

OVERVIEW

Did you know that when you play your favorite video game your scores are recorded somewhere so that you can show your friends later? Now think of all the people out there playing the same game and saving all of their scores. The compilation of all this information is called ‘big data’— a lot of information created by a lot of different people. All organizations use this data to make smart decisions. In the example of your favorite video game, a game developer might decide to create a second version of the game depending on the amount of high scores recorded. He/she may even analyze this data a step further and realize that there are no high scores recorded after a certain level, so they won’t make levels quite so challenging in the next version of this game based on this information. Collecting and analyzing this data is called data science, and it is a common practice in every organization as the Internet makes it easier to collect data gathered from customers and clients. As a result, the field of data analytics continues to gain more traction as an important field in science.

Data science is a broad term for implementing variety of methods to find connections between data to gain insightful knowledge about a particular issue. Data analytics is an even more focused way of sorting through collected data to make predictions. Using various processes, the data collected within organizations is then analyzed and synthesized into reports used during decision making processes to determine better practices for that organization. In this event, participants conduct research on an annual theme or topic, document their research in a supporting portfolio and create a display. Semifinalist teams report for a timed, on-site challenge in which they must review specific data sets, provide insights, make predictions, and present their findings.

ELIGIBILITY

Three (3) teams of two to three (2-3) individuals per state are permitted.

TIME LIMITS

PRELIMINARY ROUND

1. Five (5) minutes are allowed for the presentation.

SEMIFINAL ROUND

1. Ten (10) minutes are permitted for data analysis and synthesis.
2. Three (3) minutes are allowed for presenting the analysis.

LEAP

A team LEAP Response is required for this event and must be submitted at event check-in.

ATTIRE

TSA competition attire is required.

PROCEDURE

PRE-CONFERENCE

1. Participants review the annual problem under the Themes and Problems page of the TSA website.
2. Participants research the issue using resources including, but not limited to: books, interviews, websites, magazines, professional journals, etc.
3. Participants prepare their documentation and display according to the regulations.

PRELIMINARY ROUND

1. Participants report to the event area at the time and place stated in the conference program to:
 - Set up the static entry display
 - Submit a hard copy of the LEAP Response with no report cover
 - Sign up for a presentation time
2. Participants report to the event area at the designated time and place to present to the judges.
3. Participants are allowed five (5) minutes for the presentation.
4. Static entries are evaluated by judges.
5. A list of twelve (12) semifinalist teams (in random order) will be posted.

SEMIFINAL ROUND

1. A representative from each semifinalist team will report at the time and place stated in the conference program to schedule a time for the on-site challenge.
2. Semifinalist teams report to the event area at the time and place stated in the conference program for the on-site challenge.
3. Semifinalist teams are allowed ten (10) minutes to review the data set in the holding room.
4. After ten (10) minutes has elapsed, semifinalists are given no more than three (3) minutes to present their analysis to the judges.
5. The LEAP Response will be judged in addition to the semifinalist challenge.
6. Teams pick up their entry from the display area at the time and place stated in the conference program.
7. Ten (10) finalists will be announced during the conference awards ceremony.

REGULATIONS AND REQUIREMENTS

PRE-CONFERENCE

- A. Participants must understand the fundamental concepts and principles of the contemporary issue researched. Research about the issue shall focus on:
 1. Analysis of the collected data.
 2. Representation of that data in statistical graphs.
 3. Synthesis of the collected data in terms of factors influencing the issue, societal impacts, and ethical considerations.
- B. Supporting documentation:
 1. The documentation portfolio shall include all supporting material such as research notes, links to articles, sketches, illustrations, etc.
 2. Documentation materials (comprising a "portfolio") are required and must be secured in a clear front report cover (Click here for a sample.) including the following single-sided, 8½" x 11" pages, in this order:
 - a. Title page that includes the event title, the conference city and state, the year, and the team/chapter ID number; one (1) page
 - b. Supporting materials; maximum of ten (15) pages.
 - c. A list of references and credible resources; a minimum of three (3) different types of resources must be used; pages as needed
 - d. Consent forms (if applicable; refer to the display guidelines section of this event)
 - e. Work must be original or cited. For details, refer to the General Rules and Regulations.

C. Display guidelines:

1. The display shall include, at a minimum, the following major key points:
 - a. The definition and explanation of the issue.
 - b. An explanation of the importance of the issue including problems and possible solutions (if applicable).
 - c. Emphasis shall be placed on the graphs, which should depict not only the issue, but any causal factors.
2. Highlight your display with creative visual elements (e.g. photos, titles) to actively engage the audience. Participants may use images "labeled for reuse," but must properly cite the source (refer to the General Rules).
3. No commercial or copyrighted material may be used. If the entry contains images of people, proof of consent must be provided for each person in the presentation unless the image is "labeled for reuse."
 - Minors require parental consent
 - Use the Photo/Film/Video Consent and Release form (see Forms Appendix) for any individuals included in the presentation.
 - Participants must attach the consent forms within the portfolio
4. May be three dimensional as long as it does not exceed the size limitations of:
 - 15" deep x 3' wide x 4' high

5. Any digital display (e.g. I-pad) must fit within the allotted display space.
6. A/C electricity may not be used.
7. Dry cell or photo-voltaic cells may be used for power, if desired.
8. Any power source used must fit within the maximum display area.
9. No viruses, live plants, or animals may be used as a part of the display.
10. No harmful or illegal substances may be displayed.

PRELIMINARY ROUND

- A. The semifinalist presentation must include all team members.
- B. Violation of the following regulations will result in disqualification:
 1. No viruses, live plants, or animals may be used as a part of the display.
 2. No harmful or illegal substances may be displayed.

SEMIFINALROUND

- A. The on-site challenge must include all team members.
- B. Semifinalist teams have ten (10) minutes to review and analyze the data set.
- C. Semifinalists are permitted to:
 1. Use their phones to conduct their research during this time, however, Internet will not be provided
 2. Take notes on the index cards (to be provided by TSA)
 3. Reference their notes during the on-site challenge presentation to the judges
- D. Semifinalists are NOT permitted to:
 1. Use their phones during the on-site challenge presentation to the judges
 2. Contact outside sources for assistance while in the holding room.
- E. Semifinalists are given three (3) minutes to present their analysis to the judges.

F. The LEAP Response:

1. Teams document the leadership skills the team has developed and demonstrated while working on this event, and on a non-competitive event leadership experience.
2. Find the specific LEAP Response regulations in the LEAP Program section of this guide, and on the TSA website.

EVALUATION

PRELIMINARY ROUND

1. The documentation
2. The display
3. The semifinalist presentation

SEMIFINAL ROUND

1. The content and quality of the LEAP Response
2. Analysis of the on-site challenge

Refer to the official rating form for more information.

STEM INTEGRATION

This event has connections to the STEM areas of Science, Technology, Engineering, and Mathematics.

CAREERS RELATED TO THIS EVENT

This competition has connections to one or more of the careers below:

- Data scientist
- Data analyst
- Actuary
- Economist
- Epidemiologist
- Forensic accountant
- Market researcher
- Meteorologist
- Operations research analyst
- Quality engineer

DATA SCIENCE & ANALYTICS

2020 & 2021 OFFICIAL RATING FORM

MIDDLE SCHOOL

Judges: Using minimal (1-4 points), adequate (5-8 points), or exemplary (9-10 points) performance levels as a guideline in the rating form, record the scores earned for the event criteria in the column spaces to the right. The X1 or X2 notation in the criteria column is a multiplier factor for determining the points earned. (Example: an "adequate" score of 7 for an X1 criterion = 7 points; an "adequate" score of 7 for an X2 criterion = 14 points.) A score of zero (0) is acceptable if the minimal performance for any criterion is not met.

Go/No Go Specifications

- Before judging the entry, ensure that the items below are present; indicate presence with a check mark in the box.
- If an item is missing, leave the box next to the item blank and place a check mark in the box labeled ENTRY NOT EVALUATED.
- If a check mark is placed in the ENTRY NOT EVALUATED box, the entry is not to be judged.

- Documentation is present
- Display is present
- Completed LEAP Response is present
- ENTRY NOT EVALUATED

SUPPORTING DOCUMENTATION (50 points)				Record scores in the column spaces below.
CRITERIA	Minimal performance 1-4 points	Adequate performance 5-8 points	Exemplary performance 9-10 points	
Research base (X2)	Research is inadequate, and/or very few credible sources are referenced.	Research has been conducted appropriately, with some credible sources included.	Research indicates evidence of a comprehensive assortment of materials that are credible sources.	
Support materials (X2)	Support materials do not help clarify the documentation or are of little significance to the issue.	Support materials are appropriate and help supplement documentation by providing clarity to the issue.	Support materials are of excellent quality; if not original, they are cited; support materials clarify the issue.	
Quality, effectiveness, and mechanics (X1)	Portfolio appears to have been thrown together; distracting errors in punctuation, grammar, and spelling are evident in the documentation.	Portfolio is generally organized; punctuation, grammar, and spelling are generally correct, with few errors.	Work is of exceptional quality and well organized; punctuation, grammar, and spelling are correct, with no errors.	
SUPPORTING DOCUMENTATION SUBTOTAL (50 points)				

DISPLAY (80 points)				Record scores in the column spaces below.
CRITERIA	Minimal performance 1-4 points	Adequate performance 5-8 points	Exemplary performance 9-10 points	
Definition and explanation of the issue (X1)	An unclear definition and explanation of the issue is presented.	Issue is defined and explained adequately.	Explanation is presented and communicated in an organized, clear, and concise manner.	
Explanation of impacts (X1)	Explanation is missing a discussion of the issue's relevance to environmental, economic, social, and/or ethical considerations.	Explanation addresses some of the issues relevant to environmental, economic, social, and/or ethical considerations.	Explanation includes a full discussion of the issue's relevance to environmental, economic, social, and/or ethical considerations.	
Data charts and graphs (X2)	The data is not represented in charts and graphs.	The data is represented in charts and graphs and somewhat supports the analysis of the team.	The data is represented in charts and graphs and supports the analysis of the team.	

DISPLAY (80 points) – continued				
Communication of issue (X1)	It is difficult to understand the issue being communicated; an illogical explanation presented.	The issue is communicated and thoughts are organized somewhat concisely.	The issue is communicated in an organized, clear, and concise manner.	
Creativity (X1)	The display lacks creativity; no, or very few, design principles are integrated in the display.	Some elements of creativity exist in the display, and essential design principles are generally evident.	The display exudes creativity; essential design principles and elements are well integrated.	
Aesthetics and artanship (X1)	Work is unorganized and sloppy; display seems to be an afterthought or thrown together.	Display shows an organized presentation of the issue.	Display is exemplary in logically communicating important data.	
Delivery (X1)	The team is verbose and/or uncertain in their analysis; the participants' posture, gestures, and lack of eye contact diminish the delivery. Participants rely too heavily on the notes.	The team is somewhat well-spoken and clear in their analysis; participants' posture, gestures, and eye contact result in an acceptable delivery. Participants rely on the notes	The team is well-spoken and distinct in its presentation/interview; participants' posture, gestures, and eye contact result in a polished, natural, and effective delivery.	
DISPLAY SUBTOTAL (80 points)				

Rules violations (a deduction of 20% of the total possible points for the above sections) must be initialed by the judge, coordinator, and manager of the event. Record the deduction in the space to the right.

Indicate the rule violated: _____

PRELIMINARY SUBTOTAL (130 points)

SEMIFINAL PRESENTATION/INTERVIEW (79 points)				
CRITERIA	Minimal performance	Adequate performance	Exemplary performance	
	1-4 points	5-8 points	9-10 points	
Articulation (X2)	The analysis is full of illogical thoughts that lack clarity, and/or there is insufficient support information provided.	The analysis is somewhat logical, generally easy to follow, and/or there is sufficient supporting information provided.	The analysis is clear, concise, and there is ample supporting information provided.	Record scores in the column spaces below.
Knowledge (X2)	Participants seem to have little understanding of the concepts in their analysis; responses to questions may be vague.	Participants exhibit an understanding of the concepts in their analysis.	Participants show clear evidence of a thorough understanding of data analysis; the analysis is accurate and supported by evidence.	
Delivery (X1)	The team is verbose and/or uncertain in their analysis; the participants' posture, gestures, and lack of eye contact diminish the delivery. Participants rely too heavily on the notes.	The team is somewhat well-spoken and clear in their analysis; participants' posture, gestures, and eye contact result in an acceptable delivery. Participants rely on the notes	The team is well-spoken and distinct in its presentation/interview; participants' posture, gestures, and eye contact result in a polished, natural, and effective delivery.	
Team participation (X1)	The majority of the presentation is made by one member of the team; the partner(s) may be disengaged.	Team members generally are engaged in the process, though one member may take on more responsibility than the other(s).	All team members are actively involved in the presentation.	

SEMIFINAL PRESENTATION/INTERVIEW (79 points) – continued				
LEAP Response (19 points; 10% of the total event points)	The team's efforts are not clearly communicated, lack detail, and are unconvincing; few, if any, attempts are made to identify and incorporate the SLC Practices.	The team's efforts are adequately communicated, include some detail, are clear, and are generally convincing; identification and incorporation of the SLC Practices are satisfactory.	The team's efforts are clearly communicated, fully-detailed, and convincing; identification and incorporation of the SLC Practices are excellent.	
SEMIFINAL PRESENTATION/INTERVIEW SUBTOTAL (79 points)				
Rules violations (a deduction of 20% of the total possible points for the above sections) must be initialed by the judge, coordinator, and manager of the event. Record the deduction in the space to the right. Indicate the rule violated: _____				
SEMIFINAL SUBTOTAL (79 points)				
To arrive at the TOTAL score, add any subtotals and subtract rules violation points, as necessary.				TOTAL (209 points)

Comments:

I certify these results to be true and accurate to the best of my knowledge.

JUDGE

Printed name: _____ Signature: _____

DATA SCIENCE AND ANALYTICS

EVENT COORDINATOR INSTRUCTIONS

PERSONNEL

- A. Event coordinator
- B. Judges:
 1. Preliminary Round: Two (2) or more
 2. Semifinalist Round: Two (2) or more (preferably the same judges from the preliminary round)
- C. Assistant, one (1)

MATERIALS

- A. Coordinator's packet, containing:
 1. Event guidelines, one (1) copy for the coordinator and each judge
 2. TSA Event Coordinator Report
 3. List of judges/assistants
 4. Stick-on labels for identifying entries
 5. Results envelope with coordinator forms
 6. Notecards
- B. Measuring tape for judges
- C. Display tables for entries
- D. Table and chairs for event coordinator and judges
- E. Projector (if available) or print outs of the semifinal on-site challenge, including the data chart
- F. White board or wall for projecting the images (if applicable)

RESPONSIBILITIES

AT THE CONFERENCE

1. Attend the mandatory event coordinator's meeting at the designated time and location.
2. Report to the CRC room and obtain the contents of the coordinator's packet; check the contents.
3. Review the event guidelines and check to see that enough judges have been scheduled.
4. Inspect the area(s) in which the event is to be held for appropriate set-up, including room size, tables, chairs, etc. Notify the event manager of any potential problems.

5. At least one (1) hour before the event is to begin, meet with judges and assistants to review time limits, procedures, regulations, evaluation, and all other details related to the event. If questions arise that cannot be answered, speak to the event manager before the event begins.

EVENT CHECK-IN

1. Attend the mandatory event coordinator's meeting at the designated time and location.
2. Report to the CRC room and check the contents of the coordinator's packet.
3. Review the event guidelines and check to see that enough judges have been scheduled.
4. Inspect the area(s) in which the event is to be held for appropriate set-up, including room size, tables, chairs, etc. Notify the event manager of any potential problems.
5. At least one (1) hour before the event is to begin, meet with judges and assistants to review time limits, procedures regulations, evaluation, and all other details related to the event. If questions arise that cannot be answered, speak to the event manager before the event begins.

PRELIMINARY ROUND:

1. Participants report to the event area at the time and place stated in the conference program to:
 - Set up the static entry display
 - Submit a hard copy of the LEAP Response with no report cover
 - Sign up for a presentation time
2. Participants report at the assigned time to the event area at the time and place stated in the conference program for the presentation.
3. Judges assess the entries and may ask questions.

4. Decisions about rules violations must be discussed and verified with the judges, event coordinator, and the CRC manager to determine either:
 - To deduct twenty percent (20%) of the total possible points in this round or
 - To disqualify the entry

The event coordinator, judges and CRC manager must all initial either of these actions on the rating form.

5. Judges determine the twelve (12) semifinalists.
6. Submit the finalist results and all required forms in the results envelope to the CRC room.

SEMIFINAL ROUND

1. Meet with semifinalist judges and review time limits, procedures, and regulations, including the LEAP judging protocol. If questions arise that cannot be answered, speak to the event manager before the event begins.
2. A representative from each semifinalist team will report at the time and place stated in the conference program to schedule a time for the on-site challenge.
3. Semifinalist teams report to the event area at the time and place stated in the conference program for the on-site challenge.
4. Semifinalist teams are allowed ten (10) minutes to review the data set in the holding room.
5. Semifinalists are permitted to:
 - a. Use their phones to conduct their research in the holding room, however, Internet will not be provided
 - b. Take notes on the index cards (to be provided by TSA)
 - c. Reference their notes during the on-site challenge presentation to the judges
6. Semifinalists are not permitted to:
 - a. Use their phones during the on-site challenge presentation to the judges
 - b. Contact outside sources for assistance while in the holding room
7. After ten (10) minutes has elapsed, semifinalists are given no more than three (3) minutes to present their analysis to the judges.
8. While the team is presenting, the assistant will usher the next team into the holding room. Repeat this step until all the semifinalists have had the chance to present.
9. Judges use the same official rating form for both the preliminary and semifinal round of evaluation.
10. Judges assess the LEAP Responses.
11. Discuss rule violations (e.g. 20% deduction, disqualification) and have all relevant parties initial the rating form.
12. Judges determine the ranking of the ten (10) finalists and discuss and break any ties.
13. Submit the finalist results and all required forms in the results envelope to the CRC room.
14. If necessary, manage security and the removal of materials from the event area.