Perrin Journal for Policy ✦ November, 17th 2024 ✦ Publication No. 2

DATA EVALUATION

P

NASA Research: Chapea Operation Dynamics and Performance Utility Delta - Mars Analog Mission Sin-Conduction at Lyndon B. Johnson Space Center - Houston, Texas

NASA

Perrin Group Exploration of U.S. National Aeronautics and Space Administration

What Are Mars Realistic Simulated Analog Missions?

Explaining analog missions and their role in pioneering further space exploration.

Office Of Management And Budget

Detailing the OMB and it's specific functions in relation to NASA.

Information, Collection. Logistics, And Activities

Breakdown of NASA's public surveying process.

Remark On: Enhancing Quality, Utility And Clarity of the Collected

'SM3A: The Earth Reflected in Astronauts' Visor" -NASA/ESA

Prepared for the U.S. National Aeronautics and Space Administration - Inference of the Perrin Group for Policy; Contributors: Tianze Fang; Rienat Kharlan; Cody Coleman; Finn Järvi (Main) Zheming Tu; Emmanuel Asamoah; Samuel Riverson; Larry Franklin

Editor-In-Chief, Founder, and Correspondent: Finn B. Järvi

NASA RESEARCH: CHAPEA OPERATION DYNAMICS AND PERFORMANCE UTILITY DELTA MARS ANALOG MISSION SIM-CONDUCTION AT LYNDON B. JOHNSON SPACE CENTER - HOUSTON, TEXAS

Recipient: U.S. National Aeronautics and Space Administration
Type: Recommendation to Amend, Alter, or Implement Sectional Policy

(DOCKET ID: NASA_FRDOC_0001-0924)

Contributors

Finn Järvi (*E.I.C. - Concentration in Academic Research & Development Policy)*
Emmanuel Asamoah (*Defense & Security Policy Analyst - Concentration in Law)*
Samuel Riverson (*Economic Policy Analyst - Concentration in Economic Policy)*
Reinat Kharlan (*Aeronautics Policy Analyst - Concentration in Aeronautics Policy)*
Thomas (Tianze) Fang (*Education Researcher - Concentration in Education Policy)*
Larry Franklin (*Art Director - Concentration in the Arts and Environmental Policy)*
Daniel (Zheming) Tu (*Environmental Policy Analyst - Concentration in Science Policy)*
Cody Coleman (*Aviation Policy Analyst - Concentration in Statistics & Aviation Policy)*

INTRODUCTORY RESOURCES
FOOTNOTES AND SUBJECT BELOW

Contributor's List[1]
Contributor's Contact[2]
Link to Regulation Site[3]
Contributor Citation Log[4]

[1]Tianze Fang; Rienat Kharlan; Cody Coleman; Finn Järvi (Main) Zheming Tu; Emmanuel Asamoah; Samuel Riverson; Larry Franklin

[2]finnbjarvi@gmail.com (Finn Järvi); codycoleman2007@gmail.com (Cody Coleman); hayobro7512@gmail.com (Tianze Fang); renatharlan@gmail.com (Rienat Kharlan); danieltu2007@gmail.com (Zheming Tu); rgf9kk@virginia.edu (Samuel Riverson) ;nsu3as@virgina.edu (Emmanuel Asamoah): fresh.media.design25@gmail.com (Larry Franklin) refer to this footnote for our contacts

[3]Link to Regulation - https://www.regulations.gov/document/NASA_FRDOC_0001-0924

[4]https://docs.google.com/document/d/1zJHyiTXwQXyk7LqiBinErD19yVnQWzAYxpp7mZ1zQDg/edit?usp=sharing

TABLE OF CONTENTS

ABSTRACT: POLICY AND REGULATION..... 7

EXPLANATION OF: S.O.D. (SUMMARY OF THE DECLARED)..... 11

SUMMARY OF THE DECLARED..... 13

CREW HEALTH AND PERFORMANCE EXPLORATION ANALOG (CHAPEA):..... 17

CANDIDATE SELECTION AND REQUIREMENTS..... 20

WHAT ARE MARS REALISTIC SIMULATED ANALOG MISSIONS?..... 24

DATA COLLECTION..... 29

OFFICE OF MANAGEMENT AND BUDGET (OMB) 41

PUBLIC RELATIONSHIPS WITH THE DECLARED..... 44

INFORMATION, COLLECTION, LOGISTICS AND ACTIVITIES..... 47

THE BURDEN AND THE PROPOSED..... 49

EVIDENCE-BASED REASONING..... 53

METHODOLOGY OF PROCEDURE..... 56

EVALUATION OF THE PROPOSED..... 58

PRACTICAL UTILITY OF INFORMATION TO MINIMIZE BURDEN..... 61

REMARK ON: ENHANCING QUALITY UTILITY AND CLARITY OF THE COLLECTED..... 64

Final Statement: U.S. National Aeronautics and Space Administration..... 66

USED DEFINITIONS..... 69

ABOUT THE PERRIN JOURNAL: POLICY AND GOVERNANCE..... 72

CITATIONS: REFERENCES (SEE CITATION LOG FOOTNOTE FOR ADDITIONAL)..... 76

(DOCKET ID: NASA_FRDOC_0001-0924)

P

ABSTRACT: POLICY AND REGULATION

The Perrin Journal: Policy & Governance

NASA Research: Chapea Operation Dynamics and Performance Utility Delta - Mars Analog Mission Sin-Conduction at Lyndon B. Johnson Space Center - Houston, Texas

ABSTRACT: POLICY AND REGULATION

The Perrin Journal aims to rid the given agency (NASA) of an arbitrary directive or administrative burden. The burden is therefore evaluated with scrutiny for fault, error, or various areas of improvement. This paper aims to achieve the outlined through amendment, change, or consideration of: operations dynamics within the United States National Aeronautics & Security Administration. The Perrin Journal responds to the third and fourth comment request sections of the regulatory notice. Number three asks for ways to enhance the quality, utility, and clarity of the information to be collected. Additionally, number four asks for ways to minimize the burden of the collection of information on respondents, including automated collection techniques or the use of other forms of information technology. The directive and suggestion contends to the notion detailed in the proposition.

All of the propositions are ordered (1-5) on the current and following page.

Automated Scoring System: Pre-Screening Process for Preliminary Automation (1)

Proposition number one focuses on an alternative scoring solution for pre-screening; the development of an automated scoring rubric for preliminary questions to categorize applicants based on the mission relevance (e.g., high adaptability or experience in remote settings). This would help with the facilitation of the identification of the best candidates as deemed by the United States National Aeronautics and Space Administration (NASA).

Validation and Consistency: Candidate Incentive, Cross-Checking, & Procedure Error (2)

The validation and consistency proposition aims to address both the third and the fourth requests for comments by implementing real-time validation to cross-check applicants' answers to improve consistency. This process catches discrepancies immediately, allowing the possibility of sorting the survey results based on the consistency score. The consistency score will highlight the extent to which the respondent was truthful and consistent while answering the cross-examining questions. Implementation of this way of statistical analysis can improve the quality of the data collected with the consistency scores and sort out all potentially inconsistent responses thus reducing further follow-up burdens of clarification. For the burden: The use of a consistency score can highlight a specific section of the information as unclear and allow sending out feedback forms for the respondents where they will have a chance to elaborate more on the inconsistent data.

Increased Delta Utility and Rate of Respondents System (3)

Perrin suggests the use of a wider range of respondents with less burden time; for example, use 3000 people with an average time of 25 minutes. In addition to this, instead of having users write a whole paragraph, it would be most beneficial to give the subjects choices so that, as a consequence, it would be faster and thus more effective. When writing is necessary, the prompt should be clear so that the respondent can respond concisely. Increasing the number of multiple choice questions could also assist graphing and analyzing data as it is easier to conduct a thorough analysis on various multiple choice questions and numbers than paragraphs of words, opinions, or deemed solely arbitrary (numerical priority).

Prevention of Unnecessary Data Collection (4)

The United States National Aeronautics and Space Administration should consider an analysis of the necessity of *certain* data collection to ensure that all the data is utilized. Data overcollection and unnecessary information collection should not be present. Prioritizing certain more relevant fields over others which are deemed less useful to the

respective objective while explaining how each data collection will be used is also necessary to prevent respondents' impatience; affecting a subjects experience more generally.

Data and information should, ideally, be more straightforward and not as complicated.

Clarification of Objective and Purpose of Surveys (5)

In order to ensure information collected is of high quality and feasibility, designers for the questions and surveys should first clarify the goal and purpose before sending them out. This ensures feedback being collected is highly correlated with NASA's objective. Providing clear statements regarding the type and purpose of the survey will ensure the credibility of the survey for readers and possibly increase the response rate. Clarification of the objective and purpose; fundamental change in rudimentary procedure can be better use

P

EXPLORATION OF S.O.D. (SUMMARY OF THE DECLARED)

The Perrin Journal: Policy & Governance

NASA Research: Chapea Operation Dynamics and Performance Utility Delta - Mars Analog Mission Sin-Conduction at Lyndon B. Johnson Space Center - Houston, Texas

EXPLANATION OF: S.O.D. (SUMMARY OF THE DECLARED)

The summary of the declaration provides the reader with an understanding of the provided notice as cited by the federal agency. It aims to simplify legal terminology, cite the federal agency's edict, and use all declared information as a segue into the proposition. The structure can be found within the table of contents; this details where to find the declared, the proposition, the burden, about page, research, graphs, and any other useful information that may justify the proposition or its research. As stated previously, this document is responding to the third and fourth request for comments by NASA (United States National Aeronautics and Space Administration); has 5 unique 'props' relative to the 3rd/4th requests.

If a government agency decides to publish a rule, notice, bill, piece of legislation, or new program that it plans to implement, the public is then able to make comments on the subject of the declaration (as made possible through the *Administrative Procedure Act*). The summary of the declaration is an outline of the rule or notice; it assists in the public understanding of policy and regulation by simplifying superfluous terminology. The process of summarizing the declared helps policymakers and analysts review the notion to give helpful inferences while giving an open eye to the public who may be less informed on the matter than the agency without having conducted legal, policy, or operational research on the function of the notion. Our approach details a fundamental learning approach to policy as you read the notice; those who feel inclined to make public comments are then able to make an educated evaluation of the proposed without having to understand the complexity of the terminology. It is completely open-ended and interpretative; the public will directly be incentivized to use this as a means of civic participation as a citizen in the United States. Equally as important, it makes the function of the APA more purposeful! Carrying out civic responsibilities can be made easier with the implementation of the "Summary of the Declared".

P

SUMMARY OF THE DECLARED

The Perrin Journal: Policy & Governance

NASA Research: Chapea Operation Dynamics and Performance Utility Delta - Mars Analog Mission Sin-Conduction at Lyndon B. Johnson Space Center - Houston, Texas

SUMMARY OF THE DECLARED

Required by the Paperwork Reduction Act of 1995 (PRA), NASA invites the public, policy-makers, and other Federal agencies to comment on the proposed rule, notice, or rule. The notice addressed and the request for comments regards the continuing information collections to reduce paperwork and respondent burden by NASA[5]

The PRA seeks to limit the amount of paperwork and unnecessary information collection from the public.[6] It states that The Office of Management and Budget (OMB) has responsibility to oversee the implementation of the PRA, which includes reviewing and approving federal agencies' information collection policies to make sure it complies with the Law.[7] The PRA also requires that federal agencies seek public comment on proposed information requests.[8] Federal agencies have to publish a Notice of Proposed Information Collection in the federal register, which is this summarized notice, before they can submit a request to the OMB.[9]

This collection of information includes the support towards the Crew Health and Performance Analog (CHAPEA) through

Individual assessment and selection for the participation in the NASA CHAPEA Candidate Selection.[10]The NASA CHAPEA project, stationed at the Lyndon B. Johnson Space Center (JSC) at Houston, aims to select crew members for one of the three Mars realistic simulated analog missions,[11] which includes the collection of the candidates' background information that encompassed employment status, medical history, and

[5]US Federal Agency NASA; Notice AICAPSACHPEACA; Sect Summary.Para 1.Line 1-3

[6]"Paperwork Reduction Act (44 U.S.C. 3501 Et Seq.)," Digital.gov, December 1, 2015, https://digital.gov/resources/paperwork-reduction-act-44-u-s-c-3501-et-seq/.

[7]"Paperwork Reduction Act (44 U.S.C. 3501 Et Seq.)."

[8]"Paperwork Reduction Act (44 U.S.C. 3501 Et Seq.)."

[9]"Paperwork Reduction Act (44 U.S.C. 3501 Et Seq.)."

[10]US Federal Agency NASA; Notice AICAPSACHPEACA; Sect I.Para 1.Line 1-6

[11]US Federal Agency NASA; Notice AICAPSACHPEACA; Sect I.Para 1.Line 6-12

related experiences or job functions prior to this mission.[12]

This information will be directed for the use of the NASA CHAPEA selection committee during the process of candidate selection in order to evaluate candidates' work ethic and professionalism.[13] NASA aims to manifest the Agency's communication function according to the Space Act Section 203 (a)(3), which states that NASA should provide a wide and accurate distribution of information relating to its activities and results.[14]

Results are to be submitted electronically.[15]

The information of the data collection is as follows:[16]

Title: Crew Health and Performance Exploration Analog Crew Application.

Office of Management (OMB) Number: 2,700-new.[17]

The type of review is Initial Submission of Information Collection, and this review will affect individuals of the general public.[18] There is an estimated number of 2000 activities per year, and one person will be the respondent per activity, making the annual number of responses 2000.[19] The estimated time required per response is forty-five minutes, which results in an annual burden hour estimation of 1500.[20]

Public comments are invited to respond to the following:
Is the proposed collection of information necessary for the proper

[12]US Federal Agency NASA; Notice AICAPSACHPEACA; Sect I.Para 2.Line 1-7
[13]US Federal Agency NASA; Notice AICAPSACHPEACA; Sect I.Para 1.Line 16-20

[14]National Aeronautics and Space Act of 1958. n.d.
[15]US Federal Agency NASA; Notice AICAPSACHPEACA; Sect II.Para 1.Line 1
[16]US Federal Agency NASA; Notice AICAPSACHPEACA; Sect III.Para 1.Line 1

[17] US Federal Agency NASA; Notice AICAPSACHPEACA; Sect III.Para 2.Line 1-2
[18]US Federal Agency NASA; Notice AICAPSACHPEACA; Sect III.Para 2.Line 3-4
[19]US Federal Agency NASA; Notice AICAPSACHPEACA; Sect III.Para 2.Line 4-6
[20]US Federal Agency NASA; Notice AICAPSACHPEACA; Sect III.Para 2.Line 7-8

functions of NASA, including the practical utility of the information
The accuracy of NASA's estimation of the time and cost burden of the proposed collection of information
Enhancing the quality, utility, and clarity of the information collected
Minimizing burden of the proposed collection of information on respondents with certain forms of information technology or automated collection techniques.[21]
Comments submitted to this notice will be included as a summarization in the later request for OMB approval as well as become a public record.[22]

[21]US Federal Agency NASA; Notice AICAPSACHPEACA; Sect IV.Para 1.Line 1-5
[22]US Federal Agency NASA; Notice AICAPSACHPEACA; Sect IV.Para 2.Line 1-2

P

CREW HEALTH AND PERFORMANCE EXPLORATION ANALOG (CHAPEA)

The Perrin Journal: Policy & Governance

NASA Research: Chapea Operation Dynamics and Performance Utility Delta - Mars Analog Mission Sin-Conduction at Lyndon B. Johnson Space Center - Houston, Texas

CREW HEALTH AND PERFORMANCE EXPLORATION ANALOG (CHAPEA):

An Overview:

A series of analog missions simulating year-long stays on Mars.[23] A mission contains four crew members who live in an isolated 1700 square foot habitat called the Mars Dune Alpha, and the purpose of the mission is to conduct simulations on space walks and provide data on different factors, including both physical and mental performance.[24] This habitat will be 3d printed and include private crew quarters, a kitchen, and areas for medication, recreation, fitness, work, etc.[25]

The purpose of these missions are to obtain accurate data on every aspect of the trip to plan for the eventual Mars expedition.[26] In order for this to succeed, the simulation needs to be as realistic as possible, which means the simulation will need to include 'real life' situations such as resource limitations, equipment failure, and significant workloads.[27] Major activities during the analog will include things like spacewalk, virtual reality, communication, crop growing, meal consumption and rationing, exercise, making sure of good hygiene, maintenance, science work, personal time, and sleep.[28]
The first CHAPEA mission has already begun on June 25, 2023, while the second and third missions are planned to start in 2025 and 2026, respectively.[29]

All of the data collected will go into NASA's planning for the planned exploration of Mars in all aspects, including developing an optimal food system design, vehicle mass and requirements for the trip, and long-term voyage resource-risk trades.[30]

Mars Dune Alpha Habitat:
The realistic habitat will be 3D printed to support a year-long voyage

[23]NASA, "CHAPEA - NASA," October 8, 2024, https://www.nasa.gov/humans-in-space/chapea/.
[24]NASA, "CHAPEA - NASA."
[25]NASA, "CHAPEA - NASA."
[26]"About CHAPEA - NASA," NASA, n.d., https://www.nasa.gov/humans-in-space/chapea/about-chapea/.
[27]"About CHAPEA - NASA."
[28]"About CHAPEA - NASA."
[29]"About CHAPEA - NASA."
[30]"About CHAPEA - NASA."

to Mars, and resemble to the best extent an astronaut's life on Mars.[31]

3D printing is used because it has the potential for building what is needed on Mars without needing to launch large amounts of building materials in multiple flights.[32]

Mars Dune Alpha features include, four private crew quarters, dedicated workstations, dedicated medical station, common lounge areas, and galley and food growing stations.[33]

---

[31]"NASA'S Crew Health and Performance Exploration Analog & Mars Dune Alpha Habitat - NASA," NASA, n.d., https://www.nasa.gov/humans-in-space/chapea/habitat/.
[32]"NASA'S Crew Health and Performance Exploration Analog & Mars Dune Alpha Habitat - NASA."
[33]"NASA'S Crew Health and Performance Exploration Analog & Mars Dune Alpha Habitat - NASA."

P

CANDIDATE SELECTION AND REQUIREMENTS

The Perrin Journal: Policy & Governance

NASA Research: Chapea Operation Dynamics and Performance Utility Delta - Mars Analog Mission Sin-Conduction at Lyndon B. Johnson Space Center - Houston, Texas

CANDIDATE SELECTION AND REQUIREMENTS

Crew selections for CHAPEA will follow a certain set of standard NASA criteria.[34] The applicant has:

1. Be a U.S. citizen or permanent resident.[35]
2. Be within the ages 30-55.[36]
3. Possess a master's degree in engineering, biological science, physical science, computer science or mathematics, from an accredited institution.[37]
4. Have at least two years of related professional experience in a STEM field listed above or 1000+ hours pilot-in-command time on jets.[38]
5. Be able to pass the NASA long-duration flight astronaut physical.[39]

Master's degree qualification can be satisfied by completing the following:

1. Two years (36 semester hours or 54 quarter hours) of work toward a doctoral program in a related science, technology, engineering, or math field.[40]
2. A completed Doctor of Medicine or Doctor of Osteopathic Medicine degree.[41]
3. Completion (or current enrollment that will result in completion by June 2021) of a nationally recognized test pilot school program.[42]

NASA may also consider participants with a Bachelors degree and other specific qualifications (e.g., relevant additional education, military, or at least four years of experience in a STEM field).[43]

Application Process:

[34]"How to Apply - NASA," NASA, n.d., https://www.nasa.gov/humans-in-space/chapea/participate/.
[35]"Link_Fed_NASA.Paragraph2.Line.2"
[36]"Link_Fed_NASA.Paragraph2.Line.3"
[37]"Link_Fed_NASA.Paragraph2.Line.4"
[38]"Link_Fed_NASA.Paragraph2.Line.6"
[39]"Link_Fed_NASA.Paragraph2.Line.8"
[40]"Link_Fed_NASA.Paragraph2.Line.10"
[41]"Link_Fed_NASA.Paragraph2.Line.12"
[42]"Link_Fed_NASA.Paragraph2.Line.13"
[43]"Link_Fed_NASA.Paragraph2.Line.15"

Finalists will undergo medical evaluation, psychological testing, and psychiatric screening to determine suitability for a long-term, isolated mission.[44] NASA will fund all of the tests listed above.[45] Candidates must not have any food allergies, avoidances, or gastrointestinal disorders, and be willing to provide requested biological samples on required days and eat food required of an astronaut during the mission.[46] Candidates must not be prone to motion sickness with VR equipment, and candidates cannot have specific medications such as blood pressure medications, blood thinners, seizure medications, daily allergy medications, etc.[47] Food supplements are not allowed, but vitamin D will be provided. All other vitamins will be provided but added vitamins will not be allowed. Candidates must have a COVID-19 vaccine and have proof of vaccination, and will have to be tested negative for COVID-19.[48] Participants will need to follow COVID mitigation protocols current to the Lyndon B.[49] Johnson Space Center (JSC) campus.[50] All of the requirements listed above are required for a long term, isolated, mentally and physically tiring mission.[51] Since this mission is a simulation of a future project on Mars, candidates must undergo conditions similar to that which they would experience in space, and thus these requirements are necessary for the accurate collection of data.[52]

Candidates who participate are not guaranteed for selection for the analog missions, and the selection process will take up to 13 months, with a maximum active time of 16 days required of each candidate during this period.[53] This time includes filling out the application, travel time, time at JSC, and time at the National Outdoor Leadership School.[54] Not all candidates will participate in each phase of the screening, and crew selection will be evaluated in the order they are received until all available spots are filled.[55]

[44]"Link_Fed_NASA.Paragraph3.Line.1"
[45]"Link_Fed_NASA.Paragraph3.Line.3"
[46]"Link_Fed_NASA.Paragraph3.Line.3"
[47]"Link_Fed_NASA.Paragraph3.Line.6"
[48]"Link_Fed_NASA.Paragraph3.Line.9"
[49]"Link_Fed_NASA.Paragraph3.Line.13"
[50]"Link_Fed_NASA.Paragraph3.Line.13"
[51]"Link_Fed_NASA.Paragraph3.Line.2"
[52]"Link_Fed_NASA.Paragraph4.Line.1"
[53]"Link_Fed_NASA.Paragraph4.Line.1"
[54]"Link_Fed_NASA.Paragraph4.Line.3"
[55]"Link_Fed_NASA.Paragraph4.Line.4"

Compensation is available, and extra information will be provided during the screening process.[56]

Participation risks include potential loss of privacy, minor discomfort, low-level radiation from x-rays, physical injury, or a very rare risk of death.[57] Mitigations involve encrypted data protection, licensed medical facilities, and safety measures with injury prevention training.[58]

[56]"Link_Fed_NASA.Paragraph5.Line.1"
[57]"Link_Fed_NASA.Paragraph5.Line.2"
[58]"Link_Fed_NASA.Paragraph5.Line.4"

P

WHAT ARE MARS REALISTIC SIMULATED ANALOG MISSIONS?

The Perrin Journal: Policy & Governance

NASA Research: Chapea Operation Dynamics and Performance Utility Delta - Mars Analog Mission Sin-Conduction at Lyndon B. Johnson Space Center - Houston, Texas

WHAT ARE MARS REALISTIC SIMULATED ANALOG MISSIONS?

Mars analog mission prepares NASA for its short term and future exploration towards asteroids, Mars, and the Moon by playing a predominant role in spaceflight research.[59]

Analog missions are field tests conducted in locations that share similar physicality with the extreme space environments. NASA engineers and scientists partnered with government agencies, academia, and industry to collect requirements for testing in extreme environments, prior to being conducted in space.[60]

Analog missions were used in the past for the preparation for leaving earth's atmosphere, landing on the moon, and permanently orbiting our planet. Today, NASA used analog missions to prepare for destinations, such as asteroids or Mars, that are deep in space.[61]

Mars analog mission is crucial in the case where certain types of experiments cannot be conducted in space due to insufficient time, money, equipment, and manpower. Ground based analogs, in such cases, are more approachable. In addition, analog ensures that the countermeasures being tested in space are functional.[62]

Mars analog mission tested the following field of hazards:

1. Space radiation refers to the magnetic field and atmosphere that protects the earth from severe cosmic radiation. Without this layer of protection, humans are exposed to more damaging radiation.[63]

   Exposure to space radiation increases the risk of getting cancer, which causes harm towards the central nervous system, reduces motor function, and alters behaviors. Radiation sickness can also lead to

[59] "Analog Missions - NASA." n.d. https://www.nasa.gov/analog-missions/.
[60] "Analog Missions - NASA." n.d. https://www.nasa.gov/analog-missions/.\
[61] "Analog Missions - NASA." n.d. https://www.nasa.gov/analog-missions/.\
[62] "Analog Missions - NASA." n.d. https://www.nasa.gov/analog-missions/.\
[63] "Analog Missions - NASA." n.d. https://www.nasa.gov/analog-missions/.\

nausea, vomiting, anorexia, and fatigue.[64]

2. Isolation and confinement refers to the behavioral issues occurring in the group of people working in the same space, which are unavoidable.[65]

   Decreases in mood, cognition, morale and interpersonal interaction, sleep disorder, depression, fatigue, and boredom are all behavioral issues that correlate with working in a small and isolated space.[66]

3. Long distance from earth affects the efficiency of communication, and astronauts must be capable of accomplishing the mission on their own. Therefore, risk of insufficient amounts of food, medicine, and supplies is to be eliminated.[67]

4. Three gravity fields, weightlessness between planets, ⅓ of Earth's gravity on Mars, and normal gravity during returning to Earth, are to be experienced on Mars mission.[68]

   Gravity fields can influence spatial orientation, head/hand-eye coordination, balance, and locomotion due to loss in muscle strength and toleration, deconditioning the cardiovascular system, and shifts in fluids that cause vision problems because of the increase of the pressure on the eyes.[69]

5. Ecosystem inside the spacecraft is important in ensuring a clean and safe working environment for the astronauts. Microbes can alter space characteristics and microorganisms can be transferred between people easier in an isolated space. Moreover, the space station should be gingerly designed to

[64] "Analog Missions - NASA." n.d. https://www.nasa.gov/analog-missions/.\
[65] "Analog Missions - NASA." n.d. https://www.nasa.gov/analog-missions/.\
[66] "Analog Missions - NASA." n.d. https://www.nasa.gov/analog-missions/.\

[67] "Analog Missions - NASA." n.d. https://www.nasa.gov/analog-missions/.\

[68] "Analog Missions - NASA." n.d. https://www.nasa.gov/analog-missions/.\
[69] "Analog Missions - NASA." n.d. https://www.nasa.gov/analog-missions/.\

provide a comfortable living environment for the astronauts.[70]

Poorly designed space can raise stress hormone levels, leading to allergies, illnesses, and disease.

[70]"Analog Missions - NASA." n.d. https://www.nasa.gov/analog-missions/.\

P

DATA COLLECTION

The Perrin Journal: Policy & Governance

NASA Research: Chapea Operation Dynamics and Performance Utility Delta - Mars Analog Mission Sin-Conduction at Lyndon B. Johnson Space Center - Houston, Texas

DATA COLLECTION

Fig 1. ***Factor & Time Relativity Graph****:* Percentage of Respondents Who Started Questionnaire, Completed the Screener, and Completed the Questionnaire, by Stated Length; and Effect Sizes in Terms of Cogen's h variable: Interpretation

---

EFFECTS OF QUESTIONNAIRE LENGTH AND A MATHEMATICAL APPROACH TO RESPONDENT EVALUATION

2x5 Chart Display - Evaluated Features in the First (1) Figure: Screenings and Completed Var.X'2b(2)Block'a Trip

Stated L = 10min	*Stated L = 20min*	*Stated L = 30min*	*Total*	*X'2b(2)*
P: Factor Decimal	*Completed X*	*Contrast to Y*	*Screening Qs*	*Random Blocks 'a*

Table 1. Percentage of Respondents Who Started the Questionnaire, Completed the Screener, and Completed the Questionnaire, by Stated Length; and Effect Sizes in Terms of Cohen's *h*

	Stated length					
	10 minute	20 minute	30 minute	Total	$\chi^2(2)$	*P*
Start						
Started the questionnaire (% of all who clicked on the banner)	75.0%	64.9%	62.4%	67.4%	46.89	.001
(*n*)	(856)	(723)	(760)	(2,339)		
Contrast to the 10-minute group (*h*)		−0.22	−0.27			
Screening questions						
Completed the screener (% of all who started the questionnaire)	59.1%	54.9%	52.6%	55.7%	7.12	.03
(*n*)	(506)	(397)	(400)	(1,303)		
Contrast to the 10-minute group (*h*)		−0.08	−0.13			
Qualified—unemployed (% of all who completed the screener)	75.1%	71.8%	73.3%	73.5%	1.25	.53
(*n*)	(380)	(285)	(293)	(958)		
Random blocks[a]						
Completed the 5th random block (% of all who qualified)	68.2%	67.0%	66.2%	67.2%	0.29	.86
(*n*)	(259)	(191)	(194)	(644)		
Contrast to the 10-minute group (*h*)		−0.02	−0.04			
Completed the 12th random block (% of all who qualified)	37.9%	56.8%	54.3%	48.5%	28.95	.001
(*n*)	(144)	(162)	(159)	(465)		

Continued

Interpretation of Figure 1

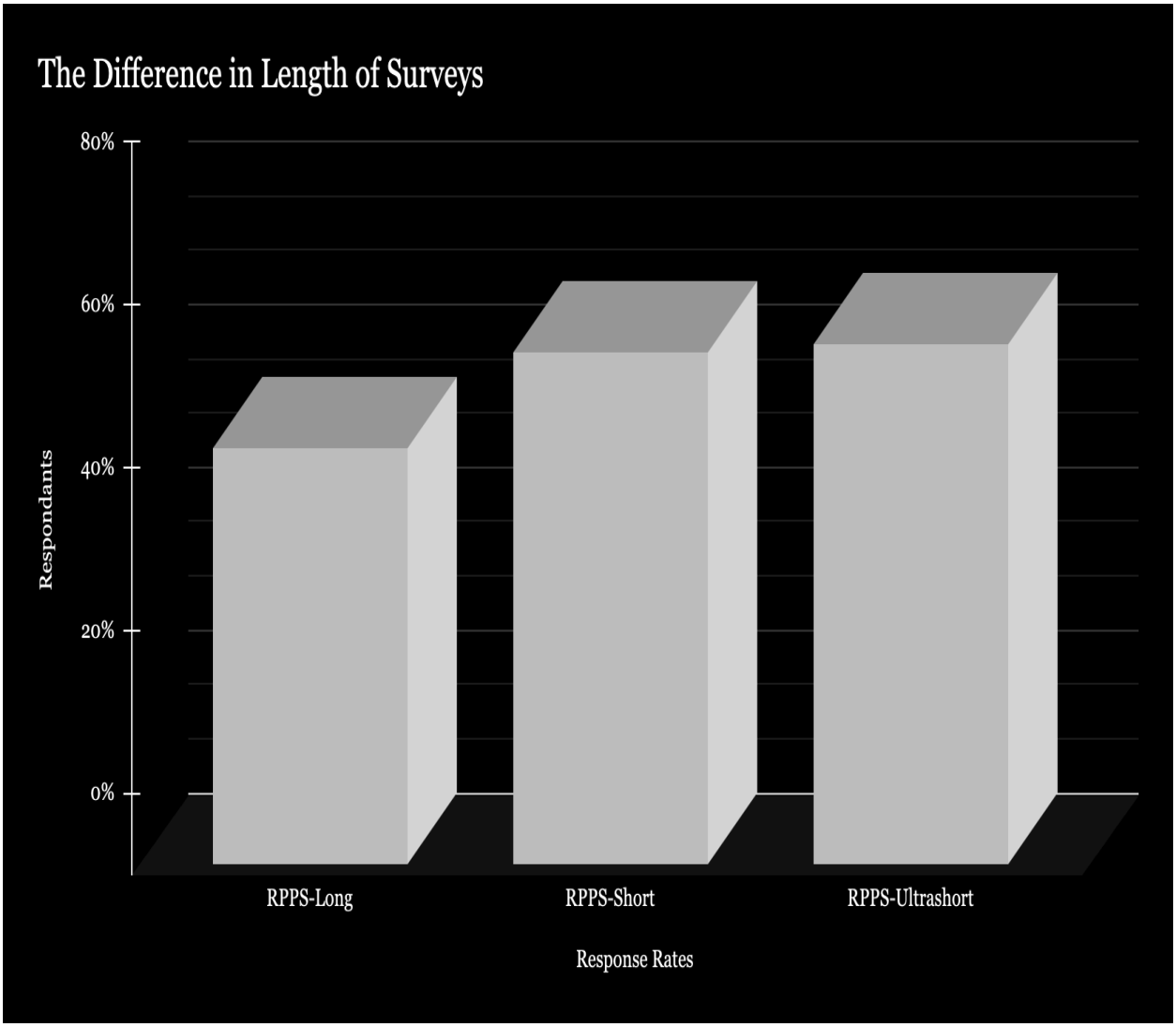
75% of participants began the questionnaire when the survey length of 10 minutes had been previously mentioned. 64.9% of contributors clicked on the questionnaire if previously mentioned that the survey was 20 minutes. 62.4% of collaborators selected the questionnaire if it was formerly known that the survey was 30 minutes. A total between all three contrasting questionnaires was final as 67.4% clicked versus untouched. The total study was of 2,339 individuals based on the length of each survey. 59% of participants succeeded in finishing the screening questions when expressed that it was 10 minutes. 54.9% of participants finished the screening questions when expressed that the estimated length of the survey was presumed to be 20 minutes. 52.6% of contributors finished the screening questions when knowing prior that the survey was an estimated 30 minutes of time. The total of individuals changed from 2,339 to 1,303. The study had so far demonstrated as time passed, the increased amount of individuals exiting the assessment. Meanwhile an average of 70% of unemployed participants from all three groups concluded the screening questions. 68.2% of contributors continued to the 5th random block of questions when expressed with a time factor of 10 minutes. 67% of supporters persisted in the questionnaire when communicated that the survey was purported to be 20 minutes. When individuals were notified that the questionnaire was 30 minutes, 66.2 proceeded past the 5 blocks of randomized questions. 67.2% of participants continued to the 5 randomized blocks of questions, leading to the total number of contributors being 644.

This is relevant to proposition three, proving that a longer survey discourages the respondent to finish or complete the survey, causing dissatisfaction at a long survey. It may also affect their answers, as dissatisfaction often causes carelessness, and NASA may receive responses that do not match with the data they need, or they are not accurate with the actual opinion of the respondent.

In conclusion, based on the research, NASA should aim to design its

survey concise and direct for the respondents. By doing so, the public will be more willing to complete the survey with high quality responses.

Fig 2. ***Length of Survey Graph****:* The Difference in Length of Surveys: Interpretation.



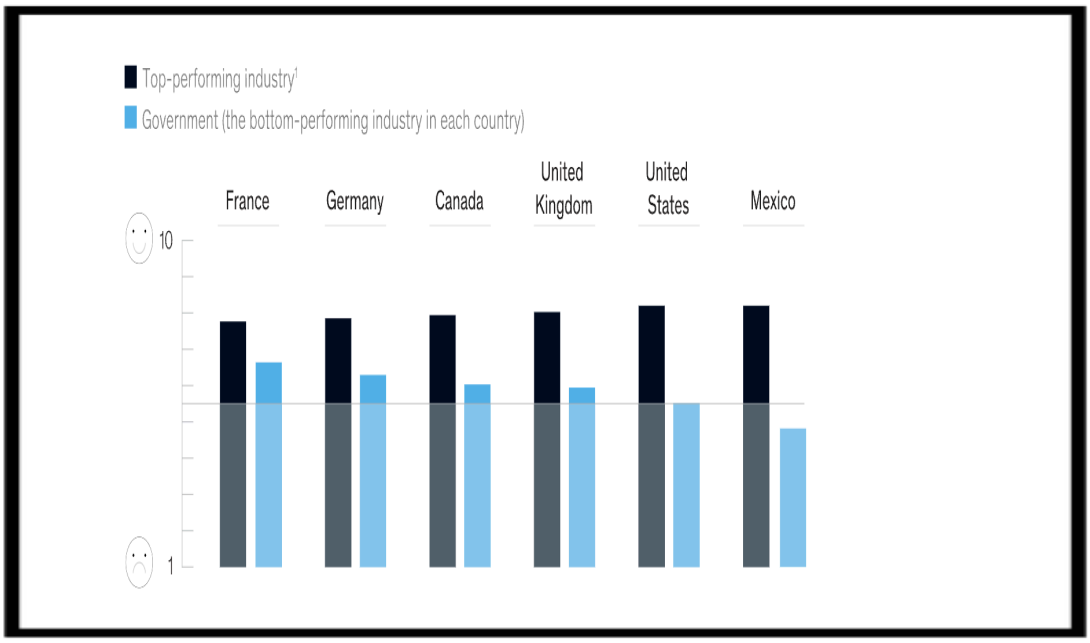
Response Rate:	RPPS-LONG	RPPS-Short	RPPS-Ultrashort	Margin.Diff.Ex
Respondents:	~51% w/ error	~61% w/ error	~62% w/ error	10.5% (DIFF)
Evaluation:	Not Ideal	More Ideal	Most Ideal	Shows Slope

Interpretation of Figure 2

In the second figure, there are three contrasting questionnaires and surveys that were manufactured for the sole purpose of testing the attention span of individuals as well as how the data contributes to surveys as a whole. The vertical axis depicts the number of recipients in percentage, while the horizontal axis depicts the difference between each response rate. The graph has a residing feature that depicts the increased nature between shortened surveys and increased response rates. The initial percentage for RPPS-Long is an average click rate of 51% compared to the other bar graphs which is at a much higher percentile. The comparison between RPPS-Short and RPPS-Ultrashort is only by one percentage point. RPPS-Short's rate of observation is 61%. Compared to RPPS-Ultrashort which is an observation rate of 62%. Both sets of data are both very close averaging out at 61.5% click rate, contrasted to RPPS-Long is a 10.5% difference. By shortening questionnaires and surveys, you can expand your audiences just based on length.

This is similar to the first data, as this proves that people prefer ultrashort or short surveys that match up with their attention spans, causing them to be interested, giving more accurate and truthful data than if they were tired out writing a long survey about things they might not be interested in. This is why the surveys should take less time than 45 minutes each, which would be considered long for a survey.

Fig. 3: Fulfillment - Top Performing Industry Relative to the State's Government



Measuring Gratification Derived from Performance of Various Independent Nations and their Respective Governments

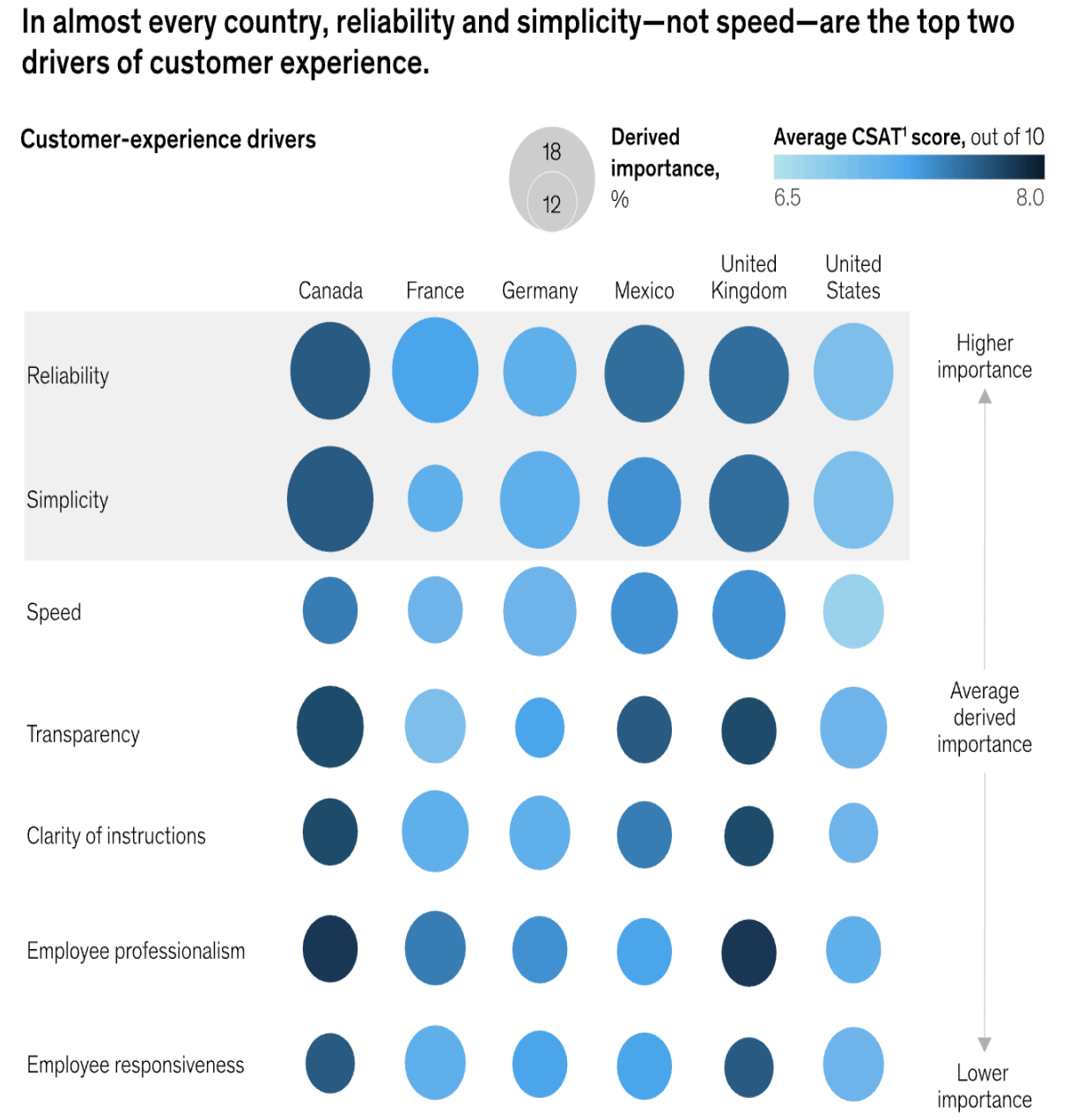
Top performing Industry Satisfactory; Individual-Independent Sovereign Nation-State

Industry-Sat	7.94/10.00	7.99/10.00	8.01/10.00	8.12/10.00	8.21/10.00	8.09/10.00
Indiv-State	France	German	Canada	UK	USA	Mexico

Interpretation of Figure 3

Represents the customer satisfaction, with respect to the industry, on the leading markets globally versus the government industries derived from federal practices and operations; x-axis represents the satisfaction of the demographic from each market (state) with respect to the quantifiable measures of satisfaction from surveys (on a 10 point scale; 0 = less satisfied | 10 = more satisfied). Figure 3 represents customer satisfaction based on leading markets globally versus government industries. The vertical axis represents the satisfaction of customers in each market, 0 being very dissatisfied, while 10 being incredibly satisfied. A lot of global industries fall either in the middle or are above average in customer satisfaction rates. Meanwhile, government agencies tend to be lackluster in customer satisfaction rate. Government agencies need to work on their customer satisfaction rates using different methods of thinking, based on the principle that leading industries are outpacing government businesses.

Figure 4: RELIABILITY AND SIMPLICITY AS FACTORS OF CUSTOMER EXPERIENCE



Top performing Industry Satisfactory; Individual-Independent Sovereign Nation-State

Industry-CSAT	7.50/8.00	7.80/8.00	6.89/8.00	7.50/8.00	7.64/8.00	7.10/8.00
Indiv-State	Canada	France	Germany	Mexico	UK	USA

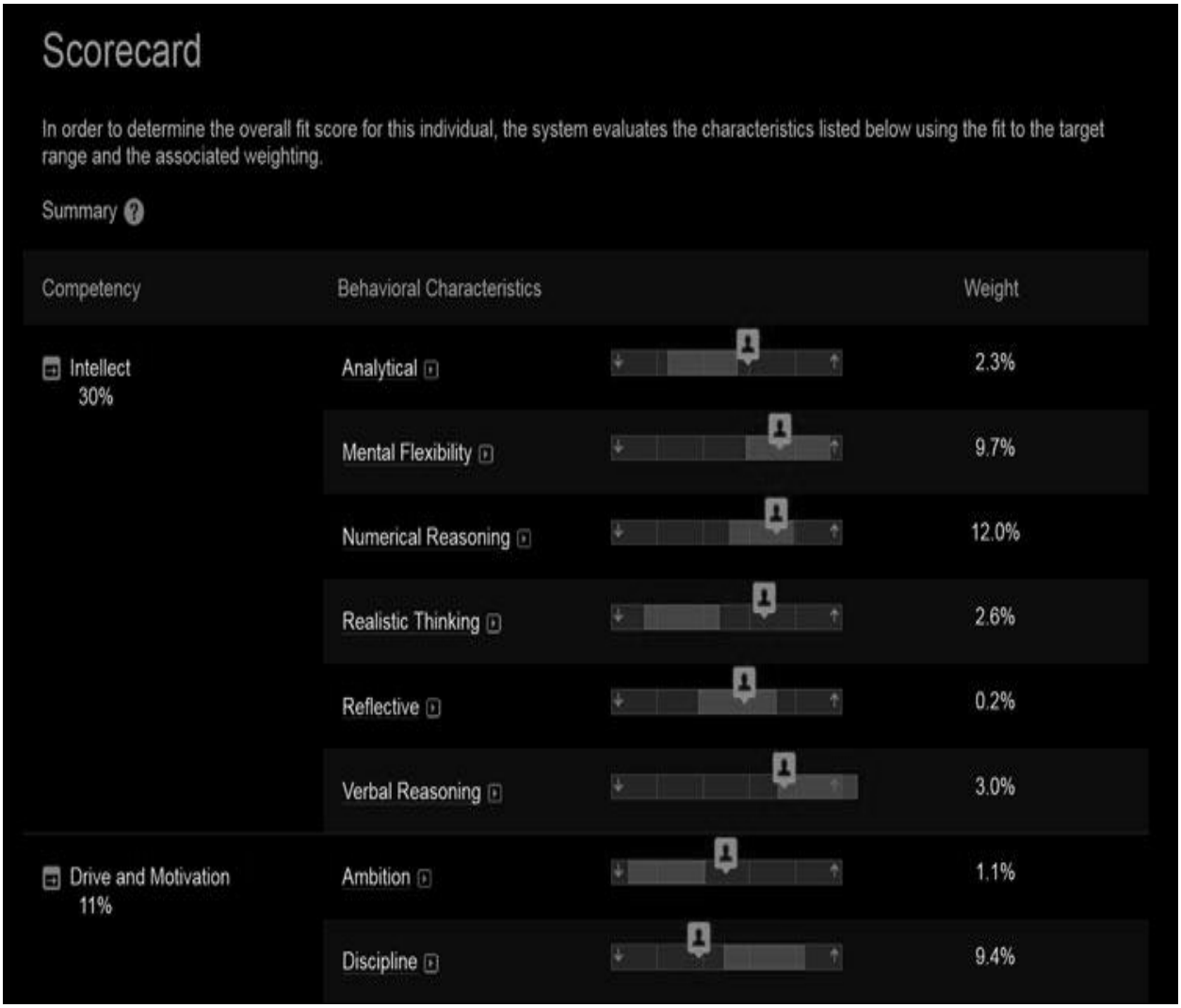
Interpretation of Figure 4

Customer satisfaction is based on the principles of reliability and simplicity. If you keep anything whatsoever simple and reliable, customers are more likely to continue further using the company or associate the company with a better view. Based on figure 4, most countries prefer reliability and simplicity moreover other traits. The vertical axis depicts the importance of the characteristic. The Customer Satisfaction Score (CSAT) depicts that during the process of communicating with a customer, when key traits are used, the CSAT score rises. Reliability and simplicity being major contributing factors for the customer experience also further conveys the importance of using both simple but reliable methods that help the customer better understand why something may be important.

This source proves that customer satisfaction requires simplicity. The same thing applies to surveys, as a shorter and more concise survey would certainly increase satisfaction of respondents doing this survey. Better satisfaction leads to more accurate data and better responses.

Fig 5: System of Classification of Best Suitable Traits

Classification Assistance: Considering the Analytical, Mental, Numerical, Reflective Incorporation.



Interpretation of Figure 5

The scorecard depicts a grading system for individuals that uses the characteristics of the contributor to better help the evaluator understand what roles should be given for each participant. The characteristics that help evaluators are analytical, mental flexibility, numerical reasoning, realistic thinking, reflective, verbal reasoning, ambition, discipline. Each factor determines which appointment would be the most suitable for each individual. Industries also use this as a way to see which candidate could be credible over others.

This can help evaluate whether or not a person would qualify for a specific role, and in the data collection, a small, five minute pre screening could be used to evaluate similarly whether one could qualify for data collection for NASA, effectively eliminating those whose data should not be considered relevant for this specific data collection.

P

OFFICE OF MANAGEMENT AND BUDGET (OMB)

The Perrin Journal: Policy & Governance

NASA Research: Chapea Operation Dynamics and Performance Utility Delta - Mars Analog Mission Sin-Conduction at Lyndon B. Johnson Space Center - Houston, Texas

OFFICE OF MANAGEMENT AND BUDGET (OMB)

OMB (Office of Management and Budget) is tasked to implement the President's vision over the Executive branch.[71] The followings listed are the main functions of the OMB across the executive departments and agencies:

1. Budget development and execution.[72]
2. Managements regarding the performance, acquisition, finance and information. technology of the agency.[73]
3. Coordination and review towards significant Federal regulations.[74]
4. Authorization and coordination of legislative and other materials.[75]
5. Authorization of Presidential Executive Orders and memoranda to agency heads.[76]

Another role of the organization, which is designated to the OIRA (The Office of Information and Regulatory Affairs) under the control of the OMB, is to monitor the flow of information by involving in the process of formulating and implementing the government information and statistical policy, creating budgets for centralized statistical agencies (CESTAs), designing the forms for the reviewing process, and regulating the budget for information collection.[77]

[71] Office of Management and Budget. 2017. "The White House." The White House. The White House. 2017. https://www.whitehouse.gov/omb/.
[72] Office of Management and Budget. 2017. "The White House." The White House. The White House. 2017. https://www.whitehouse.gov/omb/.
[73] Office of Management and Budget. 2017. "The White House." The White House. The White House. 2017. https://www.whitehouse.gov/omb/.
[74] Office of Management and Budget. 2017. "The White House." The White House. The White House. 2017. https://www.whitehouse.gov/omb/.
[75] Office of Management and Budget. 2017. "The White House." The White House. The White House. 2017. https://www.whitehouse.gov/omb/.
[76] Office of Management and Budget. 2017. "The White House." The White House. The White House. 2017. https://www.whitehouse.gov/omb/.
[77] Morin, Arthur L. "Regulating the Flow of Data: OMB and the Control of Government Information." *Public Administration Review* 54, no. 5 (1994): 434-43. https://doi.org/10.2307/976428

OMB has the jurisdiction to regulate budget and flow of information because it is the primary agency in the Executive Office, acting as the main advisor for the President to ensure proper allocation of funds between different government agencies, prioritizing the President's policies and setting the overall budget goals.

OMB collaborates with NASA to help set the budgets for its ongoing missions, and to ensure information collected fulfills the quality guidelines. NASA hopes to ensure and augment the quality, including the utility, objectivity, and integrity during the distribution of the information. Nasa has submitted a revised plan to the OMB Circular A-11, Section 124 in june 9, 2021, which aims to ensure NASA is able to activate a well organized shutdown of activities during a failure in appropriations.[78]

(No claim made; *decorative* logo of OMB)

[78] Review of *NASA Continuity of Appropriations Plan to OMB 2023*. n.d.

P

PUBLIC RELATIONSHIPS WITH THE DECLARED

The Perrin Journal: Policy & Governance

NASA Research: Chapea Operation Dynamics and Performance Utility Delta - Mars Analog Mission Sin-Conduction at Lyndon B. Johnson Space Center - Houston, Texas

PUBLIC RELATIONSHIPS WITH THE DECLARED

This NASA proposal affects the friends and family of the people who are part of the information collection in addition to the person who participates in the collection itself. Estimated burden time by NASA includes 1500 annual hours on the individuals participating in the information collection.

Contrasting with other government information collection which could affect policy making, public security, and economic development, the information NASA is collecting is strictly beneficial for the CHAPEA program. However, since most Americans view NASA programs to be favorable, it is reasonable to include more of the general public in this information collection, while decreasing the time required for each activity. According to a public survey, over 65% of Americans say it is essential that NASA continues its exploration of Space.[79]

[79] Sara Atske and Sara Atske, "Americans' Views of Space: U.S. Role, NASA Priorities and Impact of Private Companies," Pew Research Center, October 25, 2024, https://www.pewresearch.org/science/2023/07/20/americans-views-of-space-u-s-role-nasa-priorities-and-impact-of-private-companies/#:~:text=Overall%2C%2065%25%20of%20U.S.%20adults,exploration%2C%20even%20without%20NASA's%20involvement.

However, the CHAPEA program would not be in part of the general public's short term interests, limiting the potential benefits of this information collection to the general public.

In short, NASA has used 1500 annual hours of individual time for scientific research that the general public would not benefit from in a direct way, at least in the short-term view. In addition to that, there are negative impacts to the public in addition to the time they have spent, including privacy concerns of information, potential surveillance from the government, or misuse of information.

Furthermore, burden time is limited to the individuals that the collection of information is performed on, which does not incorporate those around the person that might be affected, including one's close friends or relatives, who might be affected in different ways as well.

(See next page - overlap formatted)

Overall, the 1500 hours of time the public will spend on the information collection do not match up with the benefits that NASA is providing for the general public, even though the general public's opinion is favorable of NASA's operations.

P

INFORMATION, COLLECTION, LOGISTICS AND ACTIVITIES

The Perrin Journal: Policy & Governance

NASA Research: Chapea Operation Dynamics and Performance Utility Delta - Mars Analog Mission Sin-Conduction at Lyndon B. Johnson Space Center - Houston, Texas

INFORMATION, COLLECTION, LOGISTICS AND ACTIVITIES

According to research done on Public Opinion Quarterly, research lengths affected both respondent participation as well as the average time it takes to complete the survey. Respondents were given surveys of three different lengths: very short, short, and long. Researchers would publicize each survey using Publically Accessed Banners (PAB).

Respondents accessed the PAB, and results show that on average, the shortest survey was clicked 10% more than the other two, and 5% more of respondents would continue past the screening section on the shortest survey compared to the longer surveys.

On another research, 2228 eligible registry members received survey links, and the lengths of the surveys include: RPPS-Ultrashort, RPPS-Short, and RPPS-Long. Members would respond to the ultrashort survey 64% of the time, the short format survey 63% of the time, and the long format 53% of the time.

Customer records have diverse services, and each record has an abundance of information regarding the financial and personal documents of a certain customer. Over the span of eight months, an automated robotic processing unit (ARPU) handled 42,000 transactions, effectively eliminating 22494 manual hours of employees while reducing processing time on an average from thirty minutes to four minutes.

P

THE BURDEN AND THE PROPOSED

The Perrin Journal: Policy & Governance

NASA Research: Chapea Operation Dynamics and Performance Utility Delta - Mars Analog Mission Sin-Conduction at Lyndon B. Johnson Space Center - Houston, Texas

THE BURDEN AND THE PROPOSED

NASA has asked the general public to comment on whether the proposed collection of information necessary for the proper functions of NASA, including the practical utility of the information, the accuracy of NASA's estimation of the time and cost burden of the proposed collection of information, enhance the quality, utility, and clarity of the information collected, and minimizing burden of the proposed collection of information on respondents with certain forms of information technology or automated collection techniques, as NASA has asked the general public to comment on.

The Perrin Journal has made five propositions to attempt to address two of the four problems NASA has asked the public to comment on: enhancing the quality, utility, and clarity of the information collected, as well as minimizing burden of the proposed collection of information on respondents with certain forms of information technology or automated collection techniques.

1.Automated Scoring System: Pre-Screening Process for Preliminary Automation.

An automated scoring system can significantly simplify and develop the pre-screening process by introducing a scalable and unbiased approach to filtering candidates. The implementation of an evaluation rubric that prioritizes mission-relevant qualities (adaptability, remote work experience, stress response) could significantly improve efficiency. This scoring rubric can evaluate responses to preliminary questions by assigning weighted scores to answers that align closely with mission-critical skills. Such a small weighted assessment of the applicants would allow them to sort out the least probable candidates and reduce the time burden during the later stages of the selection process.

Proposed Implementation:

Automated scoring systems for the quantitative answers can be implemented pretty easily based on the assigned values associated with every

criteria that needs to be evaluated separately (e.g., stress resistance, work load, social skills, etc). However, assessment of free responses requires using tools like **natural language processing (NLP)** for analyzing qualitative responses and assigning scores based on keyword relevance or sentiment analysis.

In addition to fixed values assigned to the questions, **data-driven adjustment** can be implemented to refine the scoring model over time. Based on the open responses from previously successful candidates can serve as a benchmark for scoring new applicants.

Examples in Other Fields:

Healthcare: Hospitals use automated tools to prioritize emergency room cases based on patient-reported symptoms and severity levels, ensuring critical patients are treated promptly.

Recruitment: AI-driven platforms like LinkedIn's Recruiter analyze profiles and applications to rank candidates according to job requirements.

2. Validation and Consistency: Cross-Checking, & Procedure Error

Sustaining the reliability of collected data is pivotal, and a validation system can enhance this by flagging discrepancies in real-time. A consistency score can track the alignment between responses to similar or cross-examined questions. This not only validates accuracy but also fosters accountability among respondents.

Proposed Implementation:

Real-Time Clarifications - After a respondent submits an inconsistent answer, they are immediately prompted to review and clarify the response. For instance, an applicant claiming both "rich experience of life in isolated environments" and "discomfort in prolonged solitude" might receive a prompt for elaboration.

Possible use of **pattern recognition algorithms** for more sophisticated questionnaires to cross-check responses dynamically, identifying mismatches that might indicate errors or falsifications in the data collected from the respondents.

Examples in Other Fields:

Survey Research: Academic institutions employ validation loops in longitudinal studies where participants' answers in follow-ups are compared to prior responses for coherence.

Tax Compliance: Tax software like TurboTax flags potential discrepancies between income and deductions to help users avoid audits.

4. Prevention of Unnecessary Data Collection

Over-collection of data can dilute focus and alienate respondents. Implementing a systematic review of survey components ensures that only essential data is collected. Applying a utility-driven approach ensures CHAPEA collects only mission-critical data, enhancing respondent engagement and reducing the burden allocated to the data collection program.

Proposed Implementation:

Introduce a *data utility evaluation* where every question is categorized by its correspondence and relevance to specific mission goals. Questions with low utility should be removed or restructured.

Transparently communicate to respondents how each data point will be used. For instance, informing applicants that "medical history data will solely determine physical suitability" can build trust.

Examples in Other Fields:

Finance: Banks have streamlined loan application processes, collecting only critical financial and personal information while providing transparency about its use.

Retail: E-commerce platforms like Amazon have reduced consumer friction by pre-filling fields and requesting only essential details for checkout.

P

EVIDENCE-BASED REASONING

The Perrin Journal: Policy & Governance

NASA Research: Chapea Operation Dynamics and Performance Utility Delta - Mars Analog Mission Sin-Conduction at Lyndon B. Johnson Space Center - Houston, Texas

EVIDENCE-BASED REASONING

Proposition 1:

According to research done on Public Opinion Quarterly, research lengths affected both respondent participation as well as the average time it takes to complete the survey. Respondents were given surveys of three different lengths: very short, short, and long. Researchers would publicize each survey using Publically Accessed Banners (PAB).

Respondents accessed the PAB, and results show that on average, the shortest survey was clicked 10% more than the other two, and 5% more of respondents would continue past the screening section on the shortest survey compared to the longer surveys.

On another research, 2228 eligible registry members received survey links, and the lengths of the surveys include: RPPS-Ultrashort, RPPS-Short, and RPPS-Long. Members would respond to the ultrashort survey 64% of the time, the short format survey 63% of the time, and the long format 53% of the time.

Shorter surveys improve the amount of times that a survey is done, and the percentage of survey completions. Therefore the information collection of NASA should apply as less individual burden time as possible, while getting enough information at the same time. This supports proposition number three, as a shorter survey for individuals should increase the completion rate and also the satisfaction of the people completing the survey, decreasing the necessary burden time overall. In addition to that, more people could be incorporated during the information collection, leading to more diverse and relevant information being collected. For example, a 25 minute individual activity with 3000 respondents (1000 more than the original proposition), will result in an annual burden time of 1250 hours, 250 hours less than the original proposition. In addition to the less burden time, each individual respondent would be able to provide clearer and more coherent data in a 25 minute collection than a 45 minute one, which they would more likely be less willing and likely to finish.

According to research, open ended questions (OEQ) exert a heavy

burden on respondents. OEQs have higher rates of uninterested individuals on surveys, and also cannot be analyzed as data to represent a large group of data, but rather just the opinion of an individual, which can affect the accuracy of the data.

In contrast to OEQs, Multiple choice questions(MCQs) provide many benefits for the workload of respondents, which includes constructing quizzes so that they can be reused. MCQs can also be delivered relatively quickly, which means a general less burden time. In addition to that, MCQs exert a much less burden on the respondent, and also provides for easier analysis of data.

This supports proposition number three, as multiple choice can decrease the amount of burden enacted on the respondents while gaining accurate data and better respondent satisfaction at the same time.

Proposition 4:

Customer records have diverse services, and each record has an abundance of information regarding the financial and personal documents of a certain customer. Over the span of eight months, an automated robotic processing unit (ARPU) handled 42,000 transactions, effectively eliminating 22494 manual hours of employees while reducing processing time on an average from thirty minutes to four minutes.

Research shows that an automated robot processing unit (ARPU), is capable of significantly decreasing the workload of both employees and the general public. This bot is used to process transactions and it effectively decreases the average transactions from 30 minutes to 4 minutes. This decrease in time mostly comes from eliminating the amount of unnecessary information collected by an employee in contrast to the bot, which uses automation to filter out the information that does not need to be collected. This supports our proposition number four, as this bot will help NASA eliminate the information that.

P

METHODOLOGY OF PROCEDURE

The Perrin Journal: Policy & Governance

NASA Research: Chapea Operation Dynamics and Performance Utility Delta - Mars Analog Mission Sin-Conduction at Lyndon B. Johnson Space Center - Houston, Texas

METHODOLOGY OF PROCEDURE

The first proposition details the feasibility of implementing certain pre-screening processes. Certain methodology in order to carry out these processes is necessary although it is ultimately in the hands of the recipient; information collected may be considered under the APA however we forfeit the rights to the methodology and will use this notion purely as abstract and hypothetical. Perrin analysts do not intend to claim an inference of the procedure nor a right towards just as so.

The second proposition details the feasibility of implementing real-time validation to cross-check applicants' answers to improve consistency. By doing so, discrepancies among the responses can be captured instantly by the system. The data collected is recognized by the APA as being in line with their standards. And the Perrin Journal does not claim ownership or control over the methods used to gather this information.

The use of a wider range of respondents shortens the average time for individual respondents to complete the survey, lowering their burden. The data collected is recognized by the APA as being in line with their standards. And the Perrin Journal does not claim ownership or control over the methods used to gather this information.

The collection of data should aim towards responses that are closely correlated with the research field, preventing unnecessary information from hindering staff members from analyzing the data. The data collected is recognized by the APA as being in line with their standards. And the Perrin Journal does not claim ownership or control over the methods used to gather this information.

The fifth proposition focuses on using NASA's own ability to rule out some of the unneeded questions while providing the respondents with a purpose to answer the questions.

P

EVALUATION OF THE PROPOSED

The Perrin Journal: Policy & Governance

NASA Research: Chapea Operation Dynamics and Performance Utility Delta - Mars Analog Mission Sin-Conduction at Lyndon B. Johnson Space Center - Houston, Texas

EVALUATION OF THE PROPOSED

Each of our proposals will match at least one of the two benefits listed below:

a. Improve the efficiency and clarity of the data collection process
b. Decrease the burden exerted on the general public.

Proposition 1:

The preliminary questioning according to the rubric will benefit efficiency, clarity, and exert less burden. First of all, preliminary questioning will avoid unnecessary data collection of people who do not qualify to participate in the data collection. This means that NASA will spend less time reading or examining data that would be no use for them, improving the clarity and efficiency of the process.

There would also be less burden exerted on the public, as if the same 2000 people were chosen for the data collection, and only 1750 qualified to participate, the other 250 would not need to complete the whole data collection of 45 minutes, instead only spending 5 minutes of their time. This means a whole decrease of over 166 annual hours of burden time decreased.

Proposition 2:

Real time validation will improve the efficiency and clarity of the data. By catching discrepancies in the responses immediately, the validation will highlight the extent to which the respondent was truthful and consistent while answering the cross-examining questions. This can improve clarity of the responses as well as efficacy when analyzing because it can help eliminate those who have not been honest, eliminating the chance of NASA receiving inconsistent or false information from the public.

Proposition 3:

Using a wider range of people with less burden time causes improved clarity and efficiency as well as less burden time. A wider range of people with a less burden time on average will decrease the overall burden time of the public. It will also be able to give more accurate data for NASA to potentially get better and clearer results of different people's, races, or other factors.

Efficiency and clarity is also improved as more multiple choice questions will be used. Multiple choice questions are easier to analyze and can be made into graphs and data much easier than short answer questions, which would require each one to be read separately.

Multiple choice questions also decrease burden on the general public as they both decrease the time it takes to complete a survey as they have to write less, but also exerts less mental burden as well, considering that clicking a button is a much less demanding action than thinking and writing a short answer.

Proposition 4:

By using and doing an analysis of the data collection either with a bot or through other means, NASA could effectively decrease overcollection and unnecessary collection of information. It could also ensure that certain fields are prioritized over others, making sure that data collection is doing what it needs to.

This proposition significantly improves the clarity of the efficiency and data collected. An automated bot could help filter out data that does not need to be collected, or ones that were collected but unused, providing feedback for NASA to improve the data collection as it goes.

By doing this, NASA also decreases the burden it exerts on the general public as they are constantly improving the data so that only the useful information is needed.

Proposition 5:

Providing clear statements for the purpose of each question should help both the general public and NASA. The general public would, then, have a better idea of what they are answering and why they are answering, potentially helping them come up with clearer answers that are more fitting to the data that needs to be collected.

It also helps NASA, as by providing these statements NASA could find certain aspects of the data collection not necessary or important to the whole thing, and could thereby be taken out, decreasing the amount of burden exerted on the public while keeping questions clear and concise at the same time.

P

PRACTICAL UTILITY OF INFORMATION TO MINIMIZE BURDEN

The Perrin Journal: Policy & Governance

NASA Research: Chapea Operation Dynamics and Performance Utility Delta - Mars Analog Mission Sin-Conduction at Lyndon B. Johnson Space Center - Houston, Texas

PRACTICAL UTILITY OF INFORMATION TO MINIMIZE BURDEN

When NASA applies the propositions we have made, NASA will see a more efficient data collection process while exerting less burden hours on the public at the same time.

Proposition number three would decrease the burden time by around 250 annual hours, if it is followed through by the 3000 people with a burden time of 25 minutes each.

Next, proposition one would eliminate a certain amount of the respondents chosen. That means, if 10 percent of the people do not qualify to respond, then they save twenty minutes each, effectively decreasing 100 (300*20/60) hours of annual burden time.

For proposition four and five, the times of burden decreased can only be estimated. For example, we can estimate that ten percent of the information might turn out to be unnecessary for collection, or the survey might be improved along the process to be more concise. This would decrease the annual hours of burden by around 100 hours as well, similar to proposition number one.

Overall, the annual burden time on the public could be decreased by 450-500 hours if our propositions are put into use, significantly decreasing the time the public has to spend on the data collection.

NASA should also see an increase in the clarity of information.

First of all, by using more multiple choice questions, NASA should have a quicker time finding a trend within the data as it is easier to graph, analyze, and interpret the data of multiple choice questions as compared to short or long answer questions. (Proposition three)

Proposition number one will eliminate much of the information that is unnecessary, as people might not have the ability to comment on certain questions, thus causing their answers to not be able to qualify for the data collection.

Proposition number two should also help NASA eliminate people who are dishonest, even though it may be a rather low percentage. The dishonest people should not be put into consideration of data collection, thus simplifying the data as well.

Proposition number four should eliminate many unnecessary questions while prioritizing the ones that are needed. Similarly, proposition number five will help NASA define each

answer's purpose as well as communicate it to the respondents and NASA themselves, helping eliminate certain unnecessary questions and helping respondents improve the clarity of their answers at the same time.

Overall, the clarity of the respondents' answer will improve as they will have a good purpose when answering the questions knowing what they are answering for and why they are answering. They will also know that their information is put to use as well. At the same time dishonest and unqualified data will be eliminated, while multiple choice questions increase ease and ability to analyze data.

Ultimately, we could see the clarity, efficiency, and utility of the information collected increase by 50% if all of our propositions are put into use. The increased clarity and efficiency also comes with decreased public burden, benefiting both necessities that NASA has asked us to comment on.

P

REMARK ON: ENHANCING QUALITY UTILITY AND CLARITY OF THE COLLECTED

The Perrin Journal: Policy & Governance

NASA Research: Chapea Operation Dynamics and Performance Utility Delta - Mars Analog Mission Sin-Conduction at Lyndon B. Johnson Space Center - Houston, Texas

REMARK ON: ENHANCING QUALITY UTILITY AND CLARITY OF THE COLLECTED

There are multiple benefits associated with the improvement in the quality of the utility system used to.

Enhancing qualities of the systems will provide multiple benefits, including increased efficiency in the data analyzing process, and better clarity when interpreting the data.

Automated bots will check for the data that is unnecessary for the data collection. For example, a purpose is put in, and it will evaluate how well a question prompts the respondents to provide the correct answer, and how many steps they take to get to the correct answer; the correct answer is the data that is necessary and will be utilized. By repeating this process, the bot can generate and regenerate better and better questions based off of the data to prompt better and better responses. Therefore the responses will get closer and closer to the actual answer that NASA will use in its analysis of the data. This way, the efficacy of the short answers will be much better than before, which means the clarity of the answers will increase.

The multiple choice can be done in a similar way. We could use the bot to determine how well the questions were understood based off of the time it takes for one to complete a multiple choice question versus the average amount of time they ‘read’, and the amount of text. The ones that have a bad ratio of answer to time could be modified to improve.

Improved utility system shortened the time for NASA to sort out information collected from surveys that are irrelevant towards the mission. Thus, giving more time for staff members to interpret the data.

In addition, Cross checking validation is another method of enhancing the utility system. Cross checking validation refers to the statistical technique of separating data into smaller sections to appraise the performance and predictions made by the model. This method allows the model or system to be trained so that it is capable of interpreting the collected data in a faster and more accurate way.

P

FINAL STATEMENTS: U.S NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

The Perrin Journal: Policy & Governance

NASA Research: Chapea Operation Dynamics and Performance Utility Delta - Mars Analog Mission Sin-Conduction at Lyndon B. Johnson Space Center - Houston, Texas

Final Statement: U.S. National Aeronautics and Space Administration

---

The Perrin Journal strongly recommends the implementation of the given propositions based on the data provided. Information on fulfillment rates, citation from data analysis regarding CHAPEA, and the factor/time relativity graphs are key focus points of our proposition that deserve consideration! Thank you for the opportunity, we hope to hear from your agency soon. Our team worked hard to put this together and we're grateful that we've been given the opportunity to demonstrate that. The Perrin Journal looks forward to the advancement of humankind from the most rudimentary stages of its development. Through the evaluation of rigor, integrity, ideas, and authenticity–truly–can policy be implemented in such a way that it benefits the core aspects of society. We wish to adopt a new notion: the implementation of a "Summary of the Declared" section under government pieces of legislation. Our explanation has been tried with the Environmental Protection Agency and briefly with the U.S. Department of State but after consideration we believe that the formatting of this paper is optimal. The inclusion of the SOD in further policy publications will revolutionize civic engagement as we know it. The agency to whom this has been delivered to, is merely a mark in the road for the future adoption of civically inclusive legislation; one that prioritizes the people for the people and with the people. The distinction is important. We hope to see federal implementation of new ideas from citizens like us! Inclusion in the most rudimentary part of society–the rules. In the conquest for all things sacred, we acknowledge the importance of inclusion. Civic inclusion in the decision making process is made possible by the Administration Procedure Act and the gathering of unique individuals from backgrounds in a vast array of different technical fields (aviation, physics, biology, philosophy, computer science, literature, computational linguistics, oration, and law).

A NOTE FROM THE EDITOR-IN-CHIEF OF THE PERRIN JOURNAL FOR POLICY

Dear U.S. National Aeronautics and Space Administration,

I believe that this is the first time we've concluded our final remarks revealing the identity of a contributor. Under the typical circumstances, we would remain anonymous as we did not think our identities to be relevant. As the Editor–In–Chief, I give my final remarks to push forward a narrative that I believe will be adopted for years to come. This research was not a culmination of dissatisfaction with the regulatory procedure of the agency but rather a recommendation that includes a "summary of the declared". A public request for comment was made possible in 1946 after the passing of the APA which altered the ways that federal agencies were able to conduct their operations (rulemaking and so forth). It is safe to say that public engagement in the decision making process is more available than it was in the 20th century, however the hurdles of federal terminology make it difficult for the average citizen to interpret notices and rules. This adoption will increase levels of civic participation. The summary of the declared, although not perfect in structure, contains a notion with potential to be easily adopted by commenters, lobbyists, and policymakers. The research conducted in this paper intended to convey the importance of at least 1 of the 5 propositions. These propositions would answer the comment request as requested from us by NASA. In the future, we think it possible that any individual citizen will be able to make carefully researched propositions and that they may be considered for real change–tangible change. The structure at current allows for the most limited form of comment pursuit, which is why the implementation or "coinage" or an SOD is important. In the event that any individual considers the unconsidered and therefore improves the operation sequences of a federal agency, it will be done under the adoption of the Summary of the Declared. Nevertheless, our contentions and propositions stand for notice revision. If deemed helpful, we've done our job.

Finn Järvi - *EIC, The Perrin Journal*

P

USED DEFINITIONS

The Perrin Journal: Policy & Governance

NASA Research: Chapea Operation Dynamics and Performance Utility Delta - Mars Analog Mission Sin-Conduction at Lyndon B. Johnson Space Center - Houston, Texas

USED DEFINITIONS

1. AICAPSACHPEACA: Agency Information Collection Activities; Proposals, Submissions, and Approvals: Crew Health and Performance Exploration Analog Crew Application.

2. NASA CHAPEA Program: A series of analog missions that perform experiments in a simulated Mars environment.[80] The program aims to observe crew's health conditions, behaviors, and the collaboration between crew members.

3. CHAPEA Candidate Selection: The CHAPEA program is looking for nonsmoking, healthy US citizens between the ages of 30 and 55 years old who are proficient in the English language.[81]

4. Mars Analog Mission: Mars analog mission prepares NASA for its short term and future exploration towards asteroids, Mars, and the Moon by playing a predominant role in spaceflight research.[82]

5. Office of Management and Budget: OMB(Office of Management and Budget) is tasked to implement the President's vision over the Executive branch on the management budget and information.[83]

6. Automated Scoring System: Automated Scoring System is a system used to efficiently select candidates that are qualified for NASA's missions.

7. Natural Language Processing: NLP (Natural Language Processing) is the computer's process of the interpretation of human language through the use of artificial intelligence.[84]

---

[80] "CHAPEA - NASA." n.d. https://www.nasa.gov/humans-in-space/chapea/.
[81] Strickland, Ashley. 2024. "NASA Is Looking for People to Live in Its Mars Simulator. Here's What It Takes to Get the Job." CNN. February 21, 2024. https://www.cnn.com/2024/02/21/world/nasa-mars-chapea-second-mission-scn.
[82] "Analog Missions - NASA." n.d. https://www.nasa.gov/analog-missions/.
[83] Office of Management and Budget. 2017. "The White House." The White House. The White House. 2017. https://www.whitehouse.gov/omb/.
[84] "Natural Language Processing." n.d. NNLM. https://www.nnlm.gov/guides/data-glossary/natural-language-processing.

8. Data Driven Adjustment: Adjustments and improvements made towards a plan or strategy after the collection and interpretation of a group of data.

9. Pattern Recognition Algorithms: PRA (Pattern Recognition Algorithms) makes the process of analyzing a set of data easier by detecting certain patterns (repetition or similarities between data) and features from the set of data.

10. Data Utility Evaluation: The process of evaluating the helpfulness of the data towards a field of study.

11. Burden on the General Public: the time taken for respondents to complete NASA's surveys. The annual burden can be calculated by multiplying the number of respondents with the average completion time of the survey.

12. Space Act: The Space Act was signed in 1958 to authorize NASA for its clarification of objectives in space. The objectives include expanding space knowledge, creating and upgrading space vehicles, evaluating the benefits from space operations, reinforcing the leadership of the United States in space exploration, and sharing discoveries with defense agencies.[85]

[85] *Space Act*. n.d.

P

ABOUT THE PERRIN JOURNAL FOR POLICY

The Perrin Journal: Policy & Governance

NASA Research: Chapea Operation Dynamics and Performance Utility Delta - Mars Analog Mission Sin-Conduction at Lyndon B. Johnson Space Center - Houston, Texas

ABOUT THE PERRIN JOURNAL: POLICY AND GOVERNANCE

The Perrin Journal is an academic research group for regulation and policy. It functions as a national think tank organization. Perrin's leadership is derived from the University of Virginia. The journal's analysts draft new propositions and advise various national federal agencies on rules and notices to implement amendments or changes in federal policy. All propositions are later considered for legislative change by the respective United States agency. Previous work conducted by the Perrin Journal includes advising the United States Environmental Protection Agency on new facets of the ***State Hazardous Waste Management Program: West Virginia,*** the U.S. Department of State on ***Reformation Proposition for Motion of International Traffic in Arms Regulations: Exemption for Defense Trade and Cooperation Among Australia, the United Kingdom, and the United States***, and the U.S. Federal Aviation Administration on ***Proposals, Submissions, and Approvals: Runway Slot Administration Schedule Analysis, New Aerial Policy Proposition***.

Our analysts come from a variety of backgrounds, nationalities, and concentrations. We unite those with different perspectives, experiences, and policy objectives to better influence our society.

At the end of each publication and submission cycle, the Perrin Journal releases a volume to those that enquire. The volume covers all legislation with a notice of all the regulatory procedures adjusted as a result of our proposition on the international/federal level. As the Perrin Journal continues to grow, we aim to establish a domain that acts as an academic repository for legal information and ease of interpretation (for complex legal work) among the general public. Authors are given the opportunity to collaborate on work and be published (work prepared for postage by U.S. National Aeronautics and Space Administration, U.S. Department of State, U.S. Environmental Policy Administration, and various other federal agencies).

Our objective is to collectively increase social welfare and prepare students for an academic segue into public policy, government, and the law. Given this, The

Perrin Journal also provides various resources for its undergraduate students to conduct research to be posted in prestigious academic journals and repositories. Manuscript arrivals have a record of publication success among Perrin members. Contributors have conducted copious amounts of research in scientific fields which better enables their participation in policymaking. An example of such research is CRISPR research at the Marine Biology Laboratory in Massachusetts (USA) involving microinjections and Cas9 Genome Editing (testing in one-cell zebrafish embryos with CRISPR/Cas9 proteins – photographing fish throughout embryogenesis and using Fiji imaging software for 3D cell imagery using fluorescence microscopy). Other contributors are members of undergraduate level research physics teams! For example, one of our contributors is a physicist for the United States Invitational Young Physicists international/global championship by the United States Association for Young Physicists (USAYPT). Other contributors are licensed pilots by the FAA, undergraduate students at universities/colleges, or leaders of registered NGOs! The exceptional staff at The Perrin Journal allows for the most informed public comments to be made on the given regulation/proposed rule/notice that needs to be addressed.

The Perrin Journal for Policy: Legal Regulatory Procedure

Administrative Procedure Act (APA) and Agency Responsibility

Our work is expected to be evaluated with full consideration; any participating federal agency is required under the Administrative Procedure Act (APA) to consider published public comments with a corresponding docket identification number provided at the bottom of the page to the proposed rule, existing rule, or notice on the given procedure. Implementation of the declared is only possible when the agency deems comments to be of special utility and relevance. In the case of the Perrin Journal, this designation is self-assured and consideration of the proposed is a required facet of this comment. Correlation with the APA's sectional administrative edicts and comment requirements allow for the general public groups, organizations, and individuals to participate in the decision making process. The current notice, after inspection by The Perrin Journal, can be improved by implementing the previously mentioned five listed propositions. These propositions will effectively, under APA

clearance, provide NASA with alternative solutions to processing and an official solution to the public request for comments on the docket (3rd and 4th request concentration). Implementation of these procedures can be considered implemented if the original source document is altered for new means. Change in one line or more certifies tangible impact. Alteration of the U.S. agency document regarding CHAPEA is assumed to be as a result of the proposition if not told. Tracking numbers and means of communication are expected to be used fully as they are given in the resources page (full list of contributor source and contact information with root index links).

It is expected that the *United States National Aeronautics and Space Administration* consider the following contention, thesis, and its whole recommendation on the subject of: *Agency Information Collection Activities; Proposals, Submissions, and Approvals: Crew Health and Performance Exploration Analog Crew Application*

View Docket Identification Number on the Next Page

P

CITATIONS: FOOTNOTES AND REFERENCES

The Perrin Journal: Policy & Governance

NASA Research: Chapea Operation Dynamics and Performance Utility Delta - Mars Analog Mission Sin-Conduction at Lyndon B. Johnson Space Center - Houston, Texas

CITATIONS: REFERENCES (SEE CITATION LOG FOOTNOTE FOR ADDITIONAL)

Daub, Matthias, Tony D’Emidio, Zaana Howard, and Seckin Ungur. “Automation in Government: Harnessing Technology to Transform Customer Experience.” McKinsey & Company, September 28, 2020. https://www.mckinsey.com/industries/public-sector/our-insights/automation-in-government-harnessing-technology-to-transform-customer-experience.

Eysenbach, Gunther, and Corresponding Author:Gunther Eysenbach. “Improving the Quality of Web Surveys: The Checklist for Reporting Results of Internet E-Surveys (Cherries).” Journal of Medical Internet Research. Accessed November 18, 2024. https://www.jmir.org/2004/3/e34/.

Farokhi, Saniya. “Pre-Employment Screening - 2024 Comprehensive Guide.” SelectHub, July 29, 2024. https://www.selecthub.com/talent-assessment/pre-employment-screening/.

Jones, Kate. “Multiple-Choice Questions: Pros and Cons.” Evidence Based Education, November 10, 2022. https://evidencebased.education/multiple-choice-questions-pros-and-cons/#:~:text=MCQs%20are%20graded%20and%20scored,provide%20instant%20feedback%20to%20students.

Kost, Rhonda G, and Joel Correa de Rosa. “Impact of Survey Length and Compensation on Validity, Reliability, and Sample Characteristics for Ultrashort-, Short-, and Long-Research Participant Perception Surveys.” Journal of clinical and

translational science, February 2018. https://pmc.ncbi.nlm.nih.gov/articles/PMC6208327/#:~:text=Response%20rate%20for%20shorter%20surveys,survey%20(p%3C0.001).&text=Response%20rate%20for%20RPPS.

An overview of Automated Scoring of essays. Accessed November 19, 2024. https://files.eric.ed.gov/fulltext/EJ843855.pdf.

Rand. Accessed November 19, 2024. https://www.rand.org/content/dam/rand/pubs/research_briefs/RBA1000/RBA1071-1/RAND_RBA1071-1.pdf.

Schell, Christina, Alexandra Godinho, and John A. Cunningham. “Using a Consistency Check during Data Collection to Identify Invalid Responding in an Online Cannabis Screening Survey - BMC Medical Research Methodology.” SpringerLink, March 13, 2022. https://link.springer.com/article/10.1186/s12874-022-01556-2.

Timothy Shanahan. “Do Screening and Monitoring Tests Really Help?” Shanahan on Literacy, March 5, 2022. https://www.shanahanonliteracy.com/blog/do-screening-and-monitoring-tests-really-help.

RECOGNITION

P

"The Perrin Journal for Policy" derives its leadership from University of Virginia

CONTRIBUTORS

Finn Järvi (*E.I.C. – Concentration in Academic Research & Development Policy*)
Emmanuel Asamoah (*Defense & Security Policy Analyst – Concentration in Law*)
Samuel Riverson (*Economic Policy Analyst — Concentration in Economic Policy*)
Reinat Kharlan (*Aeronautics Policy Analyst – Concentration in Aeronautics Policy*)
Thomas (Tianze) Fang (*Education Researcher – Concentration in Education Policy*)
Larry Franklin (*Art Director – Concentration in the Arts and Environmental Policy*)
Daniel (Zheming) Tu (*Environmental Policy Analyst – Concentration in Science Policy*)
Cody Coleman (*Aviation Policy Analyst – Concentration in Statistics & Aviation Policy*)