting metric)



Note. Hatched bars indicate statistically non-significant differences.
 a Students with special educational needs are not included in the calculation.

5. Gender disparities

Gender disparities in 2022

- Across all of the domains studied, girls' mean proficiency scores in the subjects German and English are higher than boys' mean proficiencies (cf. Fig. 5.1).
- As in previous IQB studies, the girls' advantage in proficiency in the subject German is the greatest, at 49 points, in *orthography*. At 34 points, the gender disparity in 2022 is also particularly pronounced in *reading comprehension* in the subject English.
- Girls' lead in all proficiency domains is slightly less pronounced in college-preparatory secondary schools [Gymnasien] than it is in the overall population.
- The results at the state level are similar to the results for Germany as a whole.

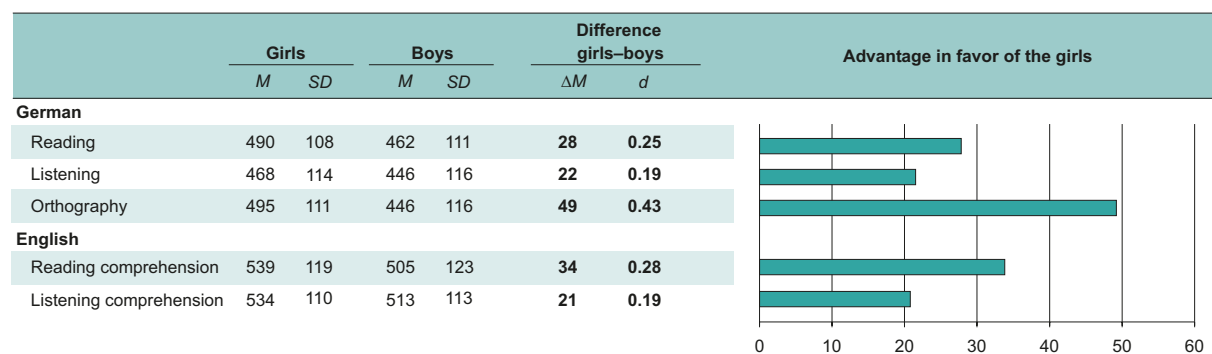
Trends in the proficiencies achieved by girls and boys

- Girls and boys are similarly affected by the developments described above (cf. Section 4). In the case of girls, unfavorable trends in the subject German emerge for the first time over the period 2015–2022, while in the case of boys, negative changes in *reading* and *listening* could already be seen in the 2009–2015 period. The positive trends in the subject English have continued for girls and boys over the two periods studied.
- The nationwide patterns in the findings also occur predominantly at the state level, although there are some exceptions (especially for the 2009–2015 trend).

Trends in gender disparities

- Gender disparities in the proficiency domains examined in the subject German remained largely unchanged in both periods, both in Germany as a whole and in most of the states.
- In terms of *listening comprehension* in the subject English, neither in Germany as a whole nor in most of the states are significant changes in gender disparities observable during the two periods. In *reading comprehension*, on the other hand, girls' lead in Germany as a whole increased significantly, by 13 points, in the period 2015–2022. The gender disparity in *reading comprehension* also increased in several states during one of the two periods studied.

Figure 5.1: Proficiency differences between boys and girls in the subjects German and English for Germany as a whole



Notes. The values in the table are rounded. As a result, the difference in mean values may deviate slightly from the difference presented (ΔM). *M* = mean; *SD* = standard deviation; ΔM = mean difference; *d* = effect size Cohen's *d*. Differences printed in bold type are statistically significant ($p < .05$). Solid bars indicate a statistically significant difference between girls and boys ($p < .05$).

6. Social disparities

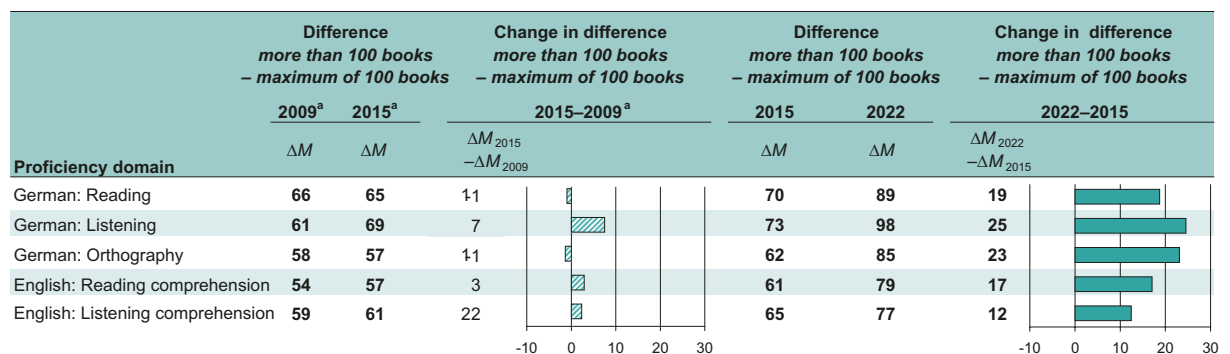
Socioeconomic status

- The correlation between the proficiency scores achieved by ninth-graders and their families' socioeconomic status, as determined by social gradients,¹⁰ is substantial across all proficiency domains, both in Germany as a whole and in all of the states as well. As in 2009 and 2015, students from families with a higher socioeconomic status achieve higher proficiency scores on average.
- In both subjects and all proficiency domains studied, the trend in Germany as a whole reveals a significant increase in the social gradients between the years 2015 and 2022, although these parameters held largely steady between 2009 and 2015.
- In nearly all proficiency domains, the social gradient was often significantly higher within the states between 2015 and 2022 than it was between 2009 and 2015.

Cultural capital

- The number of books in the household, which is considered an indicator of cultural capital – an additional aspect of social background – also correlates closely with the proficiency scores achieved. On average, students who grow up in households with larger holdings of books achieve higher proficiency scores in all proficiency domains (cf. Fig. 6.2 as well as Fig. 6.3 and 6.4). This is the case both throughout Germany as a whole and in all of the states.
- Across all proficiency domains, disparities associated with family book ownership were significantly higher in Germany overall in the period 2015–2022, whereas there were no significant changes observed in the period 2009–2015 (cf. Fig. 6.1). Significant changes in this respect between 2009 and 2015 were rare within the states as well.

Figure 6.1: Differences in mean proficiencies achieved in Germany overall, by the number of books in the household, in a comparison of 2009, 2015 and 2022



Notes. The values are rounded. Consequently, the difference shown between survey years may vary slightly from the difference in the individual values indicated. ΔM = Difference between students with more than 100 books in the household and students with a maximum of 100 books in the household; $\Delta M_{2015} - \Delta M_{2009} / \Delta M_{2022} - \Delta M_{2015}$ = Change in the difference between students with more than 100 books in the household and students with a maximum of 100 books in the household. Positive values for the respective survey year indicate proficiency advantages for students with more than 100 books in the household. In the trend, positive values and right-facing bars indicate an increase in mean difference.

^a Students with special educational needs are not included.

Differences printed in bold type are statistically significant ($p < .05$). Hatched bars indicate statistically non-significant differences.

¹⁰ Social gradients describe the linear relationship between family socioeconomic status and the proficiency scores that students achieved, with higher values indicating closer correlation between the two. More detailed information on the interpretation of social gradients can be found in Section 7 of the report.

Trends in the proficiencies achieved by adolescents from socially less privileged and from socially more privileged families

- Throughout Germany as a whole, the downturn in proficiency in the subject German is more pronounced among ninth-graders from families with less cultural capital than among ninth-graders from families with more cultural capital (cf. Fig. 6.3 as an indicator for the proficiency domain *reading*). Two main patterns of results can be distinguished at the state level for the period 2015–2022: (a) There is a downturn in proficiency in both groups considered, i.e. regardless of book ownership; and (b) only the group of adolescents with no more than 100 books in the household presents significant declines in proficiency, whereas the group of adolescents with more than 100 books in the home does not.
- The positive trends in the proficiency scores achieved in the subject English, which can be seen during the period 2015–2022, are much more pronounced among adolescents from families with more cultural capital than their counterparts from families with less cultural capital; this has led to a widening of the disparities in this subject of instruction as well. This can be seen for both *reading comprehension* (cf. Fig. 6.4) and *listening comprehension* in Germany as a whole and in most of the states.

Figure 6.2: Mean proficiency scores by number of books in the household in 2009, 2015 and 2022 in Germany as a whole

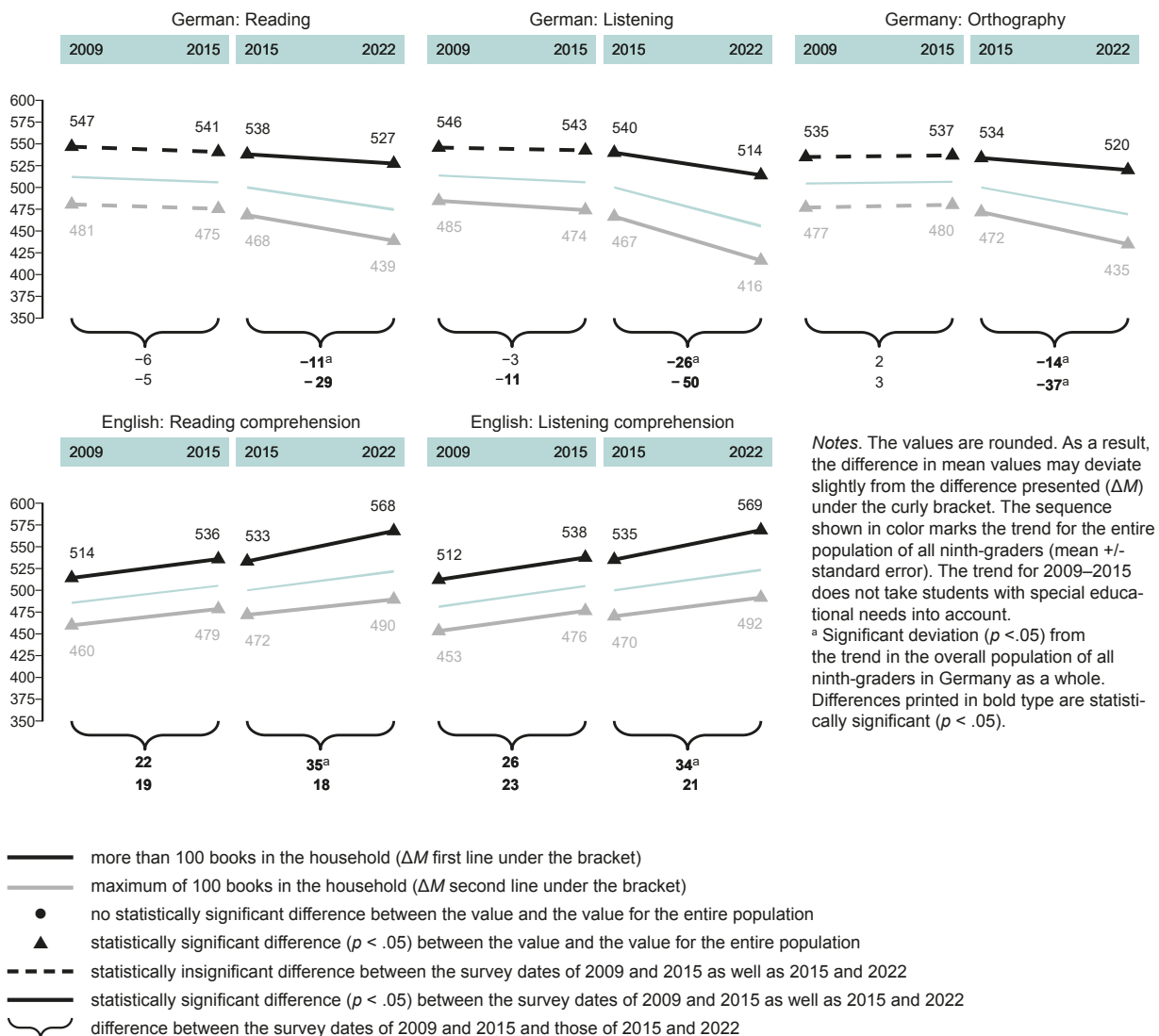
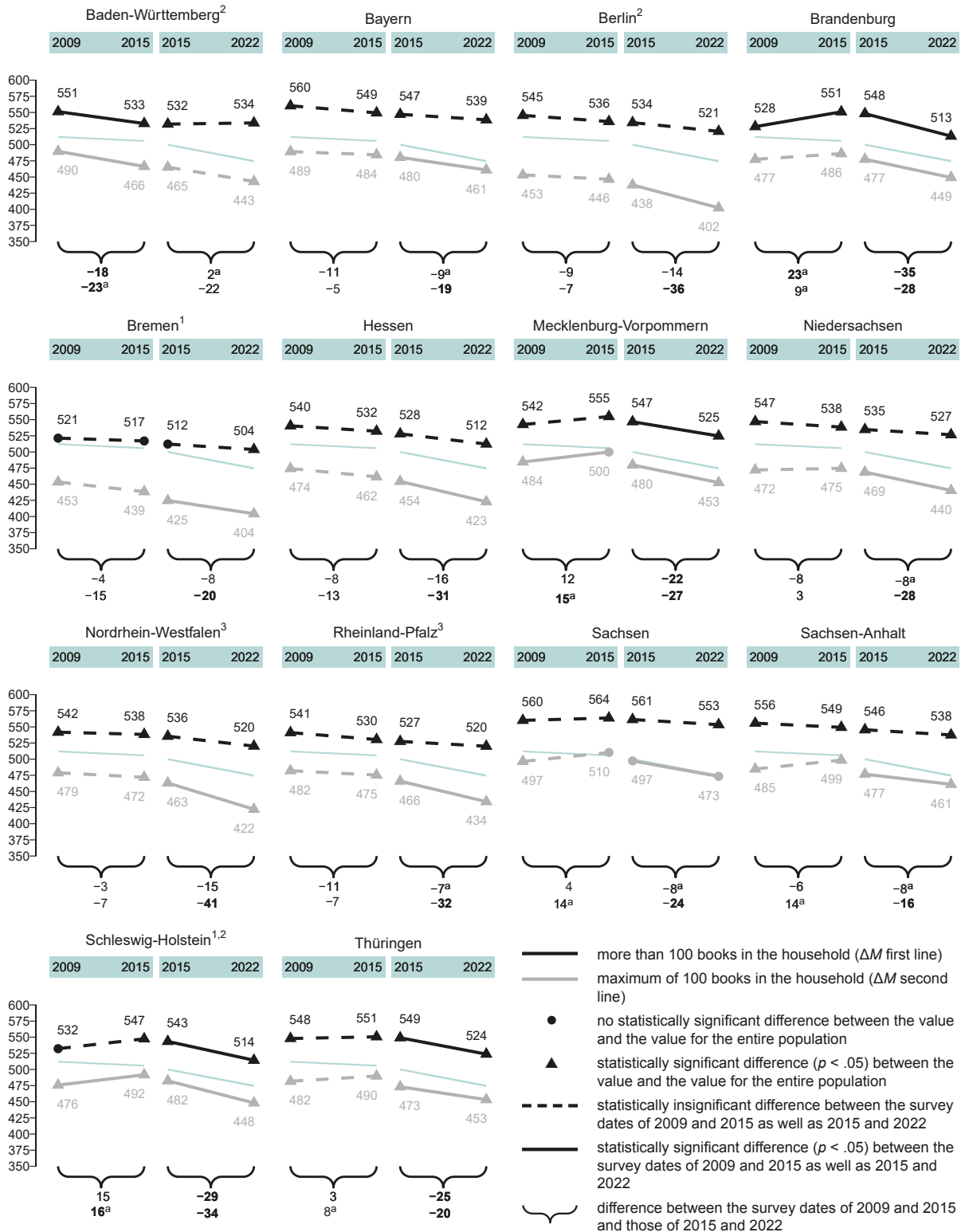
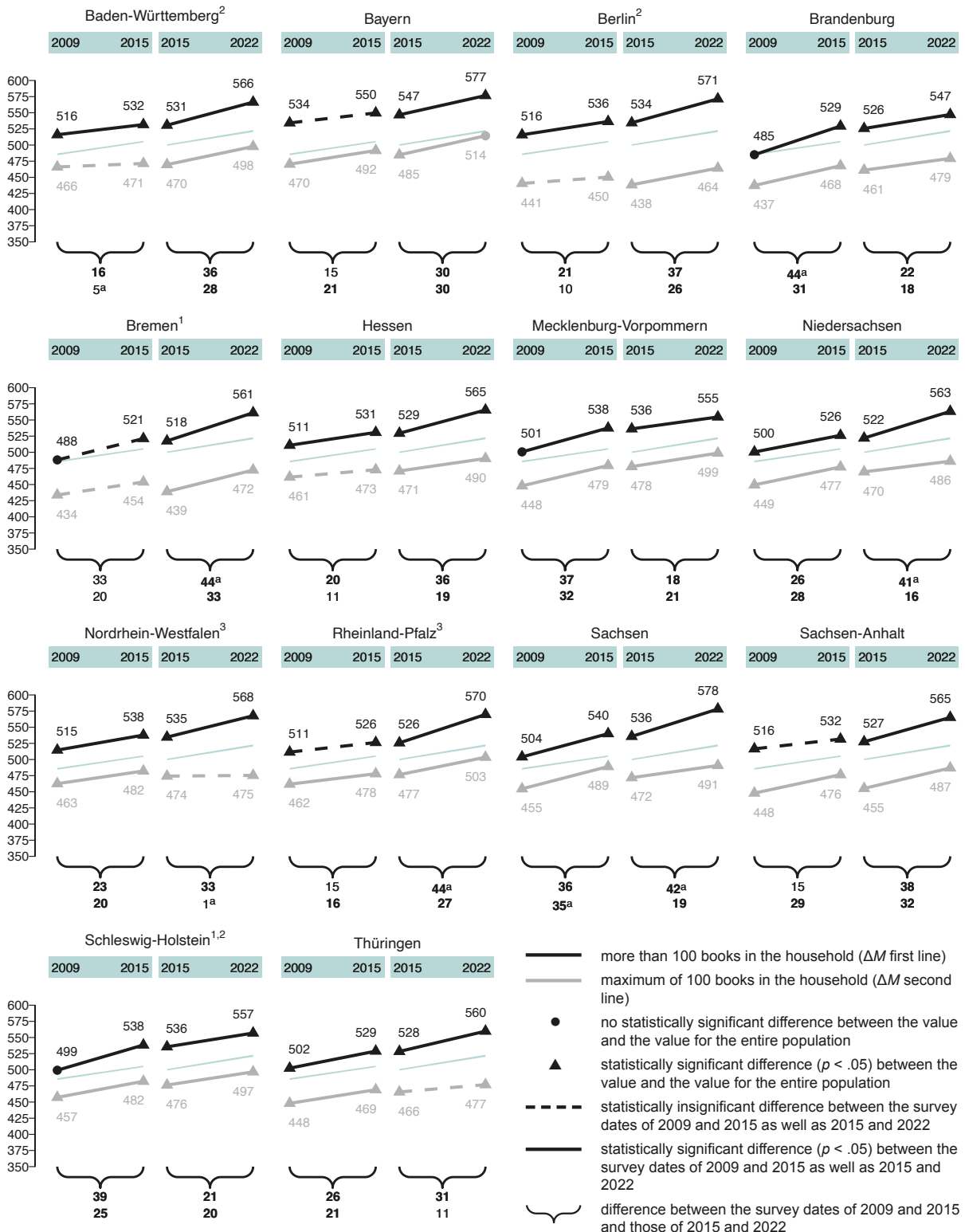


Figure 6.3: Mean proficiency scores by the number of books in the household for the proficiency domain *reading* in the subject German in 2009, 2015 and 2022



Notes. The values are rounded. As a result, the difference in mean values may deviate slightly from the difference presented (ΔM) under the curly bracket. The sequence shown in color marks the trend for the entire population of all ninth-graders in Germany as a whole (mean \pm standard error). The trend for 2009–2015 does not take students with special educational needs into account. No results can be reported for Hamburg or Saarland, as the required information is missing for more than 30% of the students. The findings for year ¹2009, ²2015 and ³2022 should be interpreted with caution due to the large percentage of missing data (20–30 percent). ^a Significant deviation ($p < .05$) from the trend for the respective student group in Germany as a whole. Differences printed in bold type are statistically significant ($p < .05$).

Figure 6.4: Mean proficiency scores by the number of books in the household for the proficiency domain *reading comprehension* in the subject English in 2009, 2015 and 2022



Notes. The values are rounded. As a result, the difference in mean values may deviate slightly from the difference presented (ΔM) under the curly bracket. The sequence shown in color marks the trend for the entire population of all ninth-graders in Germany as a whole (mean +/- standard error). The trend for 2009–2015 does not take students with special educational needs into account. No results can be reported for Hamburg or Saarland, as the required information is missing for more than 30% of the students.

The findings for year ¹2009, ²2015 and ³2022 should be interpreted with caution due to the large percentage of missing data (20–30 percent).

^a Significant deviation ($p < .05$) from the trend for the respective student group in Germany as a whole.

Differences printed in bold type are statistically significant ($p < .05$).

7. Immigration-related disparities

Adolescents with and adolescents without an immigration background in the states

- In 2022, a total of 38 percent of ninth-graders in Germany had an immigration background (cf. Table 7.1). At more than 50 percent, their share is highest in Berlin, Bremen and Hessen; at 15 percent or less, this percentage is lowest in the states of eastern Germany: Brandenburg, Mecklenburg-Vorpommern, Sachsen, Sachsen-Anhalt, and Thüringen.
- Nationwide, the percentage of adolescents with an immigration background has increased significantly, by around 9 percentage points since 2015 and by around 11 percentage points since 2009.
- Between 2015 and 2022, the increase in Germany as a whole, and in nearly all of the states, has owed chiefly to the increase in the proportion of first-generation adolescents¹¹ (2022: 9 percent, +5 percentage points compared to 2015). Some 29 percent of first-generation adolescents came to Germany seeking refuge (representing a total of just under 3 percent of ninth-graders).

Immigration-related disparities in the proficiencies

- In 2022, for Germany as a whole, significant proficiency disadvantages for adolescents with an immigration background were found across all proficiency domains examined, in the subjects of both German and English (cf. Fig. 7.1). These discrepancies are the most pronounced in the subject German in *listening* and in *reading*. In *orthography* in the subject German, on the other hand, and particularly in the subject English (*reading comprehension* and *listening comprehension*), these disadvantages are far less pronounced.
- In the subject German, the mean proficiency of all ninth-graders irrespective of immigration background has been trending significantly downward in all proficiency domains throughout Germany since 2015 (cf. Fig. 7.2). Because the downturn in proficiency is the greatest among adolescents of the first generation, the proficiency disadvantages among this group were significantly higher compared to adolescents with no immigration background. By contrast, there has been no change in the differences in mean proficiencies between second-generation and non-immigrant adolescents.
- In the subject English, the results are generally more favorable. The mean proficiency of adolescents without an immigration background and adolescents of the second generation rose significantly between 2015 and 2022 in the domains examined. There was no change in the mean proficiency of first-generation adolescents during this period (cf. Fig. 7.2). The immigration-related disparities for first-generation adolescents in *reading comprehension* in the subject English increased significantly as a result. Although there was a trend toward a widening proficiency gap in *listening comprehension* as well, this change is not statistically significant.
- Hence, first-generation adolescents almost always have a particularly pronounced proficiency shortfall, and these disadvantages have intensified over time. In the subject German, the negative trend in the mean proficiencies that had already begun between 2009 and 2015 continued between 2015 and 2022.

¹¹ The term “first generation” refers to adolescents who themselves, along with their parents, were born abroad. The term “second generation” describes adolescents born in Germany to foreign-born parents.

Table 7.1: Percentages of ninth-grade students with and without an immigration background in the states in 2022 and changes since 2009 and 2015

State	Without an immigration background		With an immigration background total ¹						One parent born abroad		Second generation			First generation		Not assignable	
	valid % ²	%	2009–2022 ^a	2015–2022	+/-	valid % ²	2009–2022 ^a	2015–2022	+/-	2009–2022 ^a	2015–2022	+/-	valid % ²	2009–2022 ^a	2015–2022		+/-
Baden-Württemberg	54.3	45.7	17.0	11.5	6.0	16.3	3.0	3.0	3.0	7.1	2.3	2.3	9.8	3.9	6.1	6.1	4.1
Bayern	66.3	33.7	9.0	7.5	5.7	14.0	3.4	3.4	2.0	2.0	0.0	0.0	8.2	1.2	4.1	4.1	9.3
Berlin ⁴	48.8	51.2	6.2	8.9	7.3	21.1	3.9	3.9	-3.0	-3.0	-0.5	-0.5	11.8	1.9	5.5	5.5	9.1
Brandenburg	84.6	15.4	5.3	5.9	1.1	6.0	0.1	0.1	4.2	2.4	2.4	2.4	5.2	1.8	3.5	3.5	13.6
Bremen ³	42.9	57.1	16.7	8.6	4.4	15.8	0.1	0.1	24.2	8.3	-1.6	-1.6	17.0	4.0	10.1	10.1	5.7
Hessen	47.5	52.5	19.8	14.1	5.6	16.9	2.7	2.7	21.9	7.7	2.1	2.1	13.7	6.5	9.3	9.3	11.8
Mecklenburg-Vorpommern	87.0	13.0	3.2	4.8	1.5	5.5	1.8	1.8	2.9	1.4	1.8	1.8	4.7	0.3	1.2	1.2	5.1
Niedersachsen	64.7	35.3	14.1	10.9	5.3	12.2	2.7	2.7	15.2	6.4	3.1	3.1	7.8	2.4	5.2	5.2	5.6
Nordrhein-Westfalen ⁵	54.2	45.8	13.8	8.2	7.2	16.0	3.8	3.8	19.6	3.5	-0.9	-0.9	10.2	3.0	5.3	5.3	21.0
Rheinland-Pfalz ⁵	62.5	37.5	12.6	9.4	4.0	12.6	3.3	3.3	15.1	4.6	-0.1	-0.1	9.8	4.0	6.2	6.2	13.9
Saarland ^{4,5}	61.9	38.1	16.7	21.7	4.2	11.3	4.5	4.5	11.3	2.7	3.2	3.2	15.4	9.8	13.9	13.9	17.9
Sachsen	86.7	13.3	3.5	4.3	2.9	7.1	2.5	2.5	2.8	0.6	1.1	1.1	3.4	0.0	0.7	0.7	12.9
Sachsen-Anhalt	89.4	10.6	1.7	3.7	1.2	4.5	1.0	1.0	2.2	0.8	0.8	0.8	3.8	-0.3	1.9	1.9	4.5
Schleswig-Holstein	71.9	28.1	13.0	10.6	4.1	9.8	1.4	1.4	10.6	5.9	3.6	3.6	7.7	3.0	5.5	5.5	6.4
Thüringen	87.7	12.3	3.4	5.0	0.5	4.6	1.1	1.1	2.5	1.2	0.8	0.8	5.2	1.7	3.1	3.1	2.6
Germany	62.3	37.7	11.3	8.9	5.2	13.7	2.9	2.9	15.0	3.5	0.8	0.8	9.1	2.6	5.2	5.2	11.7

Notes: The values are rounded. As a result, the sum of the percentages may deviate slightly from 100, and the difference in percentages may deviate slightly from the difference shown in the +/- column. +/- = Change compared to the IQB National Assessment 2009 / IQB Trends in Student Achievement 2015. No results can be reported for the state of Hamburg, as the required information for 2022 is missing for more than 30% of the students.

Without immigration background: Both parents were born in Germany.

2nd generation: Both parents are foreign-born, and the child was born in Germany.

1st generation: Both parents as well as the student were born abroad.

¹ includes students with a foreign-born parent, students of the 2nd generation and students of the 1st generation.

² valid % = Percentages are based only on information from the students that can be clearly assigned.

The findings for year ³2009, ⁴2015 and ⁵2022 should be interpreted with caution due to the large percentage of missing data (20–30 percent).

^a Students with special educational needs are not included.

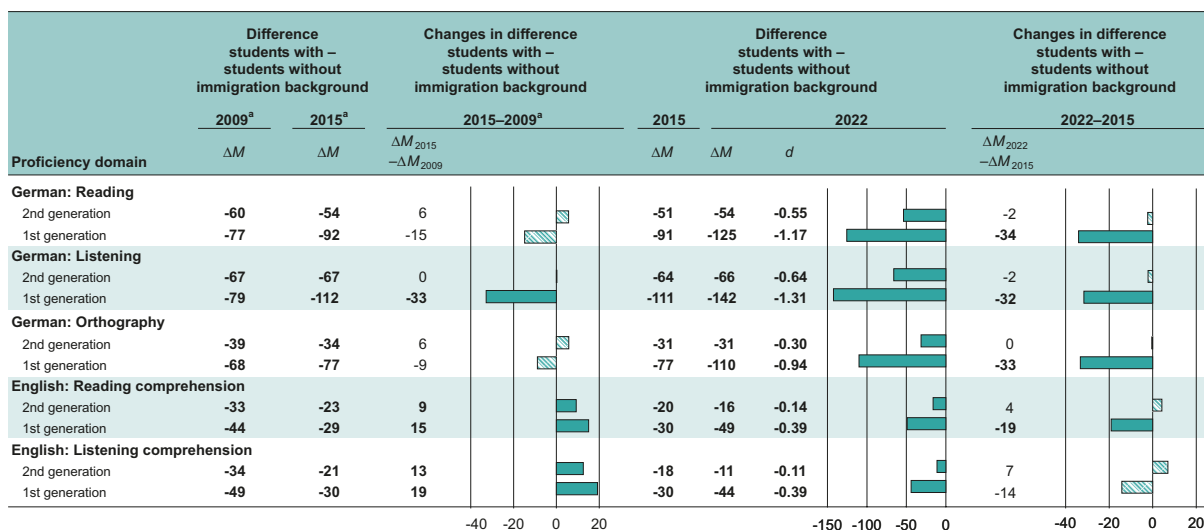
Differences printed in bold type are statistically significant ($p < .05$).

- A pattern similar to that seen for Germany as a whole can also be seen in most of the states. On average, ninth-graders with an immigration background¹² achieve significantly lower proficiencies across all proficiency domains in the subject German when compared to ninth-graders without an immigration background. Most states report unfavorable trends in all domains of proficiency in the subject German for all adolescents, regardless of immigration background, but these downward trends are more pronounced predominantly among adolescents with an immigration background (cf. Fig. 7.3 as an indicator of proficiency in *listening*).
- In the subject English, the trends are positive for adolescents without an immigration background in nearly all states (cf. Fig. 7.4 as an indicator of proficiency in *listening comprehension*). In many states, this trend can also be seen for adolescents with an immigration background; due to low case numbers, however, sometimes the results are not statistically significant.

Correlations of immigration-related disparities with family background characteristics and learning conditions

- As analyses performed for Germany as a whole reveal, immigration-related disparities in 2022 are attributable in part to characteristics in the family backgrounds of adolescents from immigrant families (lower socioeconomic status, lower cultural capital and less-frequent use of the German language in the family). Less-conducive learning conditions during the coronavirus pandemic on the part of adolescents with an immigration background also contribute only insignificantly toward explaining differences in proficiency levels.

Figure 7.1: Comparison of differences in proficiency scores achieved by pupils with and without an immigration background in 2009, 2015 and 2022



Notes. The values are rounded. Consequently, the difference shown between survey years may vary slightly from the difference in the individual values indicated. ΔM = Difference between students with and students without an immigration background; $\Delta M_{2015} - \Delta M_{2009} / \Delta M_{2022} - \Delta M_{2015}$ = Change in the difference between students with and students without an immigration background; d = effect size Cohen's d . For the respective survey year, negative values and left-facing bars indicate lower proficiency levels for students with an immigration background. In the trend, negative values and bars pointing to the left indicate an increase in the proficiency disadvantages of students with an immigration background.

^a Students with special educational needs are not included.

2nd generation: Both parents are foreign-born, and the student was born in Germany.

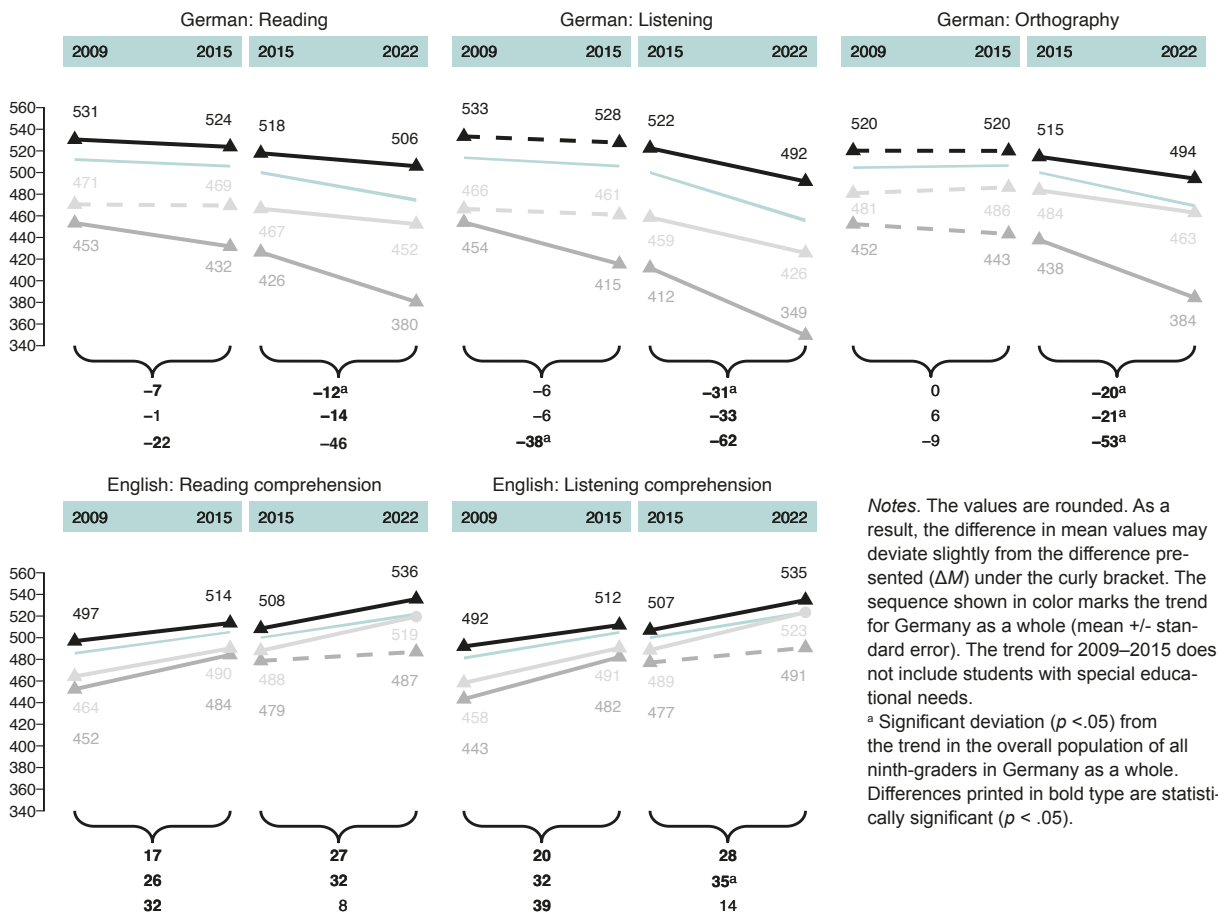
1st generation: Both parents and the student are foreign-born.

Differences printed in bold type are statistically significant ($p < .05$). Hatched bars indicate statistically non-significant differences.

12 At the state level, due to the number of cases occasionally being too low, first- and second-generation adolescents were combined to create a group of adolescents with an immigration background.

- Once again, the language spoken in the family should be highlighted for its role in immigration-related disparities in the fields of *reading* and *listening* in the subject German: Even after holding constant for differences in characteristics of social background, on average, students who speak German only occasionally or never in their families achieve lower mean proficiencies in *reading* and *listening* compared to adolescents who always speak German in their families. This once again underscores the importance of efforts to foster language development.
- In the subject English, adolescents who grow up in multilingual settings exhibit proficiency advantages over adolescents who have comparable social background characteristics but “always speak German” in their families. Multilingualism may thus prove conducive to acquisition of a foreign language.

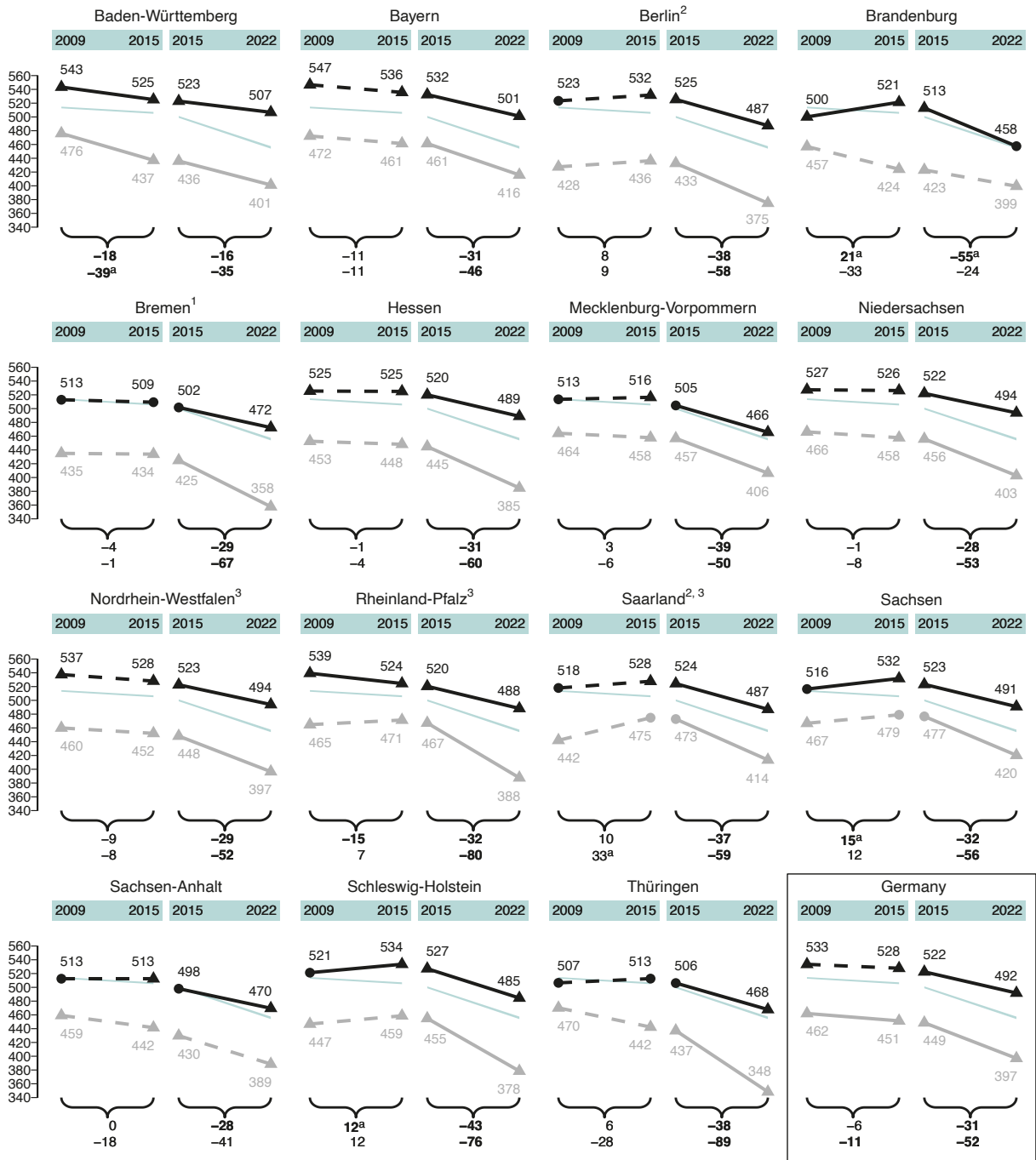
Figure 7.2: Comparison of mean values of proficiency scores achieved in German and English for students with an immigration background in Germany overall in 2009, 2015 and 2022



Notes. The values are rounded. As a result, the difference in mean values may deviate slightly from the difference presented (ΔM) under the curly bracket. The sequence shown in color marks the trend for Germany as a whole (mean \pm standard error). The trend for 2009–2015 does not include students with special educational needs.
^a Significant deviation ($p < .05$) from the trend in the overall population of all ninth-graders in Germany as a whole. Differences printed in bold type are statistically significant ($p < .05$).

- without an immigration background (ΔM first line under the bracket): Both parents were born in Germany.
- 2nd generation (ΔM second line under the bracket): Both parents are foreign-born, and the child was born in Germany.
- 1st generation (ΔM third line under the bracket): Both parents and the student are foreign-born (including refugee students).
- no statistically significant difference in value from the value for Germany as a whole
- ▲ statistically significant difference ($p < .05$) between the value and the value for the entire population
- - - statistically insignificant difference between the survey dates of 2009 and 2015 as well as 2015 and 2022
- statistically significant difference ($p < .05$) between the survey dates of 2009 and 2015 as well as 2015 and 2022
- ⎵ difference between the survey dates of 2009 and 2015 as well as 2015 and 2022

Figure 7.3: Comparison of mean values of the proficiency scores achieved in the domain of *listening* in the subject German by immigration background and state in 2009, 2015 and 2022



Notes. The values are rounded. As a result, the difference in mean values may deviate slightly from the difference presented (ΔM) under the curly bracket. The sequence shown in color marks the trend for Germany as a whole (mean +/- standard error). The trend for 2009–2015 does not include students with special educational needs. No results can be reported for the state of Hamburg, as the required information is missing for more than 30% of the students.

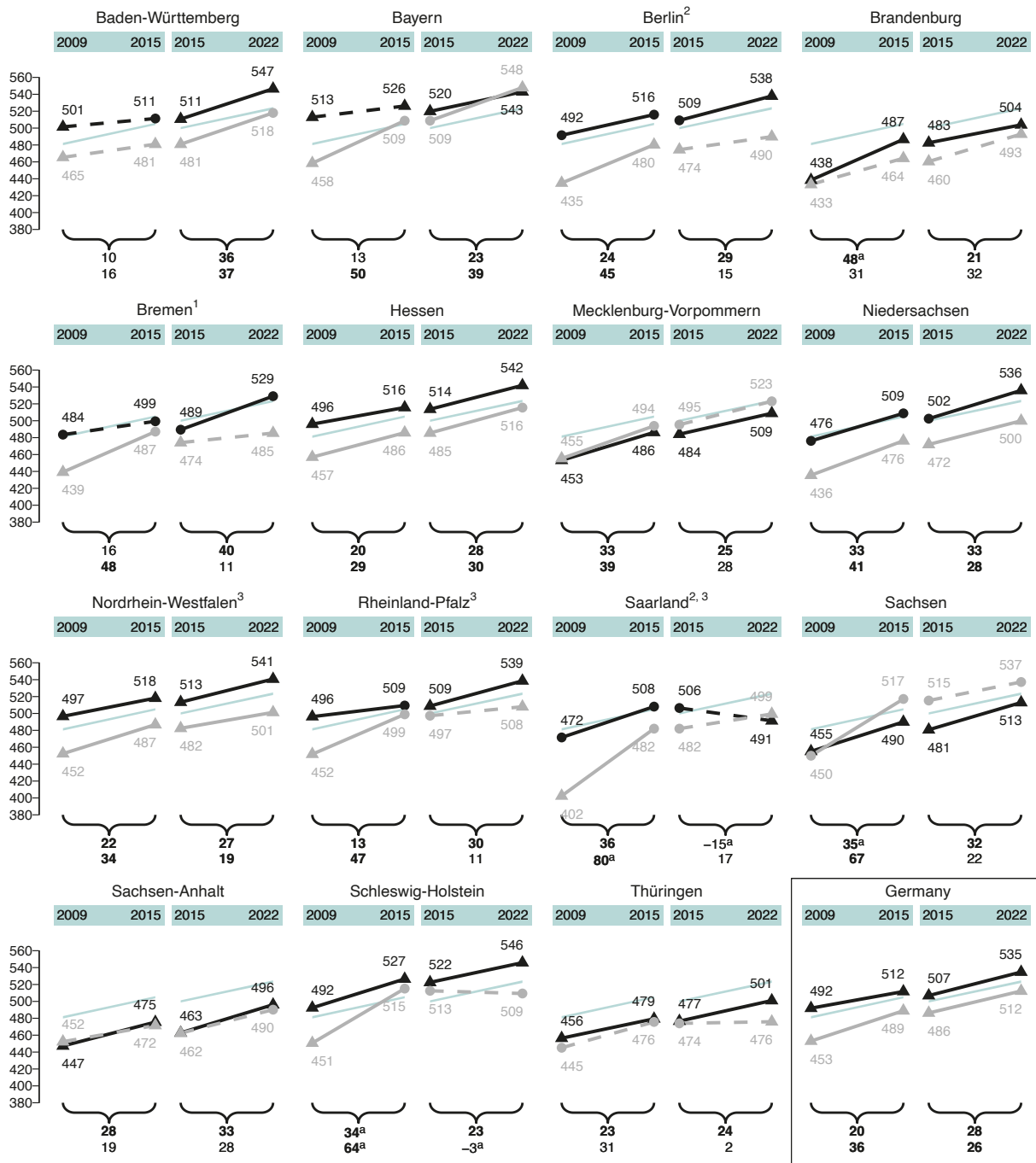
The findings for year ¹2009, ²2015 and ³2022 should be interpreted with caution due to the large percentage of missing data (20–30 percent).

^a Significant deviation ($p < .05$) from the trend for the respective student group in Germany as a whole.

Differences printed in bold type are statistically significant ($p < .05$).

- without an immigration background (ΔM first line under the bracket): Both parents were born in Germany.
- with an immigration background (ΔM second line under the bracket): Both parents were born abroad (1st and 2nd generation).
- no statistically significant difference in value from the value for Germany as a whole
- ▲ statistically significant difference ($p < .05$) between the value and the value for the entire population
- - - statistically insignificant difference between the survey dates of 2009 and 2015 as well as 2015 and 2022
- statistically significant difference ($p < .05$) between the survey dates of 2009 and 2015 as well as 2015 and 2022
- ⎵ difference between the survey dates of 2009 and 2015 as well as 2015 and 2022

Figure 7.4: Comparison of mean values of the proficiency scores achieved in the domain of *listening comprehension* in the subject English by immigration background and state in 2009, 2015 and 2022



Notes. The values are rounded. As a result, the difference in mean values may deviate slightly from the difference presented (ΔM) under the curly bracket. The sequence shown in color marks the trend for Germany as a whole (mean +/- standard error). The trend for 2009–2015 does not include students with special educational needs. No results can be reported for the state of Hamburg, as the required information is missing for more than 30% of the students.

The findings for year ¹2009, ²2015 and ³2022 should be interpreted with caution due to the large percentage of missing data (20–30 percent).

^a Significant deviation ($p < .05$) from the trend for the respective student group in Germany as a whole.

Differences printed in bold type are statistically significant ($p < .05$).

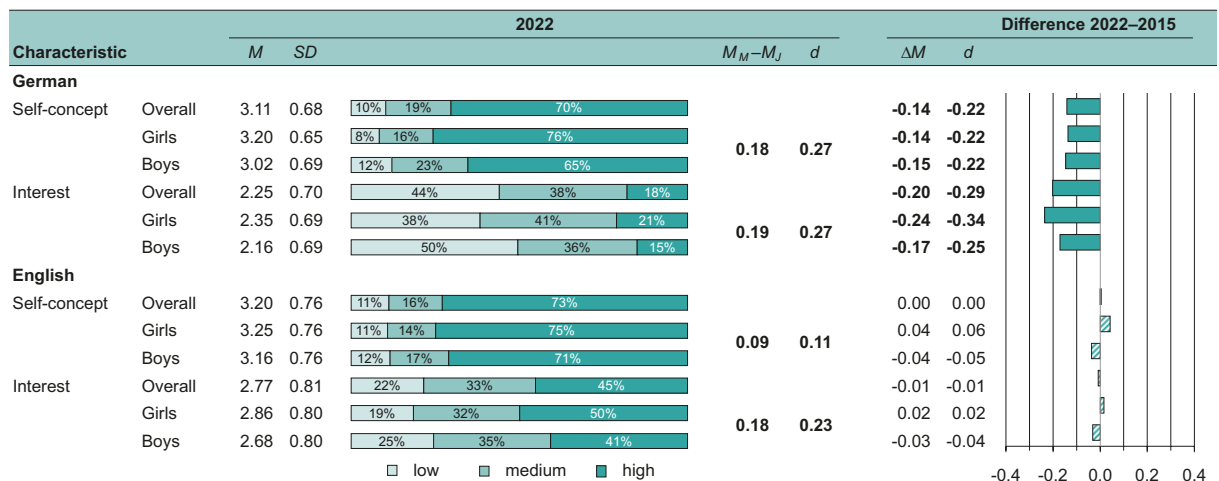
- without an immigration background (ΔM first line under the bracket): Both parents were born in Germany.
- with an immigration background (ΔM second line under the bracket): Both parents are foreign-born (1st and 2nd generation).
- No statistically significant difference in value from the value for Germany as a whole
- ▲ statistically significant difference ($p < .05$) between the value and the value for the entire population
- - - statistically insignificant difference between the survey dates of 2009 and 2015 as well as 2015 and 2022
- statistically significant difference ($p < .05$) between the survey dates of 2009 and 2015 as well as 2015 and 2022
- ⎵ difference between the survey dates of 2009 and 2015 as well as 2015 and 2022

8. Motivational characteristics, school satisfaction, and social integration

Subject-related self-concepts and interests

- In the IQB Trends in Student Achievement 2022, a considerable percentage of students indicated that they had a medium or high self-concept¹³ and were interested in the subjects German and English. However, around one adolescent in ten has only low confidence in his or her own abilities (Fig. 8.1).
- The percentage of adolescents who show little interest in the subject German is very high overall. Many adolescents are not very interested in the subject English, either, but this percentage is significantly lower than for the subject German.
- In both subjects, girls report higher self-concepts and a higher level of interest than boys. These gender differences largely correspond to the proficiency advantages of girls (cf. Section 5).
- The trend analyses for the motivational characteristics show that the mean values for self-concept and interest in the subject German in 2022 are significantly lower than in 2015. This unfavorable trend applies to girls as well as boys. In the subject English, on the other hand, there was no significant change between the survey dates.

Figure 8.1: Mean values and standard deviations for the subject-related self-concept and interest in the subjects German and English in 2022 and changes since 2015



Notes. The values are rounded. As a result, the difference in mean values may deviate slightly from the difference presented (ΔM). *M* = mean; *SD* = standard deviation; M_M = mean in the group of girls; M_J = mean in the group of boys; *d* = effect size Cohen's *d*; ΔM = mean difference.

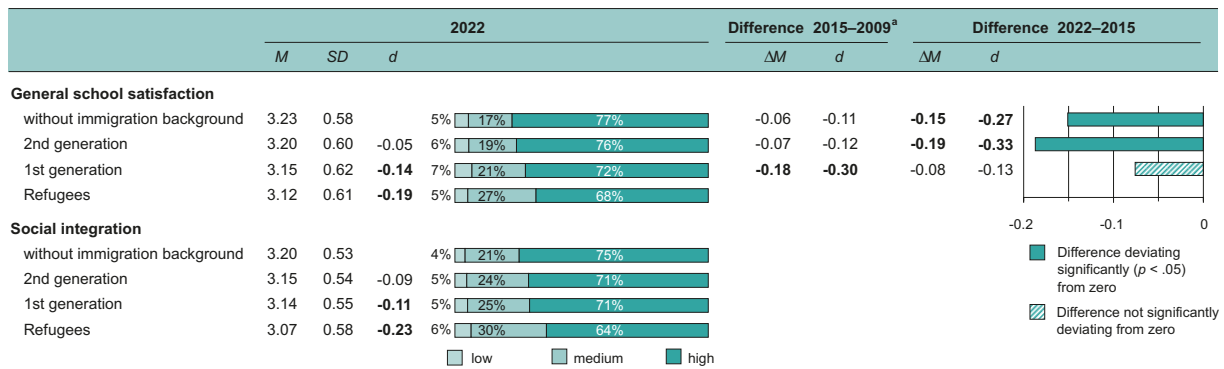
Differences printed in bold type are statistically significant ($p < .05$). Hatched bars indicate statistically non-significant differences.

13 The subject-related self-concept represents a self-assessment of the students' own abilities in a specific school subject.

School satisfaction and social integration

- For the most part, ninth-grade students in 2022 are very satisfied with their school, and a majority of them feel well integrated in their class (cf. Fig. 8.2). This result is largely independent of any immigration background. Although first-generation adolescents and adolescents who have immigrated to Germany respond with slightly lower values on average, the differences are still small.
- School satisfaction decreased significantly between 2015 and 2022 among adolescents without an immigration background and second-generation adolescents. In the group of first-generation adolescents, by contrast, the change is not significant.

Figure 8.2: Mean values and standard deviations of school satisfaction and social integration in the school class, group differences by immigration background in 2022 and changes since 2015 or 2009



Notes. The values are rounded. As a result, the difference in mean values may deviate slightly from the difference presented (ΔM). M = mean; SD = standard deviation; ΔM = mean difference; d = effect size Cohen’s d.

Without immigration background: Both parents were born in Germany.

2nd generation: Both parents are foreign-born, and the student was born in Germany.

1st generation: Both parents and the student were born abroad (2022 data excluding students with refugee biographies; trend data including students with refugee biographies).

Refugees: first-generation students with a refugee biography.

^a Students with special educational needs are not included.

Differences printed in bold type are statistically significant (p < .05).

9. School and extracurricular learning conditions during the coronavirus pandemic

- According to information provided by school administrators, a significant percentage of instruction during the 2019/2020 and 2020/2021 school years was offered in the form of distance or alternating instruction.
- A majority of students reported never or rarely encountering problems accessing the Internet and a digital device during distance learning and that they usually had a quiet place to study. Still, a significant share of adolescents often have problems motivating themselves to learn; difficulties understanding school assignments were more common as well.
- Nearly 30 percent of German and English instructors report that most or all students in their class at the time of testing in 2022 demonstrated continued learning deficits as a result of the coronavirus pandemic. The percentages for psychosocial abnormalities are lower, but they are substantial as well.
- The adolescents themselves report experiencing emotional problems and features of hyperactivity with significantly greater frequency than a comparative cohort in 2018.
- There are only a few significant correlations between the learning situation of adolescents during the coronavirus pandemic and the proficiency levels achieved or psychosocial abnormalities they have experienced. In the subject German, a greater frequency in reports of learning problems is associated with significantly lower proficiency levels in all of the proficiency domains examined. In the subject English, ninth-graders achieve a higher level of proficiency particularly if the instructor has regularly been in contact with a higher percentage of the students in a class during distance learning. As in the case of the proficiency levels achieved in the subject German, there is a significant correlation between psychosocial abnormalities and the learning difficulties students reported in during the coronavirus pandemic. All of the statistically significant correlations are only slightly pronounced, however.
- Before and/or after the 2021 summer school vacation, the majority of schools used diagnostic tools to investigate whether students had learning deficits. Significantly more than half of all schools managed to deploy additional staff (particularly teachers and student teachers) during the 2021/2022 school year to counteract the impacts of the pandemic. In addition, more than half of the schools expanded their extracurricular activities in the core subjects German, mathematics and English for students in the 9th grade in response to the coronavirus pandemic.

10. Characteristics of teaching quality in the subject German

- In terms of the surface features as assessed by instructors, in 2022 the variability in approach in the teaching of German is generally quite low (predominantly classroom instruction, individual instruction or quiet work and group work; individualized and cooperative learning forms are far less frequent), and there has been little change in this respect since 2015. Most instructors make quite frequent use of methods of internal differentiation, but use of these methods has been declining for the most part since 2015. Use of digital media and applications is higher than in previous studies, although this is limited to a few focal areas (digital sources of information as well as word-processing and presentation programs).
- Teachers in college-preparatory secondary schools offer individualized, cooperative and differentiated instruction with somewhat lower frequency than teachers in other types of schools.
- From the students' point of view, the quality of German instruction relative to its depth characteristics in 2022 (constructive support, requirements levels and the potential for cognitive activation) is quite high. This pattern has hardly changed since 2015.
- When controlling for school type, surface features of teaching structure do not correlate with the proficiency levels achieved – nor, for the most part, with subject-related motivational characteristics in the subject German.
- Even for the in-depth features of teaching quality, there are only occasional correlations between the proficiency levels achieved and the motivational characteristics studied. Specifically, a significantly positive relationship exists between constructive support, on the one hand, and the proficiency levels achieved across all domains studied and the motivational characteristics fostered on the other. This underscores the fact that a constructive and respectful relationship between teachers and their students is important for sustained engagement with subject-specific content and the development of positive, subject-based convictions around proficiency.

11. Aspects of the education and training of German and English teachers

- A substantial share of instructors involved in teaching the subjects German or English do not have a certificate qualifying them to teach the respective subject. The percentage of non-specialist instructors is around 14 percent in the subject German and around 12 percent in the subject English. There are no indications that, for Germany as a whole, non-specialist instruction is more widespread at schools in difficult circumstances.
- In the subject English, there are significant negative correlations between non-specialist instruction and the proficiency levels achieved by students. This underscores the importance of instructors' career proficiencies relative to the successful design of teaching and learning processes.
- Regardless of their qualifications, the instructors surveyed in the IQB Trends in Student Achievement 2022 have a very positive attitude towards their work as instructors. Overall, they express a high level of satisfaction with their career choice and great enthusiasm for teaching.

12. Conclusion

Overall, the results of the IQB Trends in Student Achievement 2022 in the subjects German and English are almost mirror images of one another: The results for the subject German are – similar to the findings of the IQB Trends in Student Achievement 2021 for primary education – highly alarming, whereas the findings for the subject English are very encouraging. For example, the percentage of ninth-graders who failed to meet the minimum standards for the MSA in the subject German increased nationwide by 9 percentage points in *reading*, by around 16 percentage points in *listening* and by nearly 9 percentage points in *orthography*, whereas this percentage was nearly 3 points lower for both *reading comprehension* and *listening comprehension* in the subject English. In terms of achieving the normative standards in the population of ninth-graders aspiring to the MSA, the positive trends in the subject English are even more pronounced: Here, the share of students achieving at least the normative standards for the MSA increased by 11 percentage points in *reading comprehension* and by 10 percentage points in *listening comprehension* between 2015 and 2022. This is a remarkably positive trend which stands in clear contrast to the downward trend in the subject German. The mirror-image changes in the subjects German and English are observable across nearly all of the states, albeit with different strength and at different levels.

Not only the results for the trends, but also the results for the achievement of educational standards in 2022 are significantly better in the subject English than in the subject German. At nearly 23 percent in *reading*, fully 25 percent in *listening* and fully 13 percent in *orthography*, the share of students aspiring to the MSA and failing to meet the minimum standards for this qualification is too high in the subject German. In the subject English, on the other hand, the corresponding percentages are significantly lower, at 15 percent in *reading comprehension* and around 7 percent in *listening comprehension*.

Although the reasons for the trends and for the proficiency scores achieved in 2022 cannot be determined based on the results of the IQB Trends in Student Achievement alone, the study offers some indications as to the possible causes involved. One source of the negative trends in the subject German is apt to lie in the pandemic-related restrictions placed on school operations – which, as an entire array of studies have found, had an impact on students' learning trajectories. This is bolstered, among other things, by the fact that we find a downturn in the proficiency scores in the subject German in all states. Neither the states in which a high general level of proficiency was achieved nor the states in which no change or no positive changes were observed between 2009 and 2015 were spared negative trends in the subject German in the period 2015–2022. Although the trends differ across the different states, the predominantly clear trends make it safe to assume that the distance and alternating learning implemented throughout Germany over longer periods of time contributed in not inconsiderable ways toward the unfavorable trends observed in the subject German.

Distance and alternating learning also had an impact on results in the subject English – for which the trends in the mean proficiency scores are nevertheless nearly consistently positive. These trends, which had already been observed for the period 2009–2015, increased again in the 2015–2022 period. While it cannot be ruled out that the pandemic-related restrictions on school operations could be better compensated for in English instruction than in German instruction, it seems more plausible to assume that the increase in *reading comprehension* and *listening comprehension* in the subject English is also attributable to a considerable extent to extracurricular learning opportunities. Specifically, much of the usage of digital media, which was higher when students had fewer leisure opportunities due to the pandemic, is likely to have featured the English language. This is apt to have helped advance the development of reading comprehension and, above all, listening comprehension in English (which has actually experienced a particularly steep increase), while at the same time driving the motivation to take advantage of the learning opportunities offered by English instruction. Consistent with this, it turns out that the students' interest in English instruction is higher than their interest in German instruction.

Another cause of the patterns of results identified in the IQB Trends in Student Achievement 2022 for the proficiencies studied likely lies in the further increase in the percentage of students with an immigration background. Specifically, the group of adolescents who themselves were born abroad and immigrated to Germany (first generation) achieved a significantly lower level of proficiency in the subject German in 2022 than in 2015. The downward trend is particularly pronounced in *listening*; this might also owe to the fact that students who speak a language other than German in the family had fewer opportunities for oral communication in German during the pandemic-related restrictions on school operations. Adolescents without an immigration background and adolescents born in Germany whose parents were born abroad (second generation) are also subject to the negative trends in the subject German, but to a lesser extent, further exacerbating the proficiency disadvantage of first-generation ninth-graders. For the most part, this is also predominantly the case in the subject English, where adolescents without an immigrant background and second-generation adolescents managed to increase their proficiency levels in the 2015–2022 period, while no changes were observed for first-generation adolescents during the same period.

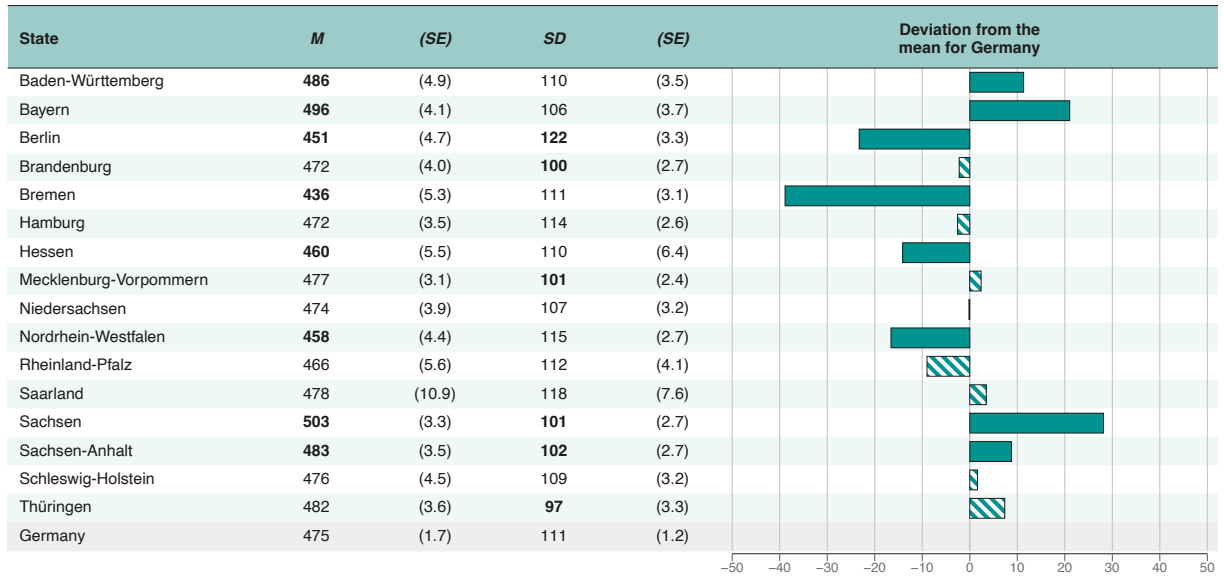
Overall, the results of the IQB Trends in Student Achievement 2022 suggest once again that added focus should be devoted to meeting the minimum standards in the subject German. This was evident already in the IQB Trends in Student Achievement 2021 for students in primary education, and now also for secondary level I. Many of the guiding principles in the expert opinion of the Standing Scientific Commission (SWK) of the KMK with regard to securing minimum standards in primary school (SWK, 2022) – such as the importance of adaptive support as a three-step approach based on (informal or formal) diagnostics, efforts to foster student development, and evaluation of learning success – are applicable to secondary schools as well. It is important, moreover, to put to the test the efforts to foster the development of language skills of students entering the German educational system with little knowledge of German, and to ask how this can be further improved, as well as what kinds of support schools and teachers require to accomplish this. The finding that the interest in German instruction is very low among a very high percentage of students and that only relatively few students develop a high interest in the subject German merits closer investigation as well.

However, the IQB Trends in Student Achievement 2022 not only draws attention to problems but also demonstrates that there are domains in which students in Germany are continuing to broaden their proficiencies. Accordingly, ninth-graders are in a significantly better position to understand written texts and spoken language in English now, in 2022, than they were 13 years ago. This may be attributable to extracurricular activities as well, but it is English instruction that creates the preconditions for this. This instruction is likely to have grown significantly more competence-oriented over the past 20 years.

Finally, there are two additional encouraging findings from the IQB Trends in Student Achievement 2022 that warrant attention: First, most of the students in secondary level I – as in the case of students in primary education – are very satisfied with their school and feel well integrated. Second, both the German and English instructors of the students who took part in the IQB Trends in Student Achievement 2022 report that they are very satisfied with their choice of career, teach with enthusiasm, and invest a great deal of effort in their profession. This indicates that the work of a teacher is not only very demanding, but apparently brings great satisfaction as well. The latter aspect is occasionally overlooked in the current discussion about this profession.

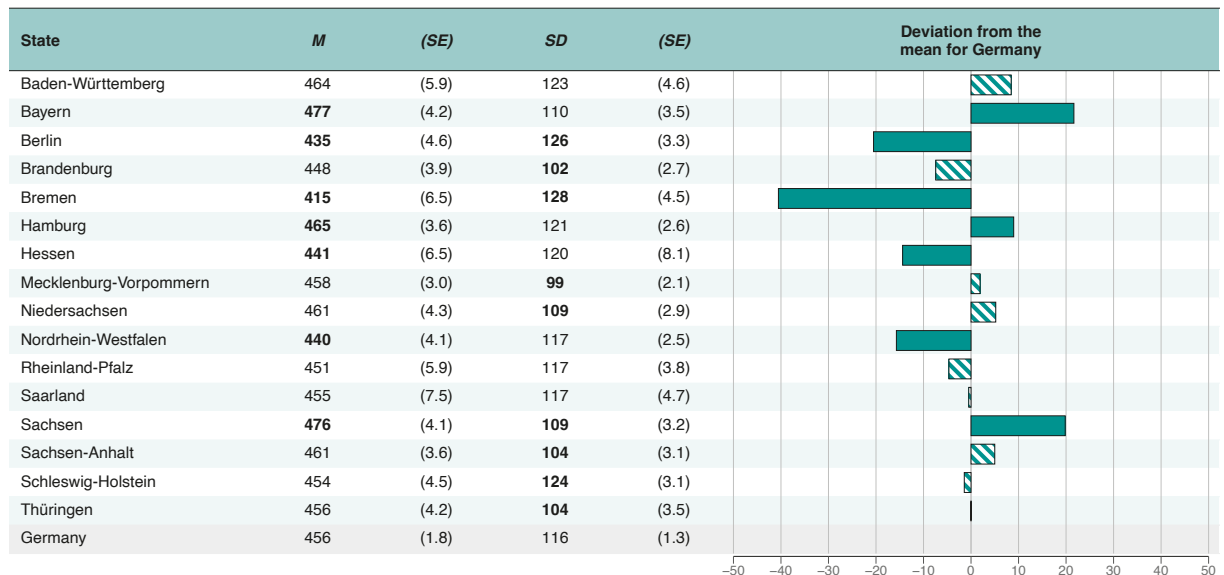
Appendix

Mean values and standard deviations of the proficiency scores achieved in 2022 by ninth-graders in the subject German in the proficiency domain of *reading*



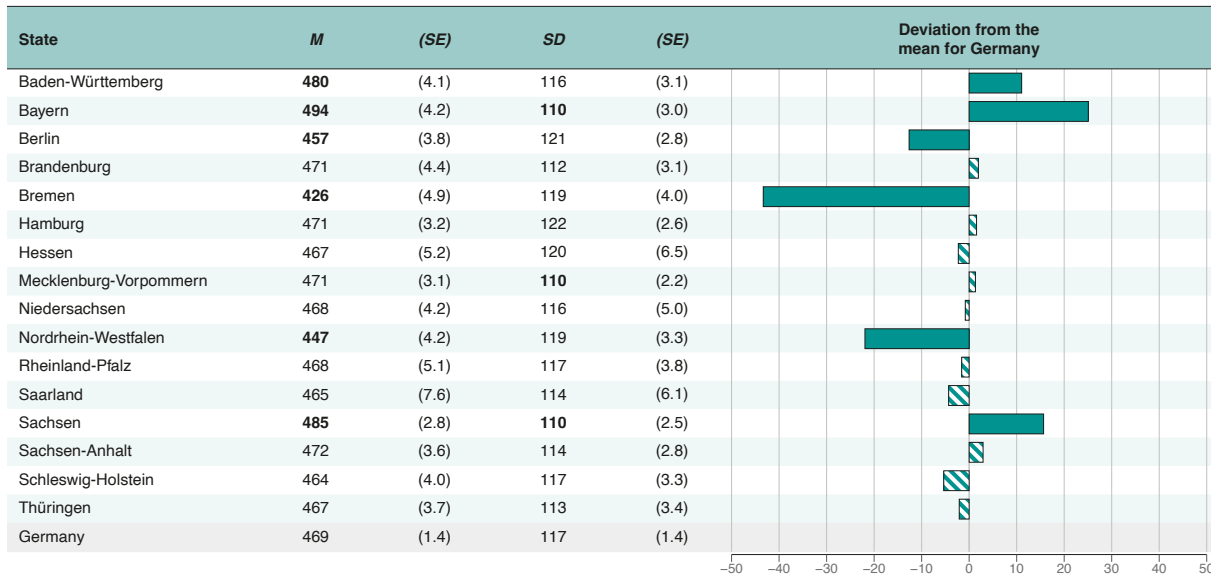
Notes. The values in the table are rounded. *M* = mean; *SE* = standard error; *SD* = standard deviation. Values printed in bold differ statistically significantly ($p < .05$) from the value for Germany as a whole. Hatched bars indicate a non-significant difference from the value for Germany as a whole.

Mean values and standard deviations of the proficiency scores achieved in 2022 by ninth-graders in the subject German in the proficiency domain of *listening*



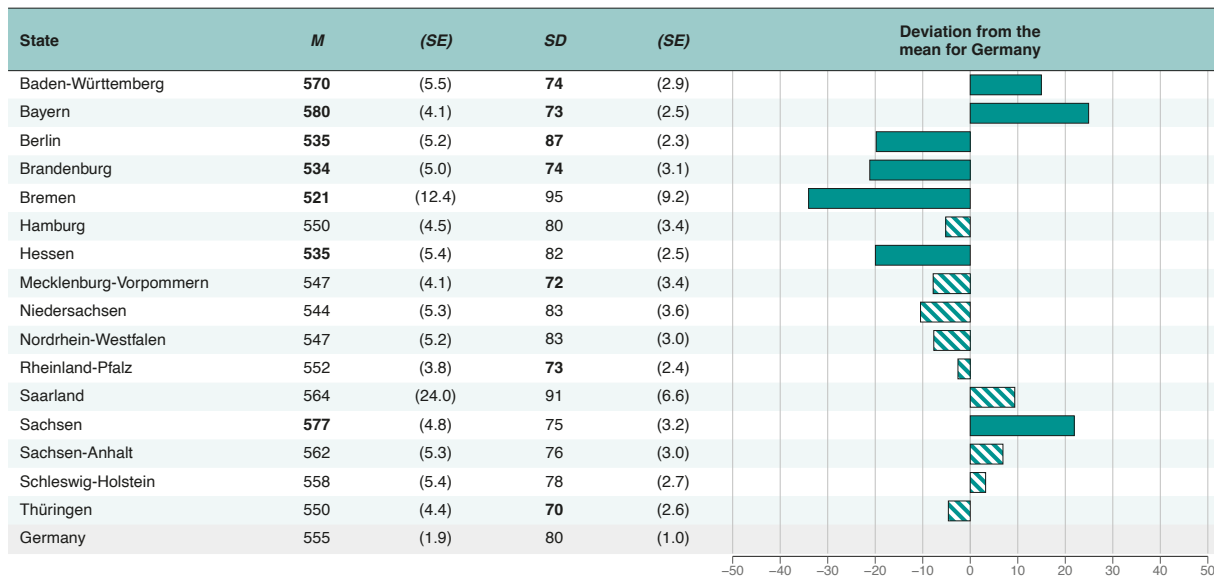
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Mean values and standard deviations of the proficiency scores achieved in 2022 by ninth-graders in the subject German in the proficiency domain of *orthography*



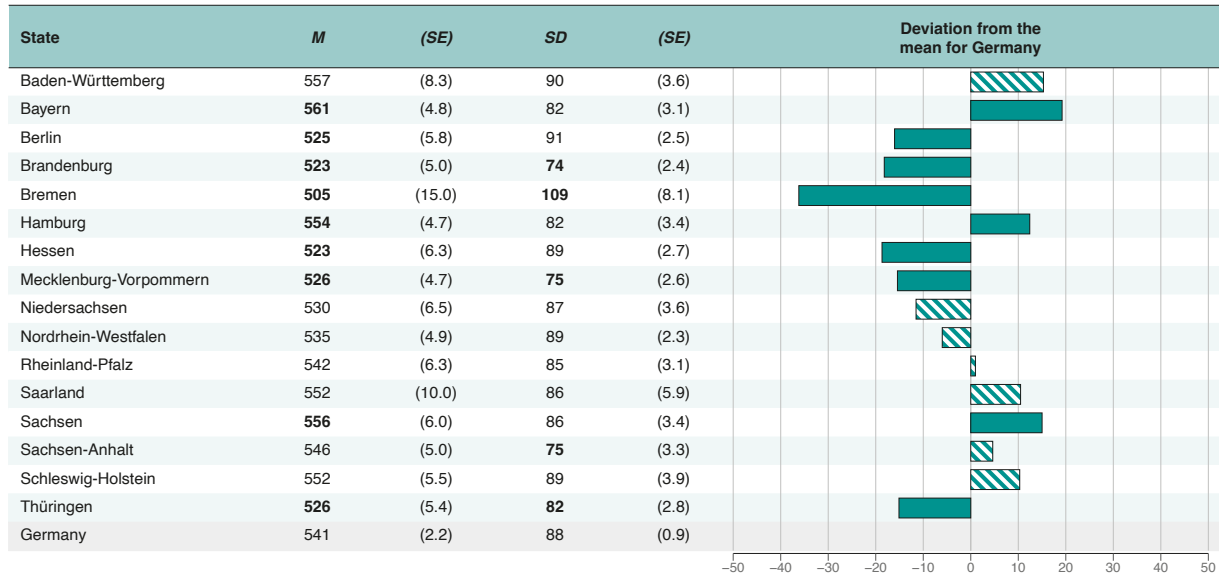
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Mean values and standard deviations of the proficiency scores achieved in 2022 by ninth-graders in the subject English in the proficiency domain *reading comprehension*



Notes. The values in the table are rounded. *M* = mean; *SE* = standard error; *SD* = standard deviation. Values printed in bold differ statistically significantly ($p < .05$) from the value for Germany as a whole. Hatched bars indicate a non-significant difference from the value for Germany as a whole.

Mean values and standard deviations of the proficiency scores achieved in 2022 by ninth-graders in the subject English in the proficiency domain *listening comprehension*



Notes. The values in the table are rounded. *M* = mean; *SE* = standard error; *SD* = standard deviation. Values printed in bold differ statistically significantly ($p < .05$) from the value for Germany as a whole. Hatched bars indicate a non-significant difference from the value for Germany as a whole.

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