



# THE ACADEMIC ACHIEVEMENT SCORES OF HOMESCHOOL STUDENTS IN THE COMMONWEALTH OF VIRGINIA:

Home-Educated Students in General and Those  
Choosing Religious Exemption in Particular

Brian D. Ray, Ph.D.

January 2, 2019



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Until about 1900, home- and family-based education of elementary and secondary students was very common in the United States, waned nearly to extinction by the 1970s, and then experienced a remarkable growth to include about 2.4 million students today (Lines, 1991; Ray, 2018).

## HOMESCHOOL FAMILIES ARE DIVERSE IN TERMS OF SOCIOECONOMICS, PHILOSOPHY, PEDAGOGY, AND ETHNICITY.

Some 41% are minorities (McQuiggan, Megra, and Grady, 2017); the median income is average for families with school-age children (Ray, 2010) but thousands have extreme incomes, either high or low. Atheists, Buddhists, Jews, Mormons, Muslims, New Agers, Protestants and Catholics choose home-schooling.

Types of homeschools range from structured schooling to unschooling to travel schooling to a simple lifestyle of learning. Given its wide emergence throughout the culture, homeschooling has clearly become mainstream in American education.

The rise in homeschooling has occurred in all 50 states, including Virginia. As homeschooling continues to expand in terms of absolute numbers and as a percentage of the school-age population, educators and policymakers, along with the general public, are keen to see what educational outcomes result from parent-led, home-based education. One outcome of great importance and high interest is academic achievement.

## PAST RESEARCH

Thirty-five years of research on the modern homeschool movement and its students continues to find overall positive learner outcomes associated with home education. Ray (2017) reviewed all of the extant peer-reviewed research on academic achievement, social and emotional development, and socio-economic success in adulthood

(including college) of the homeschooled. In 11 of the 14 peer-reviewed studies on academic achievement, the homeschooled achieved higher scores than conventional school students; one study found no difference between homeschool students and others, one found mixed results, and one found lower scores for kindergarten homeschool students on only one measure.

Regarding the social development of home-educated children and adults, 13 of 15 peer-reviewed studies clearly showed positive outcomes for the homeschooled compared to students in conventional schools. Finally, 11 of the 16 peer-reviewed research analyses on the relative success of the homeschooled who had moved on to adulthood—whether in college or life in general—showed positive outcomes for the homeschooled compared to those in conventional schools. Earlier research including more than just peer-reviewed publications has also generally found positive outcomes associated with homeschooling as compared to institutional or conventional public schooling (e.g., Medlin, 2013; Murphy, 2012).

## DETERMINING WHY THE HOMECHOOLED DO WELL IS MORE CHALLENGING THAN DETERMINING WHAT THEY DO, (E.G., PERFORMANCE ON ACADEMIC ACHIEVEMENT TESTS).

Many wonder why those educated at home do so well in terms of academic achievement when they are not in institutional schools with state-certified (licensed) teachers trained by education experts, such as professors of education.

The answer may lie in pedagogical elements that are intrinsic to parent-led, home-based education that are amenable to very successful teaching and learning. Murphy (2012) presents three principal explanations or variables “... for the positive influence of homeschools on the academic and social learning of youngsters” (pp. 153-154). The first is high parental

involvement. The second is the “instructional program”: homeschools include elements such as consistent one-on-one instruction, low student-to-teacher ratios, effective use of time, a high degree of customization of learning experiences, flexibility, meaningful feedback between teacher and student, and plenty of authentic experiences. Murphy’s third variable is the learning environment: the homeschool is a safe and orderly climate, and “... a nonthreatening culture in which the academic work of school can unfold ...” [p. 159]).

Murphy also references other scholarly work that addresses additional factors that likely contribute to homeschool students’ relatively high academic achievement (e.g., value consistency and social capital, tutoring/one-on-one instruction, increased academic learning time, and positive social environment and interactions).

Although numerous studies connect homeschooling with relatively high academic achievement (e.g., Williams, 2014), some policymakers still wonder whether more state control (regulation) of homeschooling is needed to ensure that appropriate learning is taking place. The degree of state control or regulation of homeschooling varies widely from state to state. Some states have no regulation, while others require a high degree of state control.

In an early study that addressed the topic, Ray (2000) found no correlation between the degree of regulation of homeschooling in any given state and homeschool students’ academic achievement. Likewise, Ray (2010) found no such correlation. In 2008, Ray and Eagleson found no correlation between the degree of state control of homeschooling and homeschool students’ college-entrance SAT scores.

To date, there is no empirical evidence that controlling homeschooling with more state regulation will correlate with higher academic achievement, let alone cause it. With the available research in mind, there is no reason to think that homeschooling in Virginia needs more regulated governmental oversight.

## PURPOSE OF STUDY

The purpose of this study is to gain fresh knowledge and clearer understanding of the academic achievement of Virginia homeschool students. The analysis compares the academic achievement of public school students nationwide with three groups of homeschooled students in Virginia: the homeschooled students in general, those homeschooled under notice of intent (NOI), and those homeschooled under religious exemption (RE).

## METHODS

The target population for this study was drawn from Virginia home-school students, with all homeschool families invited to participate. The advertisement inviting participants stated that the purpose of the study was to generate empirical evidence showing how Virginia homeschool students perform academically. The study also aimed to compare the scores of religiously exempt students with the scores of those homeschooled by way of a notice of intent.



The requirements for participation were that the homeschool student be a Virginia resident and be a home-educated student who has complied with Virginia law, either by being religiously exempt (§22.1-254 (B)(1) or by being in compliance (by his or her parents’ actions) with the Virginia home instruction statute (§22.1-254.1) by meeting one of the options on the notice of intent (NOI). All students were administered the nationally normed TerraNova 2/CAT 6 test through Seton Testing Services following the publisher’s guidelines.



Data were collected five times between March and June 2018 as voluntary returns from mailings to all families on the contact list of the organization Home Educators Association of Virginia (HEAV). Data were further solicited in an HEAV weekly e-newsletter from March 11 through May of 2018. An ad inviting participation was published by HEAV in The Virginia Home Educator magazine and on the HEAV website between March and May of 2018. The study was also promoted on the HEAV website (<https://heav.org/>) during the spring of 2018. Homeschooling groups other than HEAV, which serve a different demographic or pedagogical constituency, also posted and promoted the study. The Home School Legal Defense Association (HSLDA), a large nationwide organization specializing in legal defense of homeschooling, advertised the study to their members living in Virginia. Furthermore, HEAV promoted the study on Facebook and via a newsletter to homeschool support groups. Families participating in the study received a 20% discount from Seton Testing Services.

Parents were notified that participation in the study by the parents and their students was voluntary and that any personally identifying information would be anonymous and confidential. Parents were also assured that the participants' personal information would not be shared with any person or group.

**THERE WAS NO PRIOR KNOWLEDGE OF THE TEST RESULTS, AS THE PARENTS VOLUNTEERED TO PARTICIPATE IN THE STUDY PRIOR TO DELIVERY, ADMINISTRATION, OR SCORING OF THE TEST.**

Some limitations and delimitations adhere to this study. It was assumed that parents were honest about whether their child was categorized as a NOI or RE homeschool student. There was no known and feasible way of randomly selecting students from all homeschool students in Virginia. Thus there is no certainty that the students in this study constituted a completely representative sample. On the other hand, to enhance the

possibility of a representative sample, the parents were assured that confidentiality and anonymity would be provided.

Further, it was assumed that the students comprising both NOI and RE groups were relatively similar regarding their background demographic variables: they all lived in Virginia, they were all homeschooled, they all had access to identical study publicity in the various forums, they all agreed to participate before receiving or administering the test, and they all used the same testing service.

Statistical analysis was done using IBM SPSS Statistics Version 22. Percentiles and z-scores were used in the appropriate situations.

**THE AVERAGE SCORES FOR THE NOI HOMESCHOOL STUDENTS RANGED FROM THE 86TH TO 91ST PERCENTILE IN ALL SUBJECT AREAS, WHICH ARE 36 TO 41 POINTS ABOVE THE NATIONAL AVERAGE OF ALL PUBLIC SCHOOL STUDENTS.**

## **FINDINGS**

There was a total of 986 homeschool students from Virginia in the study sample. Of these, 792 were educated at home under the notice of intent (NOI) statutory provision, while 194 were under the religious exemption (RE) provision (see Table 1).

Data from both groups, NOI and RE, included very low scores and very high scores. Scores ranged from the 1st percentile to the 99th percentile in 8 of 10 subject-area cells (Appendix, Table 3 and Table 4.) The other two subject-area cells' percentiles ranged from 2 to 99 and 12 to 99.

The homeschool students' TerraNova 2/CAT 6 test scores are presented in Table 1 and in the Appendix. Table 1 shows that the average scores for all students in the study—averaged over all subject areas (i.e., reading, math, language, science, social studies)—ranged from the 84th to the 90th percentile, while the nationwide average for students in public schools used in the norm group is the 50th percentile.

Average scores for the RE homeschool students ranged from the 76th to 86th percentile, 26 to 36 points above the national average of all public school students.

Thus, both groups of homeschool students (NOI and RE) in the study scored notably

higher than the national public school average. The NOI group of homeschool students scored somewhat higher than the RE group of homeschool students. The two groups' 95% confidence intervals overlapped in one of five subject areas (i.e., social studies) (see Table 1).

Table 1.  
Achievement Test Scores of All Homeschool Students and of the NOI and RE Sub-Groups:

Subject	All Students (mean %ile)	SE M (z)	95% CL (%ile)	NOI (mean %ile)	SE M (z)	95% CL (%ile)	RE (mean %ile)	SE M (z)	95% CL (%ile)
Total Reading	90	.0257	88-90	91	.0281	89-91	86	.0600	82-88
Total Language	84	.0301	81-85	86	.0332	83-87	76	.0657	71-79
Total Math	84	.0283	81-84	86	.0312	82-86	78	.0629	72-80
Science	85	.0327	82-85	86	.0378	83-87	80	.0618	75-82
Social Studies	85	.0359	82-86	86	.0415	83-87	80	.0688	76-84
Total Score	89	.02456	86-88	90	.0267	87-90	83	.0573	78-84

Key to abbreviations:  
%ile = national percentile rank (50 is average)

SE M = standard error of the mean  
z = z-score

CI = confidence interval  
NOI = notice of intent  
RE = religious exemption

## CONCLUSIONS

Consistent with other studies conducted in the past 35 years (Murphy, 2012; Ray, 2017), the homeschool students in this study in Virginia scored well above the nationwide public school average on nationally normed standardized academic achievement tests. The average scores for all of the homeschool students in all subject areas ranged from the 84th to the 90th percentile. While both the NOI (notice of intent) and RE (religious exemption) homeschool students' scores were notably higher than the national public school average, the NOI students' scores were the higher of the two homeschool groups.

Since correlation is not causation, there is no evidence that more restrictive regulations on homeschooling would generate higher test scores. Future research could increase understanding regarding the difference in the two groups' scores, but the data do not indicate a practically significant difference.

There is ample evidence that Virginia homeschool students continue to perform well academically. This fact is consistent with research on homeschooling done across the United States. There is no indication from the empirical evidence in this study that any group of homeschool students in Virginia needs additional state regulation. ■

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## ABOUT THE AUTHOR:

Brian D. Ray is president of the National Home Education Research Institute and is internationally known for his research on homeschooling (home education, home-based education). He has published peer-reviewed articles, books, and chapters in books. Dr. Ray is a former professor of science and education at the undergraduate and graduate levels and a classroom teacher in public and private schools. He holds a B.S. in biology from the University of Puget Sound, an M.S. in zoology from Ohio University, and a Ph.D. in science education from Oregon State University. You may contact him at [mail@nheri.org](mailto:mail@nheri.org).

## APPENDIX

Table 2.  
Test Scores of All Students in the Study with Descriptive Statistics

	N	Minimum	Maximum	Mean		Std. Deviation
	Statistic	Statistic <sup>1</sup>	Statistic	Statistic	Std. Error	Statistic
totalreadingZ	863	-2.33	2.33	1.2773	.02570	.75504
totallanguageZ	719	-2.33	2.33	.9808	.03012	.80771
totalmathZ	860	-2.33	2.33	1.0151	.02828	.82926
scienceZ	777	-2.33	2.33	1.0265	.03268	.91093
socialstudiesZ	783	-2.33	2.33	1.0192	.03592	1.00518
totalscoreZ	986	-2.33	2.33	1.2167	.02456	.77134
Valid N (listwise)	625					

Notes:

1 - All statistics other than "N" are in z-scores.

Table 3.  
Test Scores of NOI Students in the Study with Descriptive Statistics

	N	Minimum	Maximum	Mean		Std. Deviation
	Statistic	Statistic <sup>1</sup>	Statistic	Statistic	Std. Error	Statistic
totalreadingZ	684	-2.33	2.33	1.3258	.02810	.73497
totallanguageZ	556	-2.33	2.33	1.0592	.03317	.78203
totalmathZ	683	-2.33	2.33	1.0814	.03118	.81492
scienceZ	610	-2.33	2.33	1.0818	.03775	.93235
socialstudiesZ	615	-2.33	2.33	1.0695	.04149	1.02899
totalscoreZ	792	-2.33	2.33	1.2834	.02666	.75029
Valid N (listwise)	474					

Notes:

1 - All statistics other than "N" are in z-scores.



**HOME EDUCATOR'S ASSOCIATION OF VIRGINIA**

2100 W. Laburnum Avenue, Suite 108A ■ Richmond, Virginia 23227

804-278-9200 ■ [office@heav.org](mailto:office@heav.org)

For questions on homeschool research and interpretation, please contact: National Home Education Research Institute (NHERI),  
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