

Government Data Advisory Board





February 28, 2020

Dear Chief Information Officer Szczurek,

It is my pleasure to deliver the 2019 Government Data Advisory Board (GDAB) Annual Report in accordance with §24-37.5-701 *et seq*.

This report reflects ongoing work by the GDAB to improve data governance and interagency data sharing and promote a state data strategy. It has relied on significant contributions by GDAB members and has continued activities that will expedite data sharing while enhancing data privacy and security. Specifically, the GDAB has:

- Developed and published a state data strategy based on agreed upon fundamental principles and goals for enterprise data data management, governance, and sharing. The strategy drills down to tasks to be performed by agencies, OIT, and the GDAB itself to accomplish the strategic goals. Since the litany of such tasks would require a considerable resource commitment, the GDAB has begun prioritizing these tasks to focus on those that will bring the most significant benefit given existing resource availability.
- Reviewed language for a draft executive order presented to the Governor related to data management, governance, and sharing. This language is being considered by the Governor's staff.
- Assisted with a request to the Attorney General to obtain consistent legal expertise on data sharing issues and constraints across state agencies.

I look forward to any comments you may have about this work. Of course, if you have any questions or concerns, please do not hesitate to contact me.

Best regards,

Jon Gottsegen Chief Data Officer

Introduction

The State of Colorado has recognized that greater efficiencies and innovations in state government will be achieved through improving data sharing processes and procedures. While there are several advanced data management programs and data sharing or integration efforts among state agencies, data sharing between state agencies continues to require labor intensive execution of data sharing agreements and manual transfer of data using a wide variety of tools adopted by state agencies independently. Additionally, the lack of a standard data governance framework across the state enterprise results in data being managed differently among state agencies. This hinders data sharing, as an agency that is sharing data may not have a common reference with the requesting agency for how the shared data may be handled.



More efficient and effective data sharing and integration will make data available for sophisticated analyses of policy and program effectiveness across state programs. With more standardized approaches to governing and sharing data across the enterprise, the sharing of data will also be better governed, thereby protecting the data and the value invested in those data by the state.

Improving data sharing, integration, and governance has been the focus of the state's Government Data Advisory Board (GDAB or the "Board"). The Colorado General Assembly recognized the need for more effective sharing and governance of data when it created the GDAB in 2009 specifically to advise the State Chief Information Officer (State CIO) on activities and policies necessary for developing an interdepartmental data protocol. This protocol should facilitate information sharing across agencies and assist in determining the effectiveness of state policies related to data sharing, governance and distribution to the public. The Interdepartmental Data Protocol and GDAB are codified in C.R.S. §24-37.5-701 et. seq. The Board is managed and chaired by the Governor's Office of Information Technology (OIT).

The Board was preceded by a Data Protocol Development Council ("Council"), also created by statute to provide guidance, policies, and procedures for implementing a data sharing architecture across the state enterprise and driven by the need to use data across state agencies to analyze the effectiveness of state policies and inform strategy for the use of state resources. Before it was allowed to sunset, this Council recommended establishing a formal governing board, which ultimately became the GDAB, to advise on enterprise policies, directions. and priorities for data governance and management across agencies. While the GDAB's work followed the Council's focus on unit records (i.e., records pertaining to individuals within the state), it now provides recommendations on records of any type.

Nonetheless, unit records will continue to be a priority for the Board due to the privacy and compliance-related issues surrounding them.

Vision

The Government Data Advisory Board's vision is to increase the effectiveness and efficiency of government services by promoting greater collaboration, innovation and agility in government operations through more regular data sharing between state agencies and political subdivisions and more seamless, efficient, and strategic exchange of core datasets while protecting the privacy and security of data.

The Board has the following cross-departmental responsibilities:

- Advise the State CIO on the development, maintenance and implementation of the data sharing protocol;
- Advise on the best practices for sharing and protecting citizen data;
- Review, advise and provide input into the strategic plan for improving data governance;
- Advise on compliance, privacy and security data requirements;
- Advise on internal and external data policies and procedures;
- Advise on financial and budgetary components required for implementation; and
- Specifically recommend education data sharing and management strategies.

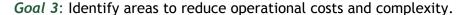
Goals

The Board's mission is to facilitate information sharing across agencies and assist in formulating and determining the effectiveness of state policies. The Board's specific goals are:

Goal 1: Develop recommendations for enterprise data sharing, integration and consolidation, particularly in the area of data sharing agreements.



for managing data and resolving data sharing or data management conflicts.



Goal 4: Provide recommendations to improve data privacy, regulatory compliance, and access management.

Goal 5: Establish an enterprise data governance framework and provide recommendations and best practices to improve data governance within the state enterprise.

Goal 6: Identify change management opportunities (e.g., service delivery, process improvement, organizational realignment) to enhance data governance and data sharing.



Goal 7: Provide feedback and guidance on an open data strategy for the state.



<u>Membership</u>

As originally passed, state statute (C.R.S. §24-37.5-703) specifies the state and local agencies that must be represented in the Board's membership, while also allowing the governor to include representatives designated by the executive directors of additional agencies. As revised in 2018, that statute mandates that all executive branch agencies be represented on the Board. Statute also allows the secretary of state, attorney general, state treasurer, and the chief justice of the supreme court to select a member from his or her department.

Currently the Board membership includes the Departments of:

- Corrections
- Education
- Health Care Policy and Financing
- Higher Education
- Human Services
- Labor and Employment
- Public Health and Environment
- Public Safety
- Revenue
- State
- Transportation
- Office of eHealth Innovation

Local representation has included:

- Jefferson County School District
- Littleton School Board

The School Board representation was removed from statute in 2019, and the School District representative resigned during the year.

The state chief data officer (CDO) serves as an ex officio member and chair of the Board, and OIT will be soliciting membership from the remaining executive branch agencies in 2020.

The specific members representing these agencies and statutory language directing the Board's membership are included in Appendix B. In addition to these official members, there has been participation from the Governor's Policy Office and OIT's Office of Information Security as well as other staff from OIT.

2019 Work Activities

The Board met monthly through the 2019 calendar year. In addition, some members of the Board worked on some tasks outside of GDAB meetings, notably collaborating with the Attorney General's Office. The specific meeting dates are listed in Appendix A.

Work Agenda

In 2016 the Board identified several objectives that will improve sharing and governance of data in the state. These objectives were identified to overcome organizational obstacles to data sharing and to realize opportunities for improved management of data across the state enterprise. Current pain points or challenges in data sharing can be categorized into:

- Statutory or programmatic restrictions
- Data governance practices (or lack of them)
- Technological needs
- Data sharing agreements and policies
- Relationships between and within agencies



Benefits or drivers for improving data sharing in the state fall into the following categories:

- Statutory or legal drivers
- Improved data governance
- Interagency relationships and data interoperability benefits
- Technology improvements and innovation
- Strategic and organizational benefits

The Board's first product was a document titled "Why should Colorado develop an interdepartmental data protocol?" that describes the obstacles to and drivers for improved data sharing and governance in greater detail. This led to a work agenda to improve the data sharing and governance environment in the state, and this work agenda continued into 2019. In previous years, the Board developed several products including a common lexicon for data sharing and a data governance framework that is based on a maturity model approach. In 2019, the GDAB pursued or contributed to the following work:

 Data Strategy: The Board agreed that the state will benefit from an enterprise-wide strategy for governing and sharing data and fully leveraging data as strategic assets.
 OIT had identified high level objectives, with feedback from Governor's Office staff, related to government effectiveness and efficiency, specifically: ensure the security and privacy of Coloradans' information, enhance the effectiveness and efficiency of Colorado government programs and services, and promote the transparency of Colorado state government.

As a start to a data strategy that addresses these objectives, the GDAB had decided that it was critical to agree on a commonly understood framework of foundational principles and goals. The Board developed and approved these principles in 2018 as the basis for ongoing consideration of a data strategy. These principles then led to a set of goals to be achieved by such a data strategy. These principles and goals are listed in Appendices C and D respectively. The Board then worked on the set of tasks required to meet these goals. The strategy breaks these tasks down into those to be done by agencies, those to be accomplished by OIT and the Chief Data Office and those that apply to the GDAB itself.

The set of tasks identified in this strategy are numerous and require significant resources to accomplish. Accordingly, the Board discussed means for tying them to agency priorities and goals and prioritizing the tasks themselves within the members' agencies. This work has been started by Board members and will continue through next year to determine overall priorities for executing on the data strategy.

• Legal Issues and Collaboration with the Attorney General's Office: It was widely recognized by the Board that more consistent and clear legal guidance is necessary across agencies from the Deputy Attorneys General who staff agencies. When agencies receive differing guidance, this causes confusion regarding what data may be shared and how. Departments rely on this guidance to mitigate risk in data sharing and, in some cases, to determine whether data may be shared at all. This has proved to be a significant obstacle to sharing data. In addition, due to potential impacts on the privileged status of the legal guidance, agencies are often told not to share the nature of the guidance that they receive from the attorneys.

Recognizing the impacts of these obstacles, the Board drafted a letter to the Attorney General asking for assistance in consistent approaches and guidance to data privacy. This letter was ultimately used by CIO Szczurek to reach out to the Attorney General to start a collaboration between state agencies and the Attorney General's Office.

In addition to this outreach to achieve greater coordination with the Attorney General's Office, there was interest in working with the Attorney General for guidance on sharing behavioral health information. This more specific need has been motivated by at least two separate projects among agencies and OIT. GDAB members assisted in communicating to the AG staff issues related to sharing the more restricted behavioral health information.

• Recommendations to the Governor's Office: Governor Polis took office in January 2019. The GDAB suggested recommendations to the new administration regarding data

- sharing and data management. These recommendations were incorporated into discussions between OIT leadership and the Governor's Office.
- Data Sharing Needs: The Board recognized that discussions about data sharing and the
 accrued benefits as well as how to overcome data sharing obstacles can be more
 effective if they deal with concrete examples of data sharing successes and data
 sharing needs. The Board has started assembling these needs and successes as
 documentation that can support further work in improving data sharing in the state.

In addition to these objectives and deliverables, the GDAB reviewed several other activities related to data sharing, integrations, and governance that occurred during the year and provided feedback to stakeholders or leaders of these activities. In this role, the GDAB served as a means for communicating developments on these topics to state agencies. The activities discussed include:

- Data Governance and Metadata for Joint Agency Interoperability (JAI) The vision of the JAI is to make the right data available to the right people at the right time for the right purposes. JAI involves several workstreams including a component to document data with metadata and establish data governance protocols for the data involved in the project. This effort is helping to establish processes and tools that will become an enterprise data governance service and process. After maturing through the JAI project, the data governance service may be used by any executive agency. Several agencies have already expressed interest in this metadata and data governance tool.
- Linked Information Network of Colorado (LINC) in collaboration with the Colorado Evaluation and Action Lab The purpose of this hub of information is to join data from multiple agencies for research purposes and provide linked data that is anonymized to protect privacy to researchers on request. This hub will reduce the requests that agencies have to respond to, thereby saving them time and effort. It will also expedite the process of obtaining data for research purposes, since data requestors will have a single location to make such requests rather than contacting and negotiating with multiple agencies. The data sharing decisions and processes are governed by the data stewards in the agencies who may determine whether a particular request is an appropriate use of their data. The decision process for allowing data to be used follows a governance framework laid out in a memorandum of understanding signed by five agencies. Data are shared based on data sharing agreements executed between OIT and the agencies. OIT has hired a Data Scientist, funded by the Office of eHealth Innovation, to perform data cleansing and analysis for LINC projects.
- Enterprise API Strategy and Governance OIT has developed a standard platform for integrating and sharing data through application programming interfaces (APIs). The platform for developing, publishing, sharing, and governing the APIs, known as an enterprise service bus (ESB), is now the standard service for data integration across the state enterprise, and funding for the service was approved by the Colorado General Assembly. APIs have been developed for the JAI project and for the Department of Transportation's data operations. The APIs developed and managed in

the state's ESB are all managed and governed by a single management plane. That is, the APIs are visible through one software platform and, therefore, use can be monitored and access controlled through one location. In addition, OIT has published an API standard (TS-DAT-001: Enterprise Data Access and Integration Services) that specifies how data integrations should be pursued. In addition to this standard, agency APIs should adhere to well-defined data governance and access management practices to ensure they are secured and allow data access to only those who have appropriate permissions to access the underlying data.

 Other presentations from: State Traffic Records Advisory Committee (STRAC), Indiana Performance Management Hub, and Criminal Justice and Mental Health Integration project.



Agenda for 2020

Based on the outstanding objectives from 2019 and the pressing needs for ongoing improvements to the data sharing and availability environment in the state, the GDAB will work on the following items in calendar year 2020.

- Communicate, prioritize tasks and execute on high priority tasks in state data strategy In 2019 GDAB representatives began to prioritize the tasks enumerated in the data strategy. The priorities will be compared to identify common priorities. This will lead to an overall prioritization of tasks within the strategy.
- Develop data sharing process flow or protocol The GDAB started work on recommendations for a systematic process flow for data sharing decision making and execution. This work will be expanded and promoted as a template for agencies to use as they mature their data sharing and governance processes.
- Work toward standard data sharing agreements Several efforts have pursued data sharing agreements among multiple agencies that can potentially serve as a standard structure for data sharing agreements. These efforts include the Linked Information Network of Colorado (LINC) and collaboration between health agencies. The agreements can be amalgamated to extend these efforts to include other agencies and other data sharing contexts.
- Produce standard data language for contracts State agencies do not have standard guidance for language in contracts that protects the agencies' interest in their data and their ability to obtain their data from their contracted vendors when desired.
- Expand statewide data governance Continue to test and refine the data governance maturity framework and promote it to all state agencies, assisting them where requested in applying the self-assessment tool to their agency's data landscape. In particular, the governance processes should be promoted among business personnel beyond business technology staff. In addition, expand the use of the data governance tool being deployed for JAI to support data governance processes.
- Document pursue use cases for sharing to support strategic components of data strategy It is important to demonstrate the powerful business cases for and benefits of data sharing to generate sufficient momentum and support for the work that will be required. Of course, data sharing is happening now, in some places more successfully than others. The GDAB will pursue data sharing issues related to wildly important goals

- from the Governor's topical work groups, labelled cabinets. This will support progress on data governance and sharing processes.
- Support data initiatives furthering enterprise approaches to sharing and
 interoperability The GDAB will receive status updates on these projects and offer
 guidance on how they may be executed to provide benefit to the agencies represented
 on the GDAB, including suggestions on overcoming obstacles being encountered. This
 feedback may also take the form of helping to shape the initiatives, communicating
 how state agencies may use or support the initiatives, or communicating these
 initiatives back to the agencies. GDAB members will communicate these projects to
 their agencies to inform them about how the outcomes of these projects may be
 adapted for them. These projects include:
 - Joint Agency Interoperability (JAI), specifically the governance efforts pursued through this project.
 - Linked Information Network of Colorado
 - myColorado.
 - Health IT Roadmap, specifically community needs for access to state data.
 - Enterprise data integrations or enterprise service bus, specifically shaping effective communication describing the use and benefits of the API strategy to agencies.
- Promulgate standard privacy policy for non-restricted data The State of Colorado often collects data, such as names, from its residents using state systems. While such data may not be subject to a particular state or federal statute protecting them, the state should have consistent processes and procedures for managing these data and protecting the privacy of residents. State agencies should communicate these processes in a consistent manner to users of these systems as well. The CDO will work with the Attorney General to develop such a statement for the GDAB's adoption.

Appendix A - 2019 Government Data Advisory Board Meeting Dates

January 15

February 20

March 20

April 17

May 15

June 19

July 17

August 21

September 18

October 16

November 20

December 18

Appendix B - Government Data Advisory Board Membership

The following individuals have been approved as members of the GDAB:

- Marcia Bohannon, Chief Information Officer, Colorado Department of Education
- Jeremy Felker, Executive Director, Student Data Privacy and Reporting, Jefferson County Public Schools
- Tobin Follenweider, Chief Operating and Performance Officer, Colorado Department of Natural Resources
- Jonathan Gottsegen, Chief Data Officer, Governor's Office of Information Technology
- Amanda Neal, Business Technology Platform Administration, Colorado Department of Labor and Employment
- Mike Hardin, Director, Business and Licensing, Office of the Secretary of State
- Sarah Nelson, Director of Business Technology, Colorado Department of Human Services
- Steve Norman, Director of Records Management, Colorado Department of Revenue
- Carrie Paykoc, State Health IT Coordinator, Governor's Office of eHealth Innovation
- Jack Reed, Statistical Analyst, Colorado Department of Public Safety
- Erik Sabina, Data Branch Manager, Colorado Department of Transportation
- Parrish Steinbrecher, Colorado Department of Health Care Policy and Financing
- Jim Stephens, Littleton School Board
- Michael Vente, Research and Information Policy Officer, Colorado Department of Higher Education
- Rick Vynke, Associate Director, Office of Planning and Analysis, Colorado Department of Corrections
- Chris Wells, Director of eHealth & Data, Colorado Department of Public Health and Environment

Appendix C - Statewide Data Strategy Principles

The GDAB approved the following principles for statewide data sharing and governance as the foundation for a statewide data strategy for Colorado. Such a commonly accepted foundation can serve as a guide for ongoing, consistent efforts by state agencies in their management, sharing, and integration of data.

These principles and goals also respond to a desire at the state's executive level of government for improved data sharing that is motivated by three major drivers:

- Protect the state's sensitive data and privacy of Coloradans while appropriately sharing data.
- Enhance the state's effectiveness and efficiency in serving Coloradans.
- Increase transparency and access to state government and state data for residents of Colorado.

Principles

- State data assets require careful and proactive stewardship. State data represent considerable investment of resources from state agencies either in direct capital outlay or in personnel time. Governments often focus on stewardship of information technology systems, leaving the management of the data to less standardized approaches. State data have value to state agencies and taxpayers, and this value should be protected and maximized as much as possible.
- State confidential data must be governed and secured to protect privacy and security. State data may contain information about the personal identity of state residents or private information about residents' health, education, or finances. State data may also potentially divulge vulnerabilities in state systems if exposed inappropriately. With the increasing attacks on sensitive data held by public and private entities, information security is critically important. Data sharing and management activities must enhance the protection of the privacy of state residents.
- Ethical use of data extends beyond regulatory or statutory security or privacy requirements. Use of state data should also consider the perception of excessive intrusion into the lives of Colorado residents. This is particularly the case for children. State agencies should be responsive to and exercise leadership in the sensitivity/ethical issues of data being exposed or being used a certain way.
- Analysis and sharing of data is necessary for evaluation of government
 effectiveness and efficiency. Evaluating the outcomes of state programs often
 requires analyzing impacts of these programs across agency boundaries. For example,
 housing programs or policies may impact or be impacted by support programs in
 human services, education, or corrections. The benefits of efforts in one program on

- other domains can be assessed only by integrating data from the agencies that support these various programs.
- Enhanced security and privacy may conflict with increased data sharing, but it does
 not have to limit data sharing. A common impression is that adequate vigilance
 regarding data security or privacy impedes data sharing. Indeed, protecting data
 privacy may limit sharing of specific data for specific use cases, but obstacles to or
 delays in data sharing in fact can arise from inconsistent application of data sharing
 practices.
- Standardized data governance protects data and improves its quality and utility.

 Data governance is the practice of establishing policies and procedures for determining appropriate data management, sharing and use. Standard governance practices rely on best practices that mitigate risks to data and ensure that data is made available for use efficiently.
- Create once, use many times. Among large enterprises like state government, it is possible that similar data are created many times or managed in several different agencies. While there may be programmatic or statutory drivers for this redundancy, it can lead to inefficient use of resources and questions about which data set is the most appropriate for use or is the "authoritative" data. To the extent possible within legal and regulatory constraints, the state should create or manage a data set one time and use it for multiple purposes (linking and collecting/aggregating data as well).
- Open data is necessary but not sufficient for government transparency. An important democratic principle, highly valued by the State of Colorado, is transparency of government for its residents. One step to making government activities more transparent is opening the state's data to the public. This applies only to data that are public; that is, that are not subject to any privacy or security constraints.
- Data value increases with use. The value of data is founded on the investments made to create and manage the data, but it is also based on the use of the data. As data are used more frequently and for wider applications, the data's value to Coloradans, and consequently the value of the source of the data, increases. This applies both to data use within state government and to open data put to beneficial use by end-users outside government.
- Data governance and data sharing should demonstrate measurable benefit. Progress toward improved governance and sharing objectives should be as demonstrable and tangible as possible. To this end, benefits of data sharing efforts should be measured through easily understood metrics and key performance indicators (KPIs). Such measures should include an emphasis on storytelling to engage executive sponsors, program leaders, and Coloradans to encourage support for strategic investment in data sharing projects.

Appendix D - Statewide Data Strategy Goals

A long term vision for data sharing, integration, and management across state government has the following goals. These will drive specific objectives and tasks to meet the goals over the next five years.

- Communicate value of data, data sharing, and data governance to business leadership. Effective and efficient governance and sharing of data requires active leadership support. This is necessary because some organizational or behavioral change will be required. Executive offices within state agencies will support this change only if value will result from the change and this value can be demonstrated.
- Develop a standard protocol for data sharing including standard procedures for
 data sharing and expectations for governing data that are shared
 (interdepartmental data protocol). Currently expectations for data sharing,
 procedures for requesting and sharing data, and responses to data sharing requests
 including data sharing agreements vary across state agencies. This results in
 considerable time spent responding to data sharing requests in an ad hoc fashion and
 makes data sharing more difficult. A standard rubric for the conditions, procedures,
 and requirements for sharing data that is commonly understood across state agencies
 will avoid the individual and processes and decisions undertaken for each individual
 data request and will expedite the data sharing process.
- Pursue API-led connectivity. The State of Colorado is developing an enterprise service bus platform (ESB) that will support integration of data through application programming interfaces (APIs). This is a technical approach that will maximize repeatability of transfers and sharing of data and provide a management platform to secure and govern these data transfers. This will enhance security and the ability to monitor or audit data sharing.
- Inventory and document state data assets. The management maxim of "you can't manage what you can't measure" applies to data too. The state must have a good understanding of its data holdings in order to manage them, understand potential risks to the data, and maximize their value. This discovery process should occur for existing data, but processes must also be in place to maintain this inventory on an ongoing basis and continue to include new data or data produced for new applications or programs. Such processes will rely on well-defined metadata (data about the data) and result in a repository of metadata to store and allow for browsing and discovery of information about data maintained by the state.
- Share data by default. The default question for state agencies should be "How do I share data" rather than "Should I share data." That is, policies, processes, and procedures should be in place that support and guide state agencies' sharing of data rather than decisions about whether data should be shared and how they should be shared occurring in an ad hoc or variable fashion with each case. If there are restrictions to sharing data, such as privacy constraints or regulatory restrictions,

- these restrictions should be understood and applied consistently across the state and should be explicit and clear.
- Develop and promulgate standard data governance approach. State data is being governed in some manner already. In some cases this governance may not be explicit. Agencies are carrying out governance activities simply as a byproduct of their business activities. Mature data governance clarifies roles, responsibilities and processes for making decisions about data sharing and appropriate data use. Data governance also involves defining processes for managing data throughout the data lifecycle and mitigating potential risk to data. The state has defined a maturity scale for data governance that agencies can use to plan for enhancing their data governance efforts.
- Agree on standard governance and controls for data of different security classifications and use cases. The state currently has a data security classification policy based on the federal security classification standard. Agencies have used this policy to classify data holding, but it is most consistently used in classifying systems that have come on-line since the policy was developed. This policy is based on the criticality of systems being adversely impacted or data being accessed or used in an unauthorized manner. Consequently it serves as risk evaluation, but also implies specific security control sets for each classification. Governance of data can also be guided by these classifications in combination with regulatory restrictions.
- Make state public data open by default. State data that are not subject to any security or privacy constraints are public data. They should be discoverable by and accessible to the public in a fully open fashion with well-documented metadata, particularly related to data quality, to increase understanding of the data and their appropriate use. This supports transparency of state government and provides opportunities for the public to analyze and use state data in novel ways, either bringing new insights to the state or even developing new markets for intellectual value added to these data.
- Identify high-impact, high-value data assets for targeted priority work.

 Transforming data sharing and governance processes entails long-term, evolutionary cultural change. Even with that understanding, benefits of data sharing for program effectiveness and for decision-making should be illustrated to stakeholders early and often by successful data sharing initiatives to garner and maintain support. This should start with quick wins leveraging existing relationships and initiatives. These quick wins could form the foundation of targeted outreach to agency leaders and generate momentum for exploring more extensive data sharing engagements. Data sharing should also be prioritized based on the impact of sharing specific data sets, the visibility of the data and the issues associated with sharing them, and the feasibility of accomplishing the sharing. GDAB members and stakeholders can also use their wide variety of relationships with local and national colleagues to help identify impactful, high-value data sharing examples and solutions from other jurisdictions and for evaluation of their applicability in Colorado.