National Assessment Governing Board

Reporting and Dissemination Committee

Friday, May 17, 2019

10:30 am – 12:30 pm

AGENDA

10:30 – 10:35 am	Welcome and Information Items *Rebecca Gagnon, Chair*	Attachment A
10:35 – 10:50 am	Report on the Release of the 2018 *Nation's Report Card* in Technology and Engineering Literacy *Stephaan Harris, Assistant Director for Communications*	
10:50 – 11:15 am	Uses of National-Only NAEP Data *Laura LoGerfo, Assistant Director for Reporting and Analysis*	Attachment B
11:15 – 11:40 am	Future Directions in Reporting: Contextual Data (SV #6) *Robert Finnegan, ETS* *Laura LoGerfo* *Daniel McGrath, National Center for Education Statistics*	
11:40 am – 12:30 pm	Discussions of Postsecondary Preparedness Dashboard (SV #10) *Robert Finnegan, ETS* *Eunice Greer, National Center for Education Statistics* *Laura LoGerfo*	Attachment C

Strategic Vision – Activities for Reporting and Dissemination Committee						
		Responsibility	Action	Measurable Outcomes	Start Date	Current Status
Inform #1: Strengthen and expand partnerships by broadening stakeholders' awareness of NAEP and facilitating their use of NAEP resources						
1.	Develop and Sustain Partnerships // Identify What Partners Need to Expand Use and Utility of NAEP	Board staff	Meet with ongoing and new partners	Increased number of partners and meetings	Summer 2015 - ongoing	Governing Board staff meets with partners
		Board staff; Communications contractor	Send newsletters to partners	Newsletters opened by recipients; Increased website traffic	October 2016 - ongoing	Higher open rates, fewer bounces
		Communications contractor – Client Relationship Management tool (CRM)	Audit and maintain database of contacts	Contact lists of partners current and error free; Increased partnerships	October 2017 - ongoing	Weekly tracking of what posts elicit attention and shares, now using SalesForce
2.	Work with Partners to Increase Awareness and Use of NAEP	Board members; Board staff; NCES staff; Communications contractor	Submit proposals to annual meetings	Increased representation at events/meetings; Increased number of conference presentations	August 2016 - ongoing	Increases in partners retweeting our work through social media
3.	Focused Reporting of NAEP Results	Board staff; CRP contractor; Communications contractor	Four tasks that will produce content to disseminate through partners	Increased traffic to website and social media; Views of artifacts; Numbers of posts and re-posts	October 2016 - ongoing	New graphics introduced biweekly; Motion graphics will be released soon

Strategic Vision – Activities for Reporting and Dissemination Committee						
		Responsibility	**Action**	**Measurable Outcomes**	**Start Date**	**Current Status**
		Board staff; Communications contractor	Produce quick graphics, videos, artifacts for dissemination	Traffic to web page; Views of artifacts; Number of posts and re-posts	January 2018 - ongoing	
4.	Highlight Contextual Data in Reporting	Board members; Board staff; NCES staff; Communications contractor; HumRRO technical support contract	Review contextual data for messaging / dissemination, including new indicators; Use contextual data in graphics, videos, toolkits	Increased number of artifacts with contextual data; Increased number of partners posting and re-posting artifacts; Traffic to social media posts with NAEP contextual data	Ongoing	Hatcher producing graphics with contextual data monthly; Process underway for second focused reporting contract, emphasizing data visualization
Inform #2: Increase opportunities to connect NAEP to administrative data and state, national, and international student assessments						
5.	Identify Opportunities to Promote Use of NAEP Data with Federal Datasets	Board members; Board staff; NCES staff	Determine what data would be feasible, useful, and of similar quality to NAEP to promote	Launch site with NAEP results and connections to other data; Traffic to website	November 2018	Discussed at November 2018 meeting of R&D and May 2019 R&D meeting
		Board members; Board staff; NCES staff	Collaborate with COSDAM about connecting NAEP with other data	Joint meeting of COSDAM and R&D to develop decisions to present to Board	August 2019	TBD

Strategic Vision – Activities for Reporting and Dissemination Committee						
		Responsibility	**Action**	**Measurable Outcomes**	**Start Date**	**Current Status**
6.	Learn from Reporting of International Assessments (***Also, SV #8***)	Board members; Board staff; NCES staff; Communications contractor	Learn about international assessments			
		Board members; Board staff; NCES staff	Invite OECD staff to present on reporting approaches	Discussions about what practices to apply to NAEP	2020 (?)	Future R&D meeting focused on international reporting
			Meet with NCES staff to consider crossover of reporting approaches	Board meeting plenary session re: feasible options; Possible incorporation of elements of international work in 2019 Nation's Report Card	2019	

Inform #3: Expand the availability, utility, and use of NAEP resources, in part by creating new resources to inform education policy and practice						
7.	Add Meaning to NAEP Achievement Levels	Technical support contract with HumRRO (COSDAM lead)	Use findings from HumRRO study to develop guides	Graphic and/or video instructing how to use and interpret achievement levels	October 2017 - ongoing	Met with COSDAM in November 2019 to discuss Achievement Levels interpretive guide, which R&D drafted; now awaiting input of Achievement Levels Working Group
8.	Research Effective Uses of NAEP	Technical contract with HumRRO;	Learn where and how NAEP is used effectively	Report on best practices—where, what, under what conditions	October 2017 - ongoing	Draft of paper on who analyzes NAEP data presented to R&D May 2019
		Communications contractor	Develop graphics and/or videos to support correct interpretation of NAEP results	Review NAEP mentions in sampling of reports and in media; Fewer reports of mis-NAEPery compared to TBD baseline		
9.	Develop New Tools for Audiences	Board members; Board staff; NCES staff; Communications	Ideas for tailored reports shared with NCES	Uses of new tool on website post-release; User feedback	August 2016; April 2018	

		contractor				
		Board members; Board staff; NCES staff; Communications contractor	Construct custom portals for different subjects and/or types of users	Uses of portals; User feedback	January 2019	
10.	Identify More User-Friendly Approaches to Presenting NAEP Results	Board staff	Invite partners / stakeholders to Board meetings to share needs, interests for using NAEP data	Number of plenary and R&D sessions; Posts of panel summaries; Traffic to social media posts of summaries	November 2016 - ongoing	New Executive Director will be introduced to partners
		Board members; Board staff; Communications contractor	Create "menu of engagement" list of speakers, graphics, videos, artifacts that Board staff can offer partners	Artifacts developed for and posted by partners; Number of requests by partners; Number of activities	January 2018 - ongoing	Graphics and videos shared online and tagged to partners who retweet
11.	Create "Brief Case" Studies	Board staff; Communications contractor	Learn how NAEP used effectively by states and districts to serve as guide via compelling narratives in graphics, videos, two-pagers	Increased social media traffic; Number of "brief case studies" posted and re-posted	January 2018 - ongoing	Arizona case study to be released soon; Wyoming case study underway

12.	**Facilitate Teacher Preparation Program Toolkit to Increase Access and Use of NAEP by Teachers**	**Board staff; Communications contractor**	**Meet with teacher educators to learn needs and interests**	**Develop tools and resources; Use of toolkits; User feedback**	**September 2018**	**Met with AACTE Executive Director to initiate this idea**
		Communications contractor	Support development of toolkit by partners	Webpage on Governing Board website for teacher educators and preservice teachers	January 2019	
Inform #4: Promote sustained dissemination and use of NAEP information beyond Report Card releases with consideration for multiple audiences and ever-changing multi-media technologies…. ***Note: SV #4 permeates throughout the entire list of planned tasks and activities, so is not presented in separate rows.***						
Innovate #6: Continue improving the content, analysis, and reporting of NAEP contextual data by considering the questions' relevance, sensitivity, and potential to provide meaningful context and insights for policy and practice						
13.	Review Contextual Variables	Board members; Board staff	Review contextual variables to ensure relevance and importance	Greater use of contextual data; Updated variables	Ongoing	

Upcoming Reports as of May 2019

2015 Student Questionnaires: Classroom Instruction for Mathematics, Reading, and Science	May 2019
2015 National Indian Education Study: A Closer Look	May 2019
Mapping State Proficiency Standards Onto the NAEP Scales: Results From the 2017 NAEP Reading and Mathematics Assessment	June 2019

2019 No. 007

National-Only NAEP Results (Arts, Civics, Economics, Geography, Technology and Engineering Literacy, and U.S. History): Who Uses Them, Why, and How

Final Report

Prepared for: National Assessment Governing Board
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Prepared under: Task 2.3 ED-NAG-17-C-0002

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National-Only NAEP Results (Arts, Civics, Economics, Geography, Technology and Engineering Literacy, and U.S. History): Who Uses Them, Why, and How

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National-Only NAEP Results (Arts, Civics, Economics, Geography, Technology and Engineering Literacy, and U.S. History): Who Uses Them, Why, and How

National-Only NAEP Results

The National Assessment of Educational Progress (NAEP) includes assessments in 10 subjects. Certain subjects, such as mathematics and reading, are statutorily required to be administered every 2 years; other subjects are typically administered every 4 years and the voluntary subjects are administered as funds permit. For all subjects, regardless of the frequency of their administration, results are reported at the national level. Some subjects, such as mathematics, reading, science, and writing have been reported at the state level and for selected districts (at least for some administrations). These state-level subjects provide useful information to state educators, policy makers, and others for benchmarking and monitoring trends in education that may be tied to state or district, national, and even international characteristics.

The purpose of this document is to provide insight on who uses these national-only NAEP data; how national-only NAEP results are being used; and where national-only NAEP results are being promoted and published outside of official releases of results. We address these questions by searching readily available, published academic literature and professional reports and publications to identify users and understand uses of national-only NAEP data. We do not include in this literature review undocumented ways that people use these data, as might be obtained via interviews or focus groups. We did not search non-print sources, such as interviews or presentations. We recognize this methodology is limited and will not produce a comprehensive picture of all NAEP uses, particularly in some areas (such as policy) where uses of NAEP are less likely to be documented in publically-searchable ways. This effort sought to obtain some very general initial information about documented uses of NAEP national-only assessment results.

Post-Release Media Coverage of NAEP National-Only Results

The National Assessment Governing Board conducts release events to inform the public about NAEP assessment results. These events allow in-person and webcast attendance of the release accompanied by outreach, social media, and partner promotion. Print, online, and broadcast media typically report the results within a week of the release. The following summaries provide the breadth of media coverage of the most recent national-only NAEP releases. Post-release media articles were not included in the literature review.

The Nation's Report Card: 2016 Arts

The most recent release of national-only results was for the 2016 NAEP Arts assessment (April 25, 2017). This well-attended event—there were more than 100 in-person attendees and more than 220 additional people participated via live webcast—generated considerable media interest. Within one week, 13 original articles were published about NAEP Arts results. These articles were republished 744 additional times. Within five days of the release, a total of 879

posts appeared on social media, potentially reaching more than 3 million people. #NAEP was a trending topic on Twitter in the D.C. metro area on April 25, 2017.

The Nation's Report Card: 2014 NAEP Technology and Engineering Literacy

Results for the 2014 Technology and Engineering Literacy (TEL) assessment were released on May 17, 2016, at the Michigan Science Center. More than 65 people attended the event and nearly 300 joined the webcast. Forty-seven original media articles were published. The news release was viewed more than 300 times on the *PR Newswire* site and appeared on another 172 websites, reaching a potential audience of nearly 10 million.

The Nation's Report Card: 2014 NAEP U.S. History, Geography, and Civics

Results of the 2014 NAEP U.S. History, Geography, and Civics assessments were released on May 6, 2015. Within one week of the release, 54 original articles were published in print, online, or broadcast news outlets. These media articles were republished or rebroadcast 853 times. In addition, 164 broadcast stations briefly mentioned the results.

The Nation's Report Card: 2012 NAEP Economics, Grade 12

The most recent release of NAEP Economics Grade 12 results was held on April 24, 2013. During the week following the release, five original news articles and two editorials were published about the assessment results. These were republished in at least 70 additional publications. The *Wall Street Journal* featured a video on their *Real Times Economics* blog. Report card results appeared on 330 websites around the world.

Method

When reviewing literature describing NAEP national-only data and results, we focused on the following assessments:

- U.S. History (2010, 2014)
- Civics (2010, 2014)
- Geography (2010, 2014)
- Economics (2012)
- Technology and Engineering Literacy (2014)
- Arts (2016)

The most recent national-only NAEP assessments were conducted in 2018, and results for TEL will be available in April 2019. The most recently released national-only NAEP results are for Arts, which was administered in 2016. The NAEP Civics, U.S. History, and Geography assessments were administered in 2014, along with the NAEP TEL assessment (all at Grade 8 only). The most recent administration of NAEP Economics was in 2012 (Grade 12 only).

We searched and reviewed academic journals, organization reports and documents, and conference presentations from 2009 to 2018 to identify references about and uses of NAEP national-only results. Using NAEP data for policy decisions is not generally documented in easily accessible sources. We searched for reports produced by think tanks, policy/research organizations, and advocacy organizations, but locating ad hoc materials used in policy analysis was beyond the scope of this effort. We reviewed potential sources to identify literature that used NAEP data for original analysis or advocacy. Analyses included NAEP scale scores or

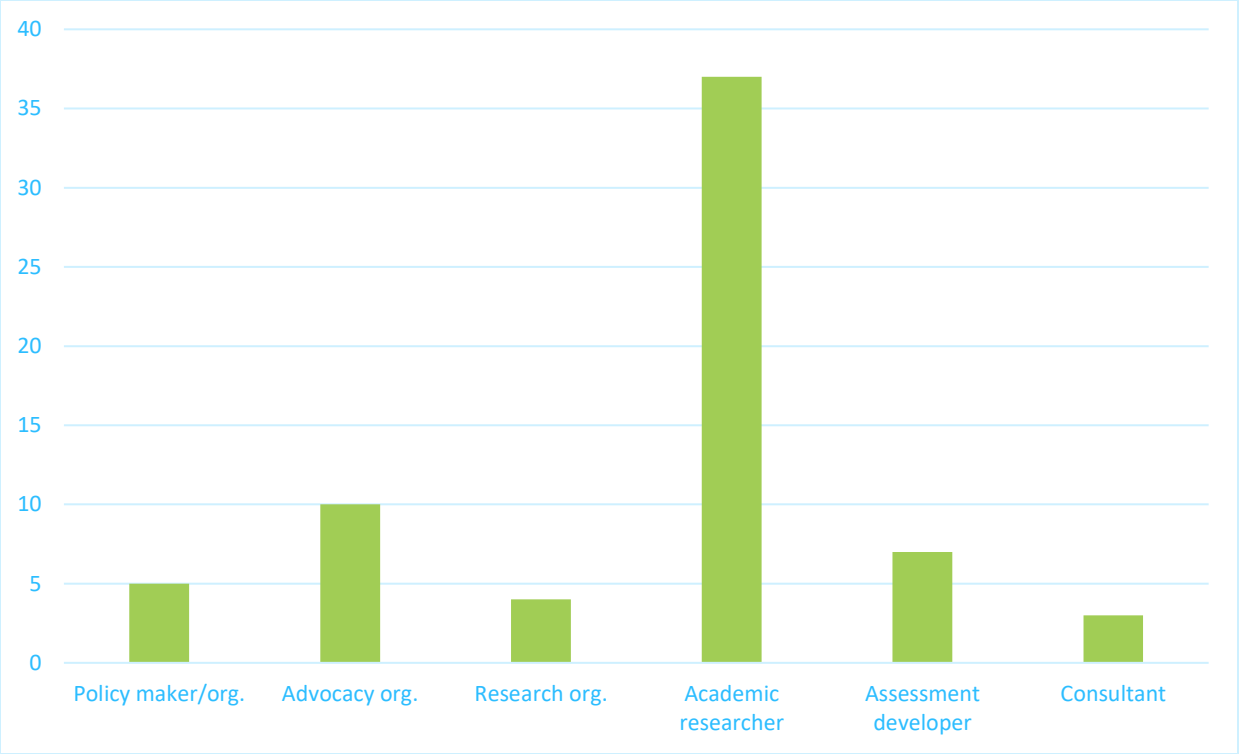
achievement levels and often incorporated contextual variables, including opportunity to learn (e.g., took an art class in school) and features of classroom instruction in a subject (e.g., teacher incorporates community engagement and active participation in civics class). Some sources referenced NAEP frameworks or released items. We deemed literature that merely made passing reference to one of the national-only NAEP assessments as not relevant and did not include them in this report. For example, Feinberg and Doppen (2010) mention NAEP Civics as a more comprehensive test than the U.S. test of citizenship.

We collected approximately 73 sources based on a thorough but not exhaustive search. For academic literature, we used search terms referencing NAEP, the Nation's Report Card, and subjects for which national-only results are reported. We targeted advocacy organizations for each of the subjects (e.g., Arts Education Partnership) to find any published material. We identified 63 sources that met our criteria of (a) being published within the past 10 years (2009−2018); (b) including more than a passing mention of the NAEP assessment; and (c) reporting beyond mere percent proficient assessment results. We eliminated 10 sources that did not meet these criteria. Sources not included in this document were omitted for several different reasons, all indicating no use or insufficient use of NAEP data or information. Reasons for exclusion include but are not limited to (a) mentioning NAEP only in the reference list; and (b) simply reporting results available in the Nation's Report Card. Appendix A presents sources we found but did not include in this literature review. Appendix B provides a list of exclusion and inclusion decisions.

We reviewed relevant sources of literature to identify the range of users of NAEP national-only results, the types of data used, how results and assessment information are used, and where the work is published. These sources are cited in the Annotated Bibliography accompanying this report.

Users of NAEP National-Only Results

NAEP is the only nationwide, representative assessment of academic subject knowledge for students in grades 4, 8, and 12. Potential users of these unique data include policy makers, advocacy organizations, research organizations, academic researchers, and assessment developers. We reviewed various sources of literature to identify users of NAEP national-only results. Several authors have multiple sources reporting similar research; as such, these results may provide a slight overestimation of use of NAEP national-only results. As seen in Figure 1, academic researchers were the major users in the 63 relevant sources of the 73 documents we reviewed.



Note: Because a single source may have multiple users, the number of sources does not sum to the total number of 63 sources.

Figure 1. National-only NAEP results literature by type of user.

To identify users, we based our categorization on the authors' affiliation. In some cases, the author was an organization. We researched the stated purpose of the institution, organization, or other entity to classify the user. Policy makers may be government employees or members of policy-oriented research institutes who support evidence-based change. Advocacy organizations work to impact change in a focused area and specific direction or manner. Research organizations focus on data and results from a neutral stance, without a policy or advocacy perspective. Assessment developers are employed by testing companies. Academic researchers are affiliated with colleges and universities.

As noted earlier, the largest group of users of NAEP national-only results comprised academic researchers; more than half of the sources we identified included at least one author from a college or university. Five sources were published dissertations and 35 sources were journal articles.

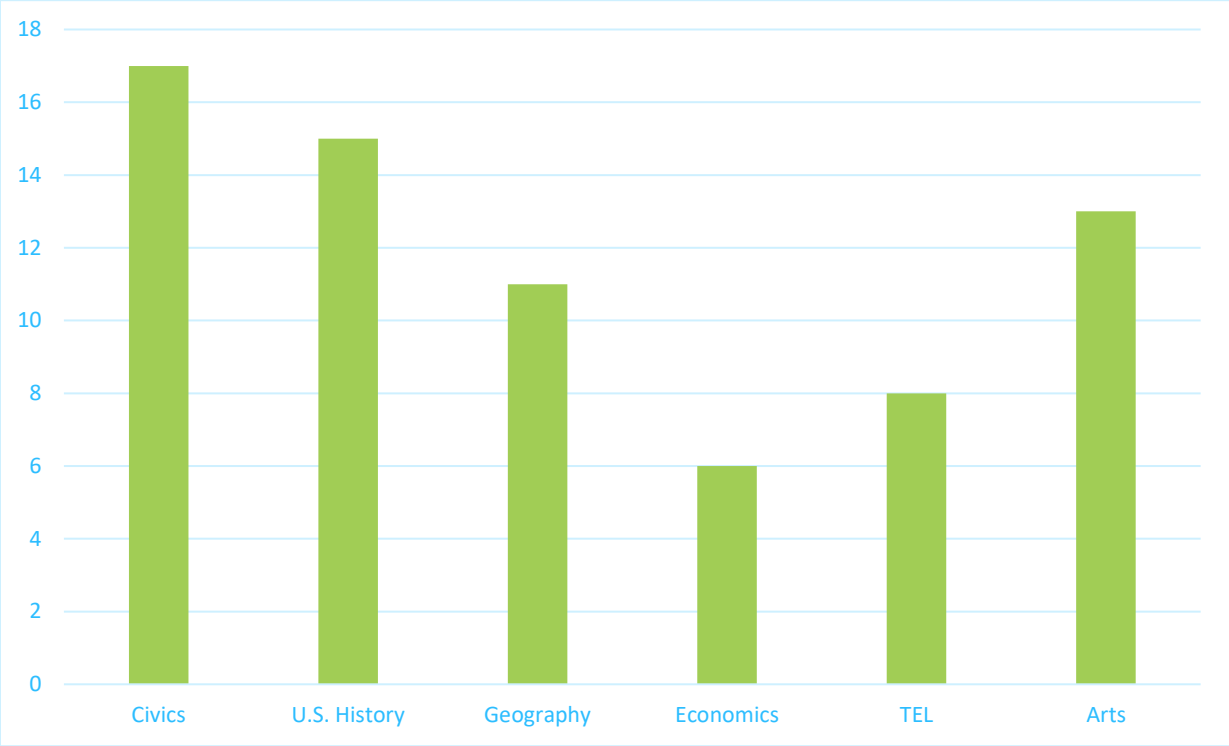
Organizations promoting policy or advocating for education in a content area were the second largest group of users. Fifteen of the 63 sources were published by a policy maker/organization or an advocacy organization and included:

- American Council of Trustees and Alumni
- American Enterprise Institute
- Arts Education Partnership
- Association of American Colleges and Universities
- Brown Center on Education Policy of the Brookings Institution
- Center for American Progress

- Economic Policy Institute
- Education Writers Association
- National Geographic Society
- The Center for Information and Research on Civic Learning and Engagement (CIRCLE)
- The Education Trust

Types of National-Only Data Used

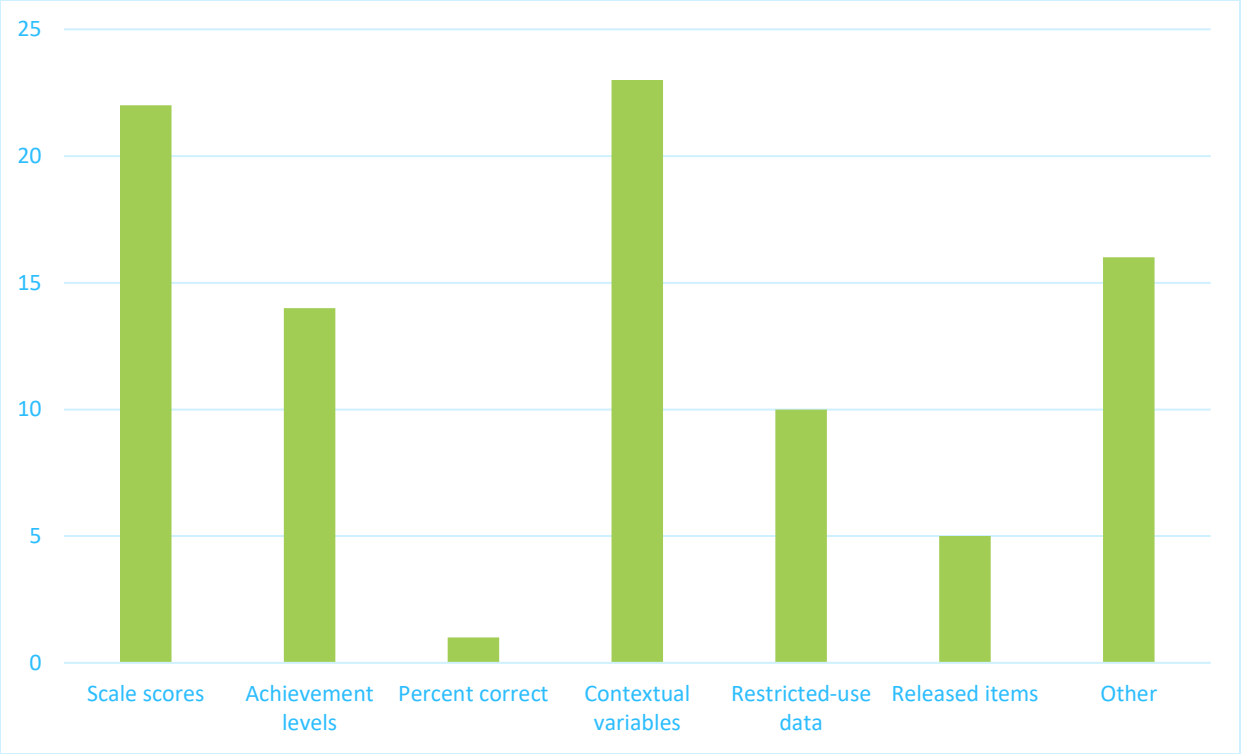
Across the national-only NAEP content areas, there was uneven coverage regarding how national-only data were used (Figure 2). Data from NAEP Civics and U.S. History assessments were most likely to be used. Geography was less likely to be used than civics and U.S. history. There is a relatively large group of arts educators advocating for the inclusion of arts in the curriculum and supporting their advocacy using NAEP. There was limited use of NAEP TEL and Economics data.



Note: Because a single source may include multiple subjects, the number of sources does not sum to the total number of 63 sources.

Figure 2. National-only NAEP results subjects by sources.

We found a variety of types of data used across the sources we reviewed, most common of which were contextual variables, scale scores, achievement levels (Figure 3). Researchers used a wide variety of data, such as restricted-use data, plausible values, scale scores, achievement levels, contextual variables, frameworks, item mapping tool, the NAEP Data Explorer, and released items.



Note: Because a single source may use multiple types of data, the number of sources does not sum to the total number of 63 sources.

Figure 3. Types of national-only NAEP results used.

Purposes for Using National-Only Data

There were almost as many purposes for using national-only NAEP data as there were sources reviewed (see Annotated Bibliography). With the largest number of sources covering U.S. history, civics, and geography, seven sources used NAEP data to describe in general the state of education in civics or geography. Half a dozen authors examined trends in student performance as their primary use of NAEP data. Some research studies conducted by academic researchers sought to explain achievement gaps in NAEP Civics, U.S. History, or TEL results using demographic or contextual variables.

Where National-Only Data Were Published

National-only NAEP data were most frequently used by academic researchers who published their work about national-only NAEP subjects most often in journal articles (Figure 4). Policy, advocacy, and research organizations typically used reports, blogs, fact sheets, and presentations to share their interpretation of NAEP national-only results.

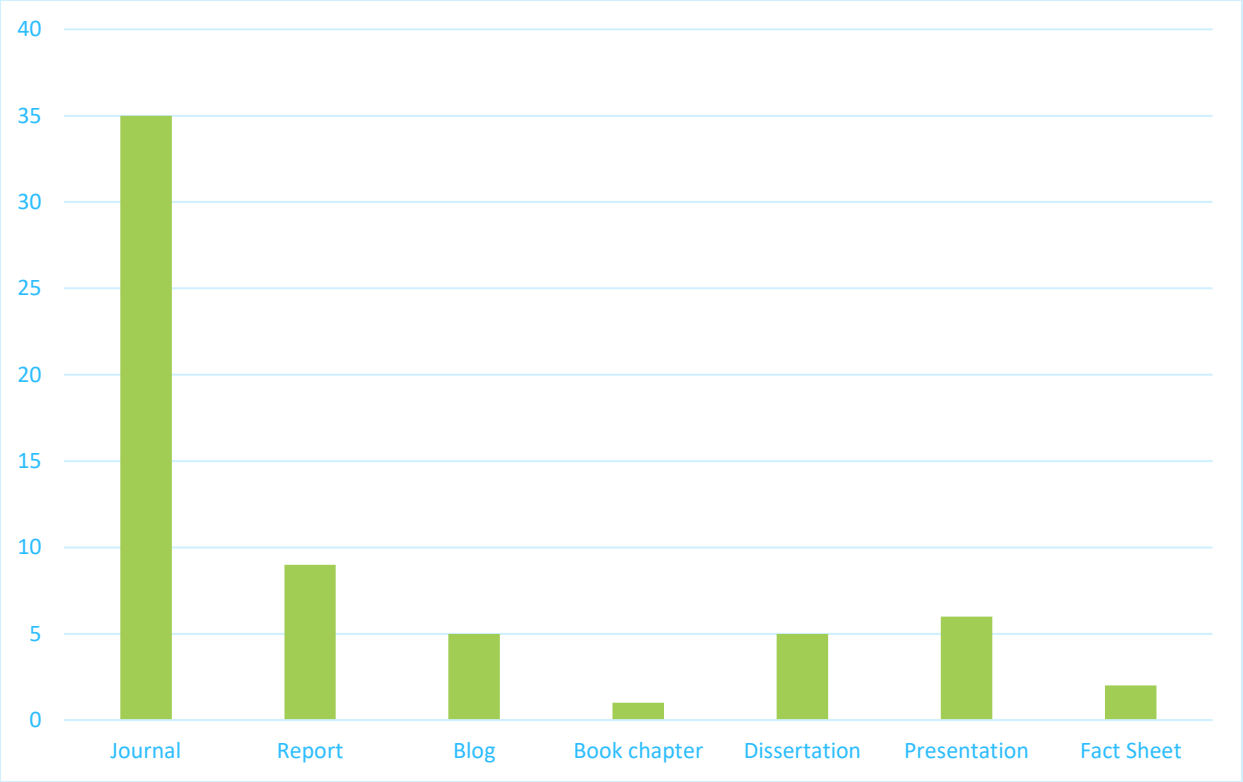


Figure 4. Where national-only NAEP results were published.

Concluding Thoughts

Beyond the immediate post-release media coverage, we found relatively few recent (2009 to 2018) uses of national-only NAEP assessment results and information. Academic researchers were more likely to use these results than other types of users. Of the NAEP subjects for which national-only results are reported, academics were most likely to use NAEP U.S. History assessment data and information. See Table 1 for types of users by NAEP subject.

Table 1. Types of National-Only NAEP Data Users by NAEP Subject

	Academic researcher	Policy maker/ organization	Advocacy organization	Research organization	Assessment developer	Consultant
Civics	8	3	6		1	
U.S. History	12	1	2			
Geography	3	2	3	3		
Economics	5					1
TEL	3			1	6	
Arts	9	1	1			2

Note: Because a single source may include multiple types of users and multiple NAEP subjects, the number of sources in this table do not sum to the total number of 63 sources.

Policy and advocacy organizations were the next most frequent users of NAEP national-only results. Users affiliated with policy and advocacy organizations were most likely to analyze and interpret results and other information related to the NAEP Civics assessment. Policy and advocacy organizations shared NAEP Arts results in context through online blog posts. None of the policy or advocacy organizations represented in the sources we reviewed used data from the NAEP Economics or TEL assessments.

The limited periodicity of the NAEP Economics assessment may have constrained the use of data from this assessment. NAEP Economics is only administered in Grade 12 and has been administered only twice, in 2006 and 2012. Organizations dedicated to enhancing economics education tend not to access NAEP Economics data to support their missions.

The NAEP Arts assessment has been offered only three times, first in 1997, then again in 2008 and 2016. There are no achievement levels for the NAEP Arts assessment and limited trend data. Further, the NAEP Arts Framework has not been fully covered in operational assessments; dance and music performance have not been included. Despite these limitations, arts educators in higher education use the NAEP Arts assessment to study and advocate for the importance of arts in the curriculum. Academic researchers disseminate their research, advocate for arts education, and influence policy through the *Arts Education Policy Review* journal, among other outlets.

NAEP Civics and U.S. History national-only results were often cited and used. Based on the sources we reviewed, these results were used by a diverse set of stakeholders, especially results from the NAEP Civics assessment. NAEP Geography received less attention than NAEP Civics and NAEP U.S. History.

The Technology and Engineering Literacy assessment is the newest NAEP assessment, having debuted in 2014 and administered again in 2018. The 2018 results are scheduled for release on April 30, 2019. Perhaps there will be more interest in the NAEP TEL assessment data following the 2019 release, especially given the increased emphasis on science, technology, engineering, and mathematics (STEM) fields. As Bergner and von Davier (2018) report, the NAEP TEL data provide a rich source of information that combines process data in addition to the traditional scale scores, achievement levels, or even item-level results. Currently, assessment developers have conducted all of the research using TEL process data. Making process data available for secondary researchers could increase the use of TEL data.

One additional point to consider is the time lag in publishing, especially journal articles and research using restricted-use data. Availability of restricted-use NAEP data follows the release by months or years (e.g., 2008 NAEP Arts results were released in 2009 and restricted-use data was made available in 2011). Getting a research article published in a peer-reviewed, academic journal typically takes at least three months, if not several years. Depending on the journal, there may be a "waiting list" for an article to be published. Factoring in time to conduct the research, it could take three years or more before research using NAEP data is publicly available. For example, Diket, Xu, and Brewer (2015) published their research using 1997 and 2008 NAEP Arts data seven years after the later assessment was conducted. Fitchett and Heafner (2017) published research using 2010 NAEP U.S. History data seven years following administration of the assessment.

Generally, less time elapses between assessments and blog posts. Malkus (2015) wrote about 2014 NAEP Geography in 2015. Petrilli (2011) and Finn (2011) discussed trends in NAEP Geography from 1994–2010 in 2011. But, sometimes it can take time to collect data from

multiple sources, conduct analyses, and produce a report. The American Council of Trustees and Alumni released *A Crisis in Civic Education*, in 2016, six years after the 2010 NAEP Civics assessment results included in its report.

Based on the literature collected for this review, users value the NAEP Civics and U.S. History assessments for analyzing test data along with contextual variables to understand student learning, particularly achievement gaps. A group of vocal academic researchers in the arts leverages the NAEP Arts data to provide support for the importance of the arts in education. The other NAEP assessments—Geography, Economics, and TEL—were less likely to be used.

Annotated Bibliography

a. American Council of Trustees and Alumni. (2016). *A crisis in civic education*. Washington, DC: Author.

User:	advocacy organization
Type of data:	achievement levels
Purpose:	state of civics education
Where published:	report
NAEP subject(s):	Civics
Main finding:	Opined there is a crisis in American civic education; 2010 NAEP Civics results show little improvement in civic knowledge of K−12 students.

b. Ben-Chetrit, L. (2014). *The effect of high school arts classes on scores in measurement and geometry* (Doctoral dissertation). Retrieved from UMI/ProQuest.

User:	academic researcher
Type of data:	achievement gaps and contextual variables
Purpose:	professional development for visual arts teachers
Where published:	dissertation
NAEP subject(s):	Arts
Main finding:	Development of professional development workshop for visual arts teachers to incorporate measurement and geometry instruction in art lessons. The focus of the research was on California's state assessment. NAEP results in art and mathematics were reported as evidence of the need for professional development.

c. Bergner, Y., Shu, Z., & von Davier, A. (2014). Visualization and confirmatory clustering of sequence data from a simulation-based assessment task. In *Proceedings of the 7th International Conference on Educational Data Mining* (pp. 177–184).

User:	academic researcher and assessment developer
Type of data:	process data
Purpose:	confirmatory clustering to analyze sequence data
Where published:	presentation
NAEP subject(s):	TEL
Main finding:	Use visualization and confirmatory clustering to understand what extent clustering solutions align with score categories. Preprocessing, distance metric, and external cluster validity impact agreement between cluster assignments and score. Different clustering protocols may lead to different solutions.

d. Bergner, Y., & von Davier, A. A. (2018). Process data in NAEP: Past, present, and future. *Journal of Educational and Behavioral Statistics*. Advance online publication. doi.org/10.3102/1076998618784700

User:	academic researcher and assessment developer
Type of data:	information about NAEP process data (not actual process data)
Purpose:	review of state of research on using process data in measurement
Where published:	journal

NAEP subject(s): TEL
Main finding: NAEP is leading the way in exploring use of process data in large-scale assessment measurement.

e. Brewer, T. M. (2009). Arts education policy lessons learned from the Southeastern College Art Conference. *Arts Education Policy Review, 110*(3), 35–39.

User: academic researcher
Type of data: NAEP Report Card
Purpose: NAEP Arts advocacy
Where published: journal
NAEP subject(s): Arts
Main finding: Provides policymaking lessons from the Visual Arts Education Forum held during the Southeastern College Art Conference. Mentions the release of the 2008 NAEP Arts results in conjunction with dialogue about state and national arts standards and the NCLB as a good time to make policy recommendations.

f. Brewer, T. M., Xu, L., & Diket, R. M. (2017), Confirming the significance of art specialists and aspirational learning. *Art Education, 70*(2), 16–24.

User: academic researcher
Type of data: achievement levels and contextual variables
Purpose: impact of art specialists on student achievement
Where published: journal
NAEP subject(s): Arts
Main finding: Clarify and present NAEP findings that are statistically significant for art educators. Scores were consistent from 1997 to 2008 because art specialists, although reduced in number, understood the standards regarding art. Achievement scores of students who received art instruction from full-time art specialists were significantly higher in 2008 than 1997.

g. Brysch, C. P. (2014). *Status of geography education in the United States*. Washington, DC: National Geographic Society.

User: research organization
Type of data: scale scores
Purpose: status of geography education and assessment in the United States
Where published: report
NAEP subject(s): Geography
Main finding: Documentation of geography assessment, including NAEP. Provides NAEP data, including a figure with grade-level scale score trends from the 2010 NAEP Geography assessment.

h. Buchanan, W. R. (2011). *Statistical modeling of the effects of micro-, meso-, and exosystem poverty on academic achievement in music* (Doctoral dissertation). Retrieved from paces-consuting.org/quantitative.html

User: academic researcher
Type of data: restricted-use data and contextual variables
Purpose: effects of poverty on achievement in music

Where published: dissertation
NAEP subject(s): Arts
Main finding: Owning a musical instrument, access to multiple diverse pedagogical methods, and access to robust music education facilities and programing were positive significant predictors of student outcomes.

i. Burton, D. (2016). A quartile analysis of selected variables from the "2008 NAEP Visual Arts Report Card". *Studies in Art Education: A Journal of Issues and Research in Art Education, 57*(2), 165-178.

User: academic researcher
Type of data: restricted-use data
Purpose: quartile analysis
Where published: journal
NAEP subject(s): Arts
Main finding: Painting and drawing, making art from clay, weekly homework, and visiting a museum or gallery were statistically significant. Studio production remains a strong component in art curriculum, and homework assignments and museum visits contribute to students' art education.

j. Campbell, D.E. & Niemi, R.G. (2016, August). Testing civics: State-level civic education requirements and political knowledge. *American Political Science Review, 110*(3), 495–511.

User: academic researcher
Type of data: scale scores
Purpose: academic research
Where published: journal
NAEP subject(s): Civics
Main finding: Having a civic education requirement of some type leads to more political knowledge. Adding a high-stakes assessment leads to increased knowledge for Latino students. Civic education requirements are most effective for Latinos and immigrants.

k. Diket, M., Xu, L., & Brewer, T.M. (2014) Toward an aspirational learning model gleaned from large-scale assessment, *Studies in Art Education, 56*(1), 397–411. doi: 10.1080/00393541.2014.11518948.

User: academic researcher
Type of data: restricted-use data
Purpose: secondary analysis of visual arts test block
Where published: journal
NAEP subject(s): Arts
Main finding: Generated model-fit statistics and path diagrams for 13 items and four constructs in a visual arts item block administered in 1997 and 2008. Technical knowledge appears requisite to developing aesthetic understanding and meaning. An aspirational learning model fit the test block and might be used in curriculum planning and implementation.

l. Downs, R. M. (2011). The NAEP Geography Report 2010: What will we do next? *Journal of Geography, 111*(1), 39–40.

User: academic researcher
Type of data: NAEP report cards and framework
Purpose: Suggestions for using NAEP to support the need for Geography education
Where published: journal
NAEP subject(s): Geography
Main finding: Commentary piece that promotes the use of NAEP Geography results, specifically conducting additional analyses of NAEP Geography data.

m. Edelson, D.C. & Pitts, V.M. (2013). *Road map for 21st century Geography Education Project*. Retrieved from http://natgeoed.org/roadmap

User: advocacy organizations
Type of data: scale scores
Purpose: state of geography education
Where published: research report
NAEP subject(s): Geography
Main finding: Assessments of geographic concepts and skills confirm failure of education system to provide students with adequate understanding of geography. NAEP 2010 Geography results indicate overwhelming majority of American students are geographically illiterate.

n. Education Writers Association (2011). *EWA Interview: Daniel Edelson on the NAEP Geography Survey*. Online interview. https://www.ewa.org/multimedia/ewa-interview-daniel-edelson-naep-geography-survey

User: professional association/advocacy organization
Type of data: scale scores
Purpose: state of geography education
Where published: online YouTube
NAEP subject(s): Geography
Main finding: Geography has been written into standards for all states but is only sporadically assessed. Only one-quarter of students in grades 4, 8, and 12 scored proficient on the NAEP geography assessment, providing evidence the country is not doing a good job educating students in this scientific discipline.

o. Finn, C.E. (2011). This glass is half-empty, maybe two-thirds. *Flypaper*. Washington, DC: Thomas B. Fordham Institute. Retrieved from https://fordhaminstitute.org/national/commentary/glass-half-empty-maybe-two-thirds

User: research organization
Type of data: scale scores
Purpose: education trends
Where published: organization newsletter/blog
NAEP subject(s): Geography
Main finding: Significant gains were made on NAEP Geography for poor, minority, and low-achieving students 1994–2010 but student on average are woefully lacking essential skills and knowledge across every subject.

p. Fitchett, P. G., & Heafner, T. L. (2013). Making critical connections between social studies teaching and student achievement using NAEP data explorer. *The Teacher Educator, 48*(4), 296–310.

User:	academic researcher
Type of data:	NAEP data explorer
Purpose:	teaching pre-service teachers to use NDE for self-evaluation
Where published:	journal
NAEP subject(s):	U.S. History
Main finding:	Teacher candidates taught to use NDE as a tool to critically analyze data and for self-evaluation of instructional practices.

q. Fitchett, P. G., & Heafner, T. L. (2017). Student demographics and teacher characteristics as predictors of elementary-age students' history knowledge: Implications for teacher education and practice. *Teaching and Teacher Education, 67*, 79–92.

User:	academic researcher
Type of data:	plausible values, contextual variables
Purpose:	understand connections among student sociocultural characteristics, instructional exposure, school-level variables, and U.S. History content knowledge
Where published:	journal
NAEP subject(s):	U.S. History
Main finding:	Teacher subject matter background, reported time spent on history/social studies, and instructional decision-making were positively associated with 4th grade 2010 NAEP U.S. History performance. Mixing interdisciplinary methods, in-class dialogue, and other literacy strategies were associated with average higher history test performance by students in those classrooms.

r. Fitchett, P. G., Heafner, T. L., & Lambert, R. G. (2017). An analysis of predictors of history content knowledge: Implications for policy and practice. *Education Policy Analysis Archives, 25*(65). http://dx.doi.org/10.14507/epaa.25.2761

User:	academic researcher
Type of data:	scale scores
Purpose:	understand connections among student sociocultural characteristics, instructional exposure, school-level variables, and U.S. History content knowledge
Where published:	journal
NAEP subject(s):	U.S. History
Main finding:	While sociocultural indicators (race, gender, and SES) correlate with achievement, students' instructional exposure variables remain significant predictors of history content knowledge. Also, while substantial achievement gaps remain, exposure to text-based instructional practices is associated with increased knowledge.

s. Grey, A. C. (2010). No Child Left Behind in art education policy: A review of key recommendations for arts language revisions. *Arts Education Policy Review, 111*, 8–15.

User:	academic researcher

Type of data: NAEP Report Card
Purpose: advocacy for NAEP Arts
Where published: journal
NAEP subject(s): Arts
Main finding: One of the recommendations is to urge the Governing Board to increase the frequency of NAEP Arts assessment to every five years in grades 4, 8, and 12. Author cites the crucial need for external analysis of the 2008 NAEP Arts results to inform recommendations for NCLB revisions so that no child is left behind in arts education.

t. Grodoski, C. (2015). Creativity, policy, and practices in three states: An exploration of definitions of creativity among state art education policies, the life contexts, and professional practice of middle level art educators. *Marilyn Zurmuehlen Working Papers in Art Education, 2015*(1), 1–13.

User: academic researcher
Type of data: secondary analysis
Purpose: survey of art educators
Where published: journal
NAEP subject(s): Arts
Main finding: References a structural model for secondary analysis of NAEP visual arts data as one of the few studies that have examined the impact of policy and intervening variables on art education outcomes. This study was a survey of art educators.

u. Hansen, M., Levesque, E., Valant, J., & Quintero, D. (2018). *The 2018 Brown Center report on American education: How well are American students learning?* Washington, DC: Brown Center on Education Policy, The Brookings Institution.

User: policy maker/organization
Type of data: scale scores
Purpose: state of social studies and civics education
Where published: research report
NAEP subject(s): Civics
Main finding: Slow and modest improvements in 8th grade civics from late 1990s to 2014; gaps remain alarmingly wide. Large share of students not receiving a civics education that incorporates community engagement and active participation in classroom.

v. Hao, J., Shu, Z., & von Davier, A. (2014). Analyzing process data from game/scenario-based tasks: An edit distance approach. *Journal of Educational Data Mining, 7*(1), 33–50.

User: assessment developer
Type of data: process data
Purpose: edit distance approach to analyze sequence data
Where published: journal
NAEP subject(s): TEL
Main finding: Compared ideal action string of best performance to student action strings for scenario-based tasks in which the order of actions is most

important. Found strong correlation between edit distances and scores obtained from the scoring rubric.

w. Heafner, T. L., & Fitchett, P. G. (2015). An opportunity to learn U.S. history: What NAEP data suggest regarding the opportunity gap. *The High School Journal, 90*(3), 226−249.

User:	academic researcher
Type of data:	plausible values
Purpose:	research
Where published:	journal
NAEP subject(s):	U.S. History
Main finding:	About 27% of variance in NAEP U.S. History achievement can be predicted by students' demographics. Opportunity to learn (OTL) is a significant predictor of historical knowledge; there is an opportunity gap for black students.

x. Heafner, T. L., & Fitchett, P. G. (2018). U.S. history content knowledge and associated effects of race, gender, wealth, and urbanity: Item response theory (IRT) modeling of NAEP-USH achievement. *The Journal of Social Studies Research, 42*(1), 11−25.

User:	academic researcher
Type of data:	item mapping tool
Purpose:	gap analysis
Where published:	journal
NAEP subject(s):	U.S. History
Main finding:	Females and black students are more likely to answer questions related to social history. Need to develop a more democratic curriculum that reflects cultural identities to make history meaningful.

y. Heid, K. (2016). The 2008 National Assessment of Educational Progress (NAEP): A visual art replication study. *Arts Education Policy Review, 117*(2), 78–86.

User:	academic researcher
Type of data:	restricted-use data
Purpose:	replication study of self-portrait scores
Where published:	journal
NAEP subject(s):	Arts
Main finding:	Conducted replication of self-portrait task in state where all K-8 schools are required to have dedicated art teachers. Found positive relationship between having a dedicated art teacher and scores on a self-portrait task compared to average NAEP scores.

z. Hinde, E. R. (2015). Geography matters: Teacher beliefs about geography in today's schools. *The Journal of Social Studies Research, 39*(2), 55–62.

User:	academic researcher
Type of data:	achievement levels
Purpose:	teachers' perspectives of geography curriculum
Where published:	journal
NAEP subject(s):	Geography
Main finding:	States "The 2010 NAEP indicates that fewer than 30% of American students were proficient in geography, and that more than 70% of 4th,

8th, and 12th graders were unable to perform at grade level in geography." The focus is a survey of teachers to identify what students should learn about geography.

aa. Jacobson, D., Parker, A., Spetzler, C., Bruine de Bruin, W., Hollenbeck, K., Heckerman, D., & Fischhoff, B. (2012) Improved learning in U.S. history and decision competence with decision-focused curriculum. *PLoS ONE 7*(9): e45775. doi:10.1371/journal.pone.0045775

User:	academic researcher
Type of data:	NAEP U.S. History scores and Decision Competence scores
Purpose:	research
Where published:	journal
NAEP subject(s):	U.S. History
Main finding:	Integrating decision making into U.S. history instruction improved students' history knowledge and decision-making competence, compared to traditional history instruction.

bb. Journell, W. (2014). Teaching politics in the U.S. history classroom. *The History Teacher, 48*(1), 55–69.

User:	academic researcher
Type of data:	achievement levels
Purpose:	using U.S. history to teach students about political issues and events
Where published:	journal
NAEP subject(s):	Civics
Main finding:	Cites the percentages of grade 12 students demonstrating Basic and Proficient knowledge of NAEP Civics. Provides examples of using U.S. history curriculum to discuss contemporary political issues.

cc. Journell, W. (2015). We still need you! An update on the status of K–12 civics education in the United States. *PS: Political Science & Politics, 48*(4), 630–634.

User:	academic researcher
Type of data:	achievement levels and contextual variables
Purpose:	state of civics education
Where published:	journal
NAEP subject(s):	Civics
Main finding:	Updates Niemi and Smith's (2001) study on enrollments in high school government class. Primarily uses High School Transcript Study data; reports achievement level results for understanding of civic and political concepts by race/ethnicity.

dd. Kanter, M., & Schneider, C. G. (2013). Civic learning and engagement. *Change: The Magazine of Higher Learning, 45*(1), 6−14.

User:	policy maker/organization and advocacy organization
Type of data:	achievement levels
Purpose:	state of civic health
Where published:	periodical/journal
NAEP subject(s):	Civics

Main finding: Too many Americans are not prepared as active citizens with civic knowledge, per 2010 NAEP Civics results. Suggest higher education should assess civic learning of students.

ee. Kawashima-Ginsberg, K. (2013). *Do discussion, debate, and simulations boost NAEP Civics performance?* Medford, MA: The Center for Information & Research on Civic Learning & Engagement, Jonathan M. Tisch College of Civic Life, Tufts University.

User: advocacy organization
Type of data: scale scores and contextual variables
Purpose: research on impact of three practices of civic education pedagogy
Where published: CIRCLE fact sheet
NAEP subject(s): Civics
Main finding: Overall, 12th graders were likely to benefit from being exposed to all three practices, while findings were mixed, in some cases negative, for 4th graders. Middle- and high-school students exposed to practices tended to perform better than peers in same demographic groups.

ff. Levine, P. (2013). *What the NAEP Civics assessment measures and how students perform*. Medford, MA: The Center for Information & Research on Civic Learning & Engagement, Jonathan M. Tisch College of Civic Life, Tufts University.

User: advocacy organization
Type of data: scale scores and contextual variables
Purpose: how to interpret NAEP results
Where published: CIRCLE fact sheet
NAEP subject(s): Civics
Main finding: Overall scores on NAEP Civics assessment do not provide objective information about how well students perform, but rather provide rich information about students' civic knowledge.

gg. Levine, P. & Kawashima-Ginsburg, K. (2017). *The republic is (still) at risk–and civics is part of the solution*. Medford, MA: Jonathan M. Tisch College of Civic Life, Tufts University.

User: advocacy organization
Type of data: scale scores and contextual variables
Purpose: state of civic learning
Where published: briefing paper
NAEP subject(s): Civics
Main finding: Data show profound disparities in civic knowledge and participation/engagement among America's young people.

hh. Levinson, M. (2010). The civic empowerment gap: Defining the problem and locating solutions. In L. Sherrod, J. Torney-Purta, & C. A. Flanagan (Eds.), *Handbook of Research on Civic Engagement* (pp. 331–361). Hoboken, NJ: John Wiley & Sons.

User: academic researcher
Type of data: scale scores and contextual variables
Purpose: research on civic empowerment gap analysis
Where published: book chapter

NAEP subject(s): Civics
Main finding: 2006 NAEP Civics results indicate poor black and Hispanic students perform significantly worse than other students. Scores on the 1998 NAEP Civics assessment were directly related to the number of years a student lived in the U.S.

ii. Littenberg-Tobias, J. (2015). *Teaching citizens: Exploring the relationships between teacher professional learning, interactive civics, and student achievement on NAEP Civics* (Doctoral dissertation). Retrieved from Boston College University Libraries.

User: academic researcher
Type of data: restricted-use data and contextual variables
Purpose: effect of teacher professional development on student achievement
Where published: dissertation
NAEP subject(s): Civics
Main finding: Participation in professional learning significantly predicted interactive instruction and student achievement. Interactive instructional practices were significantly associated with small increases in student achievement in NAEP Civics. Relationship between interactive instruction and student achievement was curvilinear.

jj. Littenberg-Tobias, J., & Cohen, A. K. (2016). Diverging paths: Understanding racial differences in civic engagement among white, African American, and Latina/o adolescents using structural equation modeling. *American Journal of Community Psychology, 57*(1-2), 102–117. https://doi.org/10.1002/ajcp.12027

User: academic researcher
Type of data: released items
Purpose: assess knowledge of civic and political topics
Where published: journal
NAEP subject(s): Civics
Main finding: Used NAEP civics questions and other sources to develop a questionnaire/survey to assess knowledge of civic and political topics and to measure exposure to democratic practices, level of civic self-efficacy, and plans for future civic engagement. NAEP civics items were provided as an example of a standardized test that had items with lower factor loading and intercepts for some subgroups than White students.

kk. Lord, K. M. Noel, A. M., & Slevin, B. (2016). Social studies concepts: An analysis of the NAEP and states' standards. *Journal of Research in Childhood Education, 30*(3), 389−405.

User: academic researcher
Type of data: achievement levels and frameworks
Purpose: research
Where published: journal
NAEP subject(s): U.S. History, Civics, Geography
Main finding: Variability in nine randomly selected state social studies standards documents and inconsistencies between what is assessed on NAEP.

Need for conceptually based social studies instruction to meet students' knowledge and achievement gaps.

ll. Malkus, N. (2015). *Shifting ground below paradoxical NAEP scores*. Retrieved from http://www.aei.org/publication/shifting-ground-naep-scores/

User:	policy organization
Type of data:	scale scores
Purpose:	education trends
Where published:	online public policy blog post
NAEP subject(s):	Civics, Geography, and U.S. History
Main finding:	US students in 2014 have very different racial/ethnic and socioeconomic makeup than in 2001. Although NAEP Geography results indicate overall growth is flat, scores for subgroups have been increasing.

mm. Mitchell, T. (2017). *Examining the relationship between technology & engineering instruction and technology & engineering literacy in K−8 education* (Doctoral dissertation). Retrieved from ProQuest. (10606761)

User:	academic researcher
Type of data:	scale scores and contextual variables
Purpose:	research
Where published:	published dissertation
NAEP subject(s):	TEL
Main finding:	Significant differences in technology and engineering achievement based on demographic variables. Students who engaged often in technology and engineering modes of instruction scored higher on TEL.

nn. National Science Board. (2018). *2018 science & engineering indicators*. Alexandria VA: National Science Foundation.

User:	research organization
Type of data:	scale scores
Purpose:	education trends
Where published:	research report
NAEP subject(s):	TEL
Main finding:	Tables of results by demographic variables.

oo. Neumann, R. (Spring 2017). American Democracy in Distress: The Failure of Social Education. *Journal of Social Science Education, 16*(1), 5–16.

User:	academic researcher
Type of data:	scale scores and contextual variables
Purpose:	further understanding of relationship between social education programs in US public schools and health of democracy
Where published:	journal
NAEP subject(s):	Civics and U.S. History
Main finding:	Student performance on NAEP Civics and U.S. History over time lends evidence about the failure of schools to educate students to

think critically and analytically about the country's political system and to prepare them for political participation.

pp. Park, B. J., Broer, M., & Bohrnstedt, G. W. (2017). *The relationship between students' contextual factors related to technology and technology and engineering literacy performance*. Paper presented at the annual meeting of the American Educational Research Association, San Antonio, TX.

User:	assessment developer
Type of data:	scale scores and contextual variables
Purpose:	relationship between contextual factors and student performance
Where published:	presentation
NAEP subject(s):	TEL
Main finding:	Self-efficacy significantly predicted TEL performance after controlling for major student demographic characteristics. Although there were no other significant direct relationships, path analysis results show that most TEL factors have significant relationships with self-efficacy, suggesting that self-efficacy may mediate the relationship between TEL factors and performance.

qq. Petrilli, M.J. (2011). Our schools' secret success. *Flypaper*. Washington, DC: Thomas B. Fordham Institute. Retrieved from https://fordhaminstitute.org/national/commentary/our-schools-secret-success

User:	research organization
Type of data:	scale scores
Purpose:	education trends
Where published:	organization newsletter/blog
NAEP subject(s):	Geography
Main finding:	Significant gains were made on NAEP Geography for poor, minority, and low-achieving students 1994–2010 but don't know why.

rr. Schug, M. C., Dieterle, D. A., & Clark, J. R. (2009). Are high school economics teachers the same as other social studies teachers? The results of a national survey. *Social Education, 72*(2), 71−75.

User:	academic researcher
Type of data:	achievement levels and contextual variables
Purpose:	research
Where published:	journal
NAEP subject(s):	Economics
Main finding:	2006 NAEP Economics results, 42% at or above Proficient. Authors suggested it would be difficult to attain this level of achievement, which is higher than U.S. History, Geography, and Civics, if economics teachers were not stressing basic economics principles in high school courses.

ss. Schug, M. C., Harrison, A. S., & Clark, J. R. (2012). All we know that may be so in economic education. *Social Studies Research and Practice, 7*(1), 1–8.

User:	academic researcher
Type of data:	Achievement level and contextual variables

Purpose: review of research in economic education
Where published: journal
NAEP subject(s): Economics
Main finding: Overview of recent reviews of research in economic education. One of the five reviews of research and data collection is NAEP. Results of NAEP Economics by achievement level, and by gender and school location/size.

tt. Schulz, E. M. (2016). Realizing a Rasch measurement through instructionally-sequenced domains of test items. *Journal of Physics: Conference Series, 772*. doi:10.1088/1742-6596/772/1/012061

User: independent researcher
Type of data: achievement levels and contextual variables
Purpose: learning progressions
Where published: journal
NAEP subject(s): Economics
Main finding: Calculated NAEP Economics expected percent correct by content and domain area as a function of achievement for standard setting.

uu. Shapiro, S., & Brown, C. (2018). *The state of civics education*. Washington, DC: Center for American Progress.

User: advocacy organization
Type of data: achievement levels
Purpose: state comparisons
Where published: report
NAEP subject(s): U.S. History
Main finding: Reports 23 percent of eighth-graders performed at or above the proficient level on the NAEP Civics exam, and achievement levels have virtually stagnated since 1998. The focus of the source was information on civics education in each state.

vv. Sharp, E., & Zhang, M. (2014). Potential influences of gender on NAEP scores in an 8th grade U.S. History class. *American Journal of Educational Science, 4*(4), 69−80.

User: academic researcher
Type of data: scale scores and contextual variables
Purpose: research/secondary analyses
Where published: journal
NAEP subject(s): U.S. History
Main finding: Findings indicate gender gap in 8th grade U.S. History is based not only on intrinsic interest factors, but also extrinsic factors such as teacher's gender and school community support.

ww. Shuler, S. C. (2009). Music assessment and the Nation's Report Card: MENC's response to the 2008 NAEP and recommendations for future NAEP in music. *Music Educators Journal, 96*(1), 12–13.

User: arts education consultant
Type of data: NAEP report card and contextual variables
Purpose: to advocate for a high-quality assessment of music

Where published: journal
NAEP subject(s): Arts
Main finding: Presents pros and cons of NAEP assessment of music in 1971-72, 1978-79, 1997, and 2008. Provides advocacy ideas for members of the National Association for Music Education, formerly known as the Music Educators National Conference (MENC). Selected NAEP Arts results are presented. It is primarily a critique of NAEP Arts with respect to the assessment of music.

xx. Shuler, S. C. (2011, June). Music education for life: The three artistic processes – paths to lifelong 21st century skills through music. *Music Educators Journal, 97*, 9–13.

User: arts education consultant
Type of data: framework
Purpose: use NAEP framework to guide curriculum development
Where published: journal
NAEP subject(s): Arts
Main finding: Explains the three artistic processes of the NAEP Arts Framework to music teachers to assist in developing curriculum and classroom lessons.

yy. Smith, M. D. (2017). Cognitive validity: Can multiple-choice items tap historical thinking processes? *American Educational Research Journal, 54*(6), 1256–1287.

User: academic researcher
Type of data: released items
Purpose: research
Where published: journal
NAEP subject(s): U.S. History
Main finding: Research question: Do selected multiple-choice items from an established standardized history test [NAEP 2010 grade 12 U.S. history] tap the aspects of historical thinking they were designed to measure? A critique of NAEP U.S. History multiple-choice items not evoking historical analysis and interpretation. (NAEP U.S. History exam described as a standardized test that transcends state borders and relies heavily on multiple-choice items to assess students in historical thinking processes. Article described a study using four released NAEP U.S. History items in think-aloud and results suggested items did not evoke aspects of historical analysis and interpretation.)

zz. Stoddard, J. D., Tieso, C. L., & Robbins, J. I. (2015). Project CIVIS: Curriculum development and assessment of underserved and underachieving middle school populations. *Journal of Advanced Academics, 26*(3), 168–196.

User: academic researcher
Type of data: released items
Purpose: large-scale curriculum development, quasi-experimental study
Where published: journal
NAEP subject(s): U.S. History

Main finding: Used released items from NAEP U.S. History to create a pre-post assessment to use in a large-scale curriculum development, quasi-experimental study.

aaa. Suh, Y., & Grant, L. W. (2014), Assessing ways of seeing the past: Analysis of the use of historical images and student performance in the NAEP U.S. History assessment. *The History Teacher, 48*(1), 71−90.

User: academic researcher
Type of data: released items
Purpose: research
Where published: journal
NAEP subject(s): U.S. History
Main finding: Analysis of NAEP items using visual images. Many items intending to measure historical analysis and interpretation with visual images end up measuring only basic knowledge or fail to create a context where students can adequately demonstrate historical thinking skills.

bbb. The Education Trust. (2015, April 29). *2014 NAEP – Civics, History, and Geography: How are American eighth graders performing?* Washington, DC: Author.

User: advocacy organization
Type of data: scale scores and achievement levels
Purpose: present results and trends
Where published: organization briefing
NAEP subject(s): Civics, U.S. History, Geography
Main finding: Civics skills and knowledge rising, but gaps not decreasing. Geography scores flat and gaps not decreasing. U.S. History scores have been flat since 2010 and gaps are not decreasing.

ccc. Torney-Purta, J., Cabrera, J. C., Roohr, K. C., Liu, O. L., & Rios, J. A. (2015*). Assessing civic competency and engagement in higher education: Research background, frameworks, and directions for next-generation assessment* (Research Report No. RR-15-34). Princeton, NJ: Educational Testing Service.

User: assessment development
Type of data: framework, assessment, item format, and IRR
Purpose: recommendations for future civics assessment
Where published: Research report
NAEP subject(s): Civics
Main finding: NAEP Civics is mentioned as an assessment that measures civic competency rather than civic engagement.

ddd. U.S. Government Accountability Office. (October 2015). *K–12 education: Most eighth grade students are not proficient in geography*. Washington: DC: Author.

User: independent, nonpartisan federal agency
Type of data: scale scores and interview data
Purpose: performance audit
Where published: report to the Senate Appropriations Subcommittee on Labor, Health and Human Services, Education, and related agencies
NAEP subject(s): Geography

Main finding: Data show most 8th grade students are not proficient in Geography, and little time is spent on instruction. States and teachers face challenges providing geography education given focus on other subjects.

eee. Walstad, W. B. (2013, January 4). *Analyzing student achievement in high school economics over time*. Paper presented at the meeting of the American Economic Association, Philadelphia, PA.

User: academic researcher
Type of data: restricted-use data and released items
Purpose: comparison of 2006 to 2012 NAEP Economics data
Where published: presentation
NAEP subject(s): Economics
Main finding: Found 2006 and 2012 item-level results similar. Despite an increase in economics instruction in schools from 2006 to 2012, scores on NAEP Economics did not increase.

fff. Walstad, W. B. (2013). Economic understanding in US High School Courses. *American Economic Review: Papers & Proceedings, 103*(3), 659−663.

User: academic researcher
Type of data: restricted-use data and contextual variables
Purpose: assessing effect of high school courses on NAEP Economics
Where published: journal
NAEP subject(s): Economics
Main finding: High school course experience contributes significantly to economic understanding, varying by type of course and type of students.

ggg. Weiss, E. (2017, May 4). The hidden sides of NAEP: girls, art, and empowerment. [*Working Economics Blog*] Retrieved from https://www.epi.org/blog/the-hidden-sides-of-naep-girls-art-and-empowerment/

User: policy maker/organization
Type of data: percent correct by specific items and contextual variables
Purpose: Arts results in context
Where published: online blog post
NAEP subject(s): Arts
Main finding: Student achievement in Arts was stable, when comparing results from 2008 to 2016, despite major cuts to Arts programs during that time. However, students are not “very ‘fluent’ in the Arts.” Fewer than half of students took an art class and although more students took a music class, more than half reported there was no dedicated music room in their school.

hhh. Wolff, K., & Jones, S. D. (2017, April 27). *Maximizing the Nation’s Arts Report Card*. [web blog].

User: advocacy organization (Arts Education Partnership [AEP])
Type of data: NAEP report card and contextual variables
Purpose: Arts results in context
Where published: online blog post

NAEP subject(s): Arts
Main finding: Access to music and art classes remained steady, when comparing results from 2008 to 2016. Results show significant differences in achievement and access between ethnicity, geographic regions, socio-economic status, and gender. Cites Every Student Succeeds Act (ESSA) language replacing “core academic subjects” with “well-rounded education” as an opportunity to expand art education in schools.

iii. Yetter, E. A. (2014). *Do school and teacher characteristics matter? Evidence from the 2006 Economics National Assessment of Educational Progress* (Doctoral dissertation). Retrieved from UMI/ProQuest.

User: academic researcher
Type of data: scale scores, achievement levels, and contextual variables
Purpose: relationship of teacher and school characteristics to results
Where published: dissertation
NAEP subject(s): Economics
Main finding: Identified relationships between teacher and school variables and student performance on 2006 NAEP Economics. Students who had teachers with experience teaching theory-based courses performed better than students who had teachers with experience teaching “infused” courses (e.g., government and economics) or non-theory based courses. Formal education in economics for teachers did not positively influence NAEP scores. Extra- and co-curricular activities related to economics generally did not affect student performance.

jjj. Zhang, T., Xie, Q., Park, B. J., Kim, Y. Y., Broer, M., & Bohrnstedt, G. (2016). *Computer familiarity and its relationship to performance in three NAEP digital-based assessments* (AIR-NAEP Working Paper #01-2016). Washington, DC: American Institutes for Research.

User: assessment developer
Type of data: scale scores and contextual variables
Purpose: relationship of computer familiarity to TEL performance
Where published: report
NAEP subject(s): TEL
Main finding: Identified three factors associated with computer familiarity and performance on the TEL assessment. 1. Computer use to create spreadsheets or presentation. 2. General use of computers or digital devices. 3. Self-efficacy at using computer for TEL-related activities.

kkk. Zhu, M., Shu, Z., & von Davier, A. (2016). Using networks to visualize and analyze process data for educational assessment. *Journal of Educational Measurement, 53*(2), 190–211.

User: assessment developer
Type of data: process data
Purpose: visualizing and analyzing process data
Where published: journal
NAEP subject(s): TEL

Main finding:	Created a transition network with nodes representing actions and links connecting actions. Used visualization of the transition networks to represent process data and provide insights for item design. Explored how network measures are related to existing scoring rubrics. Examined how network measures can be used to make intergroup comparisons.

Appendix A

Sources Not Included and Why

1. Clark, J. S., & Camicia, S. P. (2017). Examining justice in social studies research. *Pedagogy & (Im)Possibilities across Education Research (PIPER), 1*(1), article 3.

   When searching for NAEP in this document, the only mention is in the reference list. We included the reference as a source. The Clark & Camicia report itself does not use NAEP data or information.

2. Feinberg, J. R., & Doppen, F. H. (2010). High school students' knowledge and notions of citizenship. *The Social Studies, 101*, 111–116.

   Merely mentions NAEP Civics as a more comprehensive test than the U.S. test of citizenship. The reference list includes a source that might have used NAEP data or materials, but it was published in 2000, outside of our timeframe.

3. Lenzi, M., Vieno, A., Sharkey, J., Mayworm, A., Scacchi, L., Pastore, M., & Santinello, M. (2014). How school can teach civic engagement besides civic education: The role of democratic school climate. *American Journal of Community Psychology, 54*(3-4), 251–261.

   Only mention of NAEP is in the reference list to a 1990 report.

4. Furgione, B., Evans, K., Walker, I., & Russell III, W. B. (2018). The elephant in the classroom: A comparative study of civics end-of-course assessment. *Social Studies Research and Practice, 13*(2), 168–184.

   Includes reports of NAEP achievement gap in civics using a quote from Levinson (2010). Given that this source quotes another source, we included the quoted Levinson (2010) source rather than Furgione, Evans, Walker, and Russell III (2018).

5. Hernandez, B. (2012). The case for multiple, authentic, evidence-based dance assessments. *Journal of Physical Education, Recreation & Dance, 83*(1), 5–6, 55–56.

   Mentions NAEP Arts Framework (1997) and National Dance Association standards (1996) as providing guidelines for K–12 dance education assessment. NAEP is useful, but not necessary, to make the case for assessing dance in schools and for dance to be treated comparably to academic courses.

6. Xu, L., Brewer, T. M., & Diket, R. (2016). Secondary data analysis of NAEP visual arts mother/child block: The reference connection between government and users. *The Reference Librarian, 57*(2), 131–142.

   Discusses how NAEP data could be used but doesn't use or reference any NAEP data.

7. Griner, D. (2012, July 18). *Student Autonomy: A Case Study of Intrinsic Motivation in the Art Classroom* (Master's thesis). Retrieved from BYU ScholarsArchive.

   Does not directly cite any NAEP publications; instead cites other research (prior to our dates of interest) that reported NAEP results. Thesis is a case study of student-directed art instruction.

8. Logan, J. R., Minca, E., & Adar, S. (2012). The geography of inequality: Why separate means unequal in American public schools. *Sociology of Education, 85*. Doi:10.1177/0038040711431588

   This is not about NAEP Geography. This source states that the NAEP Reading achievement gap exists, but uses state reading and mathematics assessment data to conduct analyses.

9. Bednarz, S. W., Heffron, S. G., & Solem, M. (2013). Geography standards in the United States: Past influences and future prospects. *International Research in Geographical and Environmental Education, 23*(1), 79–89.

   A historical discussion including the development of the NAEP Geography Framework. This source includes descriptive information but does not use the NAEP Geography Framework or NAEP data.

10. Xu, L., Diket, R., & Brewer, T. (2016). Bringing the arts as data to visualize how knowledge works. Khosrow-Pour, M. (Ed.), *Big Data: Concepts, Methodologies, Tools, and Applications*. Hershey, PA: IGI Global.

    Largely duplicates information included in Diket, Xu, and Brewer (2015), which is included in the sources, explaining the data visualization techniques the authors developed to explain NAEP statistical path analyses to substantiate a general model of aspirational learning.

Appendix B

Inclusion and Exclusion Decisions

We conducted a preliminary search and screen on NAEP subject and the 10-year timeframe 2009–2018 to include national-only assessments and to focus on NAEP releases since 2009.

Inclusion Criteria

Sources were included if the following information was reported as background to demonstrate need for or to support a research study, or if the information was an integral part of the study or discussion. See Appendix C, Table C for sources using the following data:

- Achievement levels (e.g., percent proficient)
- Achievement gaps (e.g., white-black gaps)
- Scale scores
- Plausible values
- Restricted-use data/secondary analysis
- Percent correct by item
- NAEP Data Explorer
- Item mapping tool
- Released items
- Process data

Sources were included if they used a NAEP Report Card to support policy recommendations. See Brewer (2009), Downs (2011), and Grey (2010).

Sources using a NAEP framework to enhance teaching or assessment were included. See Shuler (2011) and Torney-Purta, Cabrera, Roohr, Liu, and Rios (2015).

We included sources that reported or used contextual variables, other than demographic data, in conjunction with other NAEP data.

In deciding to include multiple sources from the same author(s), we looked at differences in the studies or recommendations. For example, if the sources used different techniques to analyze the same NAEP data, we included them. See Bergner, Shu, and von Davier (2014); Bergner and von Davier (2018); Hao, Shu, and von Davier (2014); and Zhu, Shu, and von Davier (2016). We also looked at the type of data used. See Heafner and Fitchett (2015) which used plausible values and Heafner and Fitchett (2018) which used the item mapping tool. These two sources were aimed at different audiences.

Exclusion Criteria

Sources were excluded if NAEP appeared only in the reference list. See Appendix A, Clark and Camicia (2017) and Lenzi, Vieno, Sharkey, Mayworm, Scacchi, Pastore, & Santinello (2014).

Sources were excluded if NAEP data were not from a primary source. In such cases, we used the primary source if it fit our timeframe and met the other inclusion criteria. See Appendix A, Furgione, Evans, Walker, and Russell (2018) and Griner (2012).

Sources were excluded if a NAEP assessment was mentioned in name only. See Appendix A, Feinberg and Doppen (2010) and Bednarz, Heffron, and Solem (2013).

Sources that merely described a NAEP framework were excluded. See Appendix A, Hernandez (2012) and Bednarz, Heffron, and Solem (2013).

Sources were excluded if they were repetitive. Xu, Brewer, and Diket published multiple articles about using the NAEP visual arts mother/child block as an aspirational learning model for teaching. We included the earliest source which reported using restricted use data to develop the model, Diket, Xu, and Brewer (2015). We excluded two other sources, Xu, Brewer, and Diket (2016) and Xu, Diket, and Brewer (2016), which described their aspirational learning model. We included another source from these researchers, Brewer, Xu, and Diket (2017), in which they used achievement levels and contextual variables to examine the impact of art specialists on student achievement in art.

Appendix C

Table A. National-Only NAEP Results Literature by Type of User

	Policy maker/ organization	Advocacy organization	Research organization	Academic researcher	Assessment developer	Consultant
Number of sources	5	10	4	37	7	3
Sources	u, dd, ll, ddd, ggg	a, m, n, dd, ee, ff, gg, uu, bbb, hhh	g, o, nn, qq	b, c, d, e, f, h, i, j, k, l, p, q, r, s, t, w, x, y, z, aa, bb, cc, hh, ii, jj, kk, mm, oo, rr, ss, vv, yy, zz, aaa, eee, fff, iii	c, d, v, pp, ccc, jjj, kkk	tt, ww, xx

Note: Because a single source may have multiple users, the number of sources does not sum to the total number of 63 sources.

Table B. National-Only NAEP Results Subjects by Sources

	Civics	U.S. History	Geography	Economics	TEL	Arts
Number of sources	17	15	11	6	8	13
Sources	a, j, u, bb, cc, dd, ee, ff, gg, hh, ii, jj, kk, ll, oo, bbb, ccc	p, q, r, w, x, aa, kk, ll, oo, uu, vv, yy, zz, aaa, bbb	g, l, m, n, o, z, kk, ll, qq, bbb, ddd	rr, ss, tt, eee, fff, iii	c, d, v, mm, nn, pp, jjj, kkk	b, e, f, h, i, k, s, t, y, ww, xx, ggg, hhh

Note: Because a single source may include multiple subjects, the number of sources does not sum to the total number of 63 sources.

Table C. Type of National-Only NAEP Results Used

	Scale scores	Achievement levels	Percent correct	Contextual variables	Restricted-use data	Released items	Other
Number of sources	22	14	1	23	10	5	16
Sources	g, j, m, n, o, r, u, ee, ff, gg, hh, ll, mm, nn, oo, pp, qq, vv, bbb, ddd, iii, jjj	a, b, f, z, bb, cc, dd, kk, rr, ss, tt, uu, bbb, iii	ggg	b, f, h, q, cc, ee, ff, gg, hh, ii, mm, oo, pp, rr, ss, tt, vv, ww, fff, ggg, hhh, iii, jjj	h, i, k, q, t, w, y, ii, eee, fff	jj, yy, zz, aaa, eee	c, d, e, l, p, s, v, x, aa, kk, ww, xx, ccc, ddd, hhh, kkk

Note: Because a single source may use multiple types of data, the number of sources does not sum to the total number of 63 sources.

Table D. Where National-Only NAEP Results Were Published

	Journal	Report	Blog	Book chapter	Dissertation	Presentation	Fact Sheet
Number of sources	35	9	5	1	5	6	2
Sources	d, e, f, i, j, k, l, p, q, r, s, t, v, w, x, y, z, aa, bb, cc, dd, jj, kk, oo, rr, ss, tt, vv, ww, xx, yy, zz, aaa, fff, kkk	a, g, m, u, nn, uu, ccc, ddd, jjj	o, ll, qq, ggg, hhh	hh	b, h, ii, mm, iii	c, n, gg, pp, bbb, eee	ee, ff

Postsecondary Preparedness Dashboard

The National Assessment Governing Board is currently working in partnership with the National Center for Education Statistics to develop a Postsecondary Preparedness Dashboard. This work was recommended in the final report of the Governing Board's Ad Hoc Committee on Measures of Postsecondary Preparedness. In this report, the Ad Hoc Committee specified that the Postsecondary Preparedness Dashboard would display

> "…a system of indicators derived from a variety of data sources (including but not limited to NAEP) to report, to the extent possible given the limits of existing data and the NAEP Authorization Act, the academic knowledge, literacies, cross-cutting cognitive skills, and intra- and inter-personal skills that are essential abilities for all students graduating high school to be prepared for postsecondary endeavors."

The committee urged the Governing Board and NCES to develop a prototype of the Postsecondary Preparedness Dashboard to help the Governing Board determine if the dashboard is feasible and possibly valuable to stakeholders. The prototype will reflect the conceptual framework currently under development by the Governing Board and will be populated with extant results from NAEP (including data from contextual questionnaires and transcript studies) as well as from other NCES data sources (e.g., TIMSS, PISA, PIRLS).

At the February/March 2019 meeting, Robert Finnegan from ETS and Eunice Greer from NCES presented their proposed timeline and work plan for the dashboard to the R&D Committee for review and comment. Members of the committee shared their expectations for how the dashboard might be used and what queries they expect the dashboard to address.

At the May 2019 meeting of the R&D Committee, Ms. Greer and Mr. Finnegan will present a "wire frame" design for the dashboard that will reflect the feedback from the March meeting, as well as additional refinements and clarifications that have resulted from their continued collaboration and research. The discussion will focus on:

- Committee members' reactions and recommendations re: the "wire frame" design;
- Potential data sources that Committee members would like to populate the dashboard;
- A review of timelines and expectations for the August and November quarterly board meetings.