



PART 4: Reporting on the Data

A central aim of any arts education data initiative is to make information on arts education available to audiences who can use it to guide better decisions. The success of the initiative therefore depends on its ability to report on arts education data in a form that key audiences can understand and use. This section of the toolkit offers guidance on how to plan and execute a sound strategy for reporting your data.

Reporting on your data requires the following steps:

- [Review Your Arts Education Information Against the Original Goals of Your Initiative.](#)
- [Confirm the Audiences for Your Information.](#)
- [Choose What Information You Want to Convey.](#)
- [Choose a Mechanism for Reporting on Data.](#)
- [If You Choose to Create an Interactive Website or Webpages, Create a Blueprint.](#)
- [Design Your Visualizations.](#)
- [Prepare Your Data for Your Interactive Website or Webpages.](#)
- [Troubleshoot and Adjust.](#)
- [Promote Your Website or Webpages.](#)

These steps need not be as sequential as they appear here. You may need to move back and forth among them as you prepare your strategy and design your reporting mechanisms. For example, discoveries you make as you design your visualizations may prompt you to reevaluate what information you want to convey if some information doesn't lend itself to visualization.

That said, these steps will help you be deliberate in your planning. You cannot begin to create effective reporting mechanisms until you understand your goals, precisely what information you have to support them and the audience you want to reach.

This part of the toolkit has one extensive Tool, [Tool M](#), containing two sample wireframes that present ideas for laying out interactive websites or webpages that present arts education data.

1. Review Your Arts Education Information Against the Original Goals of Your Initiative

Your goals will help you determine what information about arts education you need to present, to whom and in what format.

GO OVER THE GOALS you established at the beginning of the initiative. (See Part 1.)

REVIEW THE DATA THAT EMERGED FROM YOUR ANALYSIS (See Part 3.) Do you have the information you need to inform progress toward your goals? For example, if you aim to guarantee

every child access to arts education, does your information reveal how many students currently have such access? Do you have trend data to help you mark progress toward universal access?

CONSIDER ADDING TO YOUR ORIGINAL DATA REQUEST if you lack information that addresses your goals. Do not take this step lightly, because it may add significant time to your project.

IF NECESSARY, REVISE YOUR GOALS to address unanticipated needs revealed by the data. If, for instance, you find that students from low-income families are far less likely than you expected to take music classes, you can make raising participation among such students a more explicit goal.

Your goals should be the lodestar for your work. They will help you focus on the most relevant information and then present that information in ways that are most likely to inspire effective action.



STUMBLING BLOCK

Watch out for the impact of data suppressions.

Parts 2 and 3 of this toolkit address the challenge of data suppressions, or instances where data providers withhold data on small groups of students to protect their privacy. When you see visualizations of your data, the full impact of these suppressions will become clear — in the form of charts that show little or no information.

As you review your data, you may find many such data suppressions at the school or even district level if you've broken data out by student subgroups like race, ethnicity or disability status. If these suppressions affect most of your school- or district-level charts, you may not be able to include those subgroups in your final report, unless you want to publish a lot of empty charts.

It will save you time and money to review your spreadsheets and make these decisions before you begin planning your reports or designing an arts education data website.

2. Confirm the Audiences for Your Information

A clear picture of your intended audience will help you understand how you will need to present your information. Work with the partners who helped you set your goals create a list of potential audiences — the people in your state who have a stake in arts education. (See Part 1.) Do they represent parents, educators, policymakers, funders, arts education advocates or others? What information, if any, do these audiences need, and how are they likely to use it?

FOR EXAMPLE:

STATE POLICYMAKERS may want statewide data to inform their state policy decisions.

FUNDERS may want to identify regions or communities in the state that require the most support to plug gaps in access.



SCHOOL LEADERS may want to benchmark access or participation to arts education in their district or schools against access or participation in neighboring districts or schools.

PARENTS may want to identify local schools that have robust arts offerings, or they may want information to assess the offerings in schools their children already attend.

Your final reporting mechanism cannot be all things to all people, but you will probably discover that different audiences have overlapping needs. As you design your reporting mechanisms, keep these audiences and their needs in mind, because those needs should shape the content and format of what you report.

3. Choose What Information You Want to Convey

Your goals and the needs of your audiences will help you select the information you should report. Your choices may seem limited — you probably cannot choose topics beyond access to arts education, access to qualified arts teachers and participation in arts classes. That said, your and your audience’s overarching goals will help you determine what aspects of the data you should highlight.

As you identify what information you would like to report, consider some important questions that will have implications for what information you will focus on:

WHAT LEVEL OF DETAIL DO YOU WANT TO REPORT?

Do you have state-level data? District-level data? School-level data? Would it serve your goals and your audience to report on all three? Remember, federal and state privacy laws prevent you from reporting data on individual students.

WHAT ARE YOUR UNITS OF ANALYSIS?

Students? (For example, “50% of high school students in District X have access to theatre classes” or “47% of rural students in State X have access to certified visual arts teachers.”) Schools? (For example, “12% of schools in State X offer dance classes.”) Teachers? (For example, “97% of high school visual arts teachers in District X are certified to teach visual arts.”)



TIMELY TIP

Using schools, rather than students, as the unit of analysis in a state- or district-wide analysis can have big implications for your findings. By using schools as your unit of analysis, you will give schools with small and large enrollments equal weight, which could skew your analysis of students’ access to arts education. (For example, 50% of schools could offer theatre, but that 50% could enroll 75% of students in the state.)



TIMELY TIP CONT'D

If schools are your unit of analysis, you may want to offer context on access or participation by school type. (For example, are rural schools less likely than suburban schools to offer dance? How about schools that enroll less than 400 students, or schools where more than 75% of students qualify for the federal school lunch program?) Such information can reveal which schools need most attention.

WHAT INFORMATION IS MOST USEFUL?

For example, information broken out by race, ethnicity or geographic region may offer more guidance for targeted strategies to improve access than information reported in the aggregate.

Here are some strategies for presenting information in ways that can inform decisions:

SUPPORTING EQUITY. Highlight unequal access to, or participation in, arts education.

- Break out data by student subgroup – by gender, race/ethnicity, eligibility for free or subsidized lunch, disability status, status as an English language learner, etc.
- Break out data by geography or region – rural vs. urban or suburban schools, for example, or schools in different areas of the state.
- Break out data by type of school – Title I schools, charter schools, schools by percentage of students who qualify for free or subsidized lunch, etc.

PROMOTING PROGRESS. Examine changes to access or participation over multiple years.

- Measure the percentage change from one year to the next.
- Create line charts showing longer term trends.

STRIVING TOWARD FIXED GOALS. Measure how the state, its districts or its schools perform against explicit targets.

- Use targets set forth in state statute or regulation – statutes that require all schools to offer at least two arts disciplines, for example, or requirements that all high school students receive at least one credit in the arts.
- Use targets set by the initiative's partners (see Part 1) – for instance, that at least 50% of middle schoolers in every racial and ethnic subgroup complete at least one arts course.

BENCHMARKING AGAINST OTHERS. Promote comparisons among schools and districts to establish real-world benchmarks for access and participation.

- Compare districts or schools with neighboring districts or schools, for example, or with districts or schools that have similar demographic profiles.
- Compare schools with the districts in which they are located or with the state as a whole.

The above examples are by no means exhaustive, nor are they mutually exclusive. You can break out trend data by race and ethnicity, for example. As you'll see later, however, your message will be clearer if you do not attempt to tackle too many different topics or themes in a single chart or data visualization.



STUMBLING BLOCK

Remember that *not everything you can say needs to be said*. Data analysis often produces much more information than you can or even should report. Your audience may not have the time or attention to absorb too many kinds of information, and some information may distract from your goals.

4. Choose a Mechanism for Reporting on Data

After you have identified your audience and the information you would like to present, you will be ready to select your mechanism for reporting the information.

The audience and goals will dictate your format. While some stakeholders may be most interested in state-level data, for example, many, like school principals or teachers, might want district- or school-level data. Those with an interest in equity may want to see data broken out by race, ethnicity and eligibility for free or subsidized lunch, whereas those who focus on rural education may want to see how rural schools stack up against suburban and urban schools.

PDF REPORTS. Static PDF reports are well-suited for presenting detailed information at the state level, but they limit your ability to present extensive information on every district or school in that state.

- **CONTENT:** Static reports can effectively present high-level findings of data analysis and make the case for policies and practices to address challenges uncovered in the data.
- **AUDIENCE:** Such reports may serve such stakeholders as policymakers who focus broadly on state-level issues, but they may not suit the needs of local stakeholders who need information about their own districts or schools.

INFOGRAPHICS. Infographics can present state-level data through engaging and accessible visualizations.

- **CONTENT:** An infographic can quickly convey one or two important points, but it cannot present more than a few visualizations at a time without overwhelming or confusing the audience.
- **AUDIENCE:** Infographics can target a broad audience of policymakers, parents, community leaders and other stakeholders, usually to raise awareness of a specific challenge or strategies to address it.

INTERACTIVE WEBSITES. These websites rely on platforms that can organize and visualize large amounts of data automatically. Simple navigation structures allow users to move easily from state-level information to information about any district or school in the state.

- **CONTENT:** Interactive websites are flexible enough to accommodate many different types of information. Users could toggle between trend data and data for a single year, for example, or they could select from drop-down lists of student subgroups to see data broken out by gender, race, disability status or other categories.
- **AUDIENCE:** Interactive websites can accommodate different audiences, because each audience can select the issues — and the districts or schools — that it finds most relevant to its needs.

A COMBINATION OF THE ABOVE. A robust arts education data reporting strategy could combine interactive websites with reports and infographics to reach the broadest possible audience with a variety of information and messages. Interactive websites can allow users to explore different aspects of the data, while reports and infographics can promote a more limited set of messages or lessons that emerge from an analysis of the data.



TIMELY TIP

You or your partners may not be able to control all the messages that emerge from the data you present on a website or webpage – and that’s not necessarily a bad thing. Many interactive data websites give visitors the option of downloading the data presented there in the form of spreadsheets. Visitors to the site may use then use those data to produce their own reports or infographics highlighting information that is important to their communities.

The decision about which reporting mechanism you choose will of course have implications for your budget. Simple online reports that require little design can be inexpensive to produce. Infographics can cost between \$1,000 and \$10,000, depending on how elaborate they are. Interactive websites can be much more expensive – \$100,000 or more – if you hire developers to build them from scratch. Fortunately, there are off-the-shelf data visualization platforms that can dramatically lower the cost of creating a basic, but still powerful, arts education data website or set of webpages. Simple websites or webpages built on such platforms can cost as little as a few thousand dollars.

5. If You Choose to Create an Interactive Website, Create a Blueprint

Wireframes are like blueprints of websites. They are akin to the storyboards of video development or the layout template of desktop publishing. They map the user’s experience across your webpages, laying out places for text, graphics, data visualization and page controls among other features of your site. They demonstrate how users can navigate through websites to find the information they need.



TIMELY TIP

If the person or team developing your wireframes isn’t familiar with web development or off-the-shelf data visualization platforms, have them confer with people who are, even if you must hire them. If you are developing web pages from scratch, seemingly small changes to your design can have big implications for cost and timeline. If you are using an off-the shelf data visualization platform, it helps to be familiar with the power and limitations of that platform as you begin the wireframing process.

[Tool M](#) offers two examples of wireframes for arts education data websites. These wireframes include rough mockups of charts and sample text to display how form and content can support each other. The first example shows a website that would need to be built from scratch. It offers



cleaner navigation and clearer displays but comes at a higher cost. The second example shows a website that could be created on most off-the-shelf data visualization platforms, with some adaptations. The website's navigation may not be as clean, but it would be substantially less expensive to create.

6. Design Your Visualizations

As you consider your wireframes, begin to design your visualizations — the charts or tables that will convey your information. Detailed guidance on how to create effective charts and tables is beyond the scope of this toolkit, but there are multiple resources that offer such guidance.



TIMELY TIP

You can find guidance on data visualization resources from several federal sources. The federal government's Technical Assistance Program for Statewide Longitudinal Data Systems includes a [Data Visualization Toolkit](#) with principles for effective visualization and links to additional resources. Though intended for state education agencies, the National Forum on Education Statistics' extensive [Guide to Data Visualization](#) offers guidance for any data visualization effort. Funded by the federal government, the Center for IDEA Early Childhood Data Systems has created its own [Data Visualization Toolkit](#). Though targeted to early education data, this toolkit offers insights that apply to arts education data as well.

When designing a data visualization, such as a chart, keep some broad principles in mind:

IS IT COMPLETE?

It's all too easy to leave out important information on a chart. Be sure you include:

- The year or years of data you display.
- The name of the school, district or state in question.
- The units (i.e., count or percentage).
- If appropriate, the arts discipline or disciplines in question.
- Data labels displaying numbers or percentages, so that viewers don't have to estimate the quantitative information your charts represent.

IS IT SIMPLE?

Too often, charts get cluttered with distracting information.

- Don't present too much information in a small space. Multiple axes in one chart, line charts superimposed over bar charts or too many categories in one line chart can confuse the viewer, bury your main point and even distort your findings.

- Don't repeat information. If you specify percentage in a chart's axis, for instance, you don't need to do so in its title.
- Tailor visualizations to your audience. It's likely that most of your viewers aren't researchers. Use simple language in your titles and straightforward presentations of data.

DOES IT MAKE A CLEAR POINT?

- Make comparisons clear. Bar charts or column charts can effectively display differences among schools or categories — differences that can get lost in pie charts, for example. Line charts can also highlight gaps, but too many lines on a single chart can obscure gaps and be hard to follow.
- Present information in the most helpful context. For example, consider comparing results for a single school with results for its district and for the state as a whole. Also consider presenting trends over multiple years, which can help viewers chart progress. And always ask yourself whether counts or percentages tell the clearest story: The fact that 500 students took music classes in a district tells us little if we don't know that those 500 students comprised 10% of the total enrollment in that district.

IS IT HONEST?

- Clearly label and define the data your chart is displaying. If possible, define your terms in a methodology section or even in brief explanations that appear below your charts or in hover-over text. (See our sample wireframes in [Tool M](#) for examples of how to do so.) If, for example, you identify schools that do not offer arts classes, be clear in your notes about how you define such schools. Are they schools with no enrollments in arts classes? Are they schools that lack teachers assigned to the arts?
- Don't distort the scale of your axes. If you are reporting percentages, considering starting your axis at 0% and ending it at 100% whenever possible. You may occasionally need to start or end elsewhere to make charts more readable, but doing so for any other reason can mislead your audience by exaggerating gaps or changes in data. Many data visualization programs will automatically rescale your axes in ways that can distort your findings. Most give you the option to override that feature by specifying where axes begin and end.



TIMELY TIP

If you want your website or webpages to be accessible to all audiences, consult federal [Section 508 guidelines](#) for the development of web pages before you begin designing your website and visualizations. Federal agencies must comply with these guidelines to ensure that their websites are accessible to, and usable by, individuals with disabilities. The guidelines can be helpful to non-federal websites as well. They can affect your:

Choice of fonts (fewer stylized and/or serif fonts).

Choice of colors (watch your red/green interactions, and don't overuse closely related colors that can't be easily distinguished from one another).



TIMELY TIP CONT'D

Decision to provide alternate text coding, or “alt tags,” to describe visualizations verbally. Screen readers for visually impaired users can read alt tags for users who might have difficulty seeing.

Note that some of these principles — governing choice of fonts and colors, for example — apply to printed materials as well.

[These guidelines](#), prepared for the National Park Service, include additional guidance for making printed materials accessible.

7. Prepare Your Data for Your Interactive Website or Webpages

Modern data visualization platforms automatically generate charts and tables from spreadsheets full of data. If you want to report on arts education in every district and school in your state, your website or webpages must feature hundreds or thousands of separate charts. The good news is that you need to design only one template for each type of chart or table, and the platform can instantly create corresponding charts for every district and school in the state.

If, for example, you want to report on middle school enrollments in dance for each school in your state, you can create a template for how those data should appear in a chart. If you upload a spreadsheet with middle school dance enrollments for every school in the state, the visualization platform will do the rest, automatically generating a corresponding chart for every school. (See the sample wireframes in [Tool M](#) for examples of how these templates might look.)

Whoever is developing your website or webpages will probably need your data before she can begin the development process — whether you’re creating your website or webpages from scratch or using an off-the-shelf platform. In many cases you can format your data in Microsoft Excel or similar spreadsheets.

Work with your developer to make sure that you format your spreadsheets in ways that best suit your platform’s structure and requirements. This work is not complicated, but you must follow formatting rules precisely if you want your data to display correctly, or at all.

Note that small errors in your spreadsheet — letters where there should be numbers, for example, or extraneous characters — can prevent charts from displaying information. Be careful not to import any unwanted characters into your spreadsheets.

8. Troubleshoot and Adjust

When you see your data visualized for the first time, you may encounter problems in some of the visualizations. Go through as many of your state, district and school visualizations as possible; and keep any eye out for irregularities such as missing charts, charts that are clearly displaying incorrect data or charts with formatting problems.

The causes of these irregularities can vary, but in most cases, you can correct them by making corresponding corrections to your spreadsheets or adjusting the formatting of your charts. If problems persist, your developer may have to troubleshoot the website's code.

9. Promote Your Website or Webpages

Once your website or webpages are live, make sure as many people as possible are aware they exist. At a minimum, you can use some simple strategies to promote your site.

- Send an email blast to key audiences alerting them that the new site is live.
- Use social media posts on Facebook, Twitter, Instagram and LinkedIn to promote your site.
- Ensure that the URL (or website address) is included on any connected one-pagers and other digital/printed materials.
- Clearly link to the website or webpages from the frequently visited pages on your and your partners' websites.
- Include the URL in your email signature block to bring attention to the site.
- Demonstrate the website or webpages at meetings and events across the state.

By weaving the arts education data website or webpages into your and your partner organizations' routine communications, you can ensure that they get the attention they deserve.

Summary

The success of your arts education data initiative hinges on how well you report on the data you've worked so hard to request and analyze. Your reporting strategy must be firmly tied to your goals and carefully targeted to your most important audiences. Fortunately, technology has dramatically lowered the cost and effort of data visualization.

NATIONAL ENDOWMENT FOR THE ARTS



Established by Congress in 1965, the National Endowment for the Arts is the independent federal agency whose funding and support gives Americans the opportunity to participate in the arts, exercise their imaginations and develop their creative capacities. Through partnerships with state arts agencies, local leaders, other federal agencies and the philanthropic sector, the Arts Endowment supports arts learning, affirms and celebrates America's rich and diverse cultural heritage, and extends its work to promote equal access to the arts in every community across America. Visit arts.gov to learn more.

EDUCATION COMMISSION OF THE STATES



Education Commission of the States was created by states, for states, in 1965. It conducts comprehensive research, delivers evidence-based reports, provides expert counsel and convenes state leaders on the full spectrum of education policy issues, from early learning through the workforce. It is the only state-focused national organization to bring together governors, legislators, and K-12 and higher education chiefs, as well as other state education leaders. Learn more at ecs.org.