STATE OF NORTH CAROLINA

OFFICE OF THE STATE AUDITOR
BETH A. WOOD, CPA
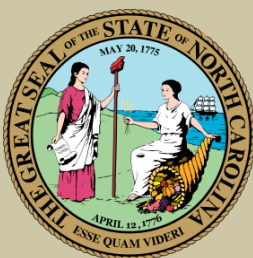
NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

DIVISION OF MOTOR VEHICLES

PERFORMANCE MEASUREMENT

FINANCIAL RELATED AUDIT
MAY 2018

EXECUTIVE SUMMARY

PURPOSE

The objective of this audit was to determine whether the Department of Transportation's Division of Motor Vehicles' (DMV) performance measurement plan provides reasonable assurance that meaningful information is available to measure the DMV's performance in serving the users of its services and make budgeting decisions.

BACKGROUND

The Division of Motor Vehicles (DMV) administers and enforces laws regulating the operation of vehicles or the use of highways in North Carolina. The DMV issues commercial and personal drivers' licenses, registers vehicles, and suspends or revokes drivers' licenses.

The DMV's mission is to deliver quality customer support through professional driver and motor vehicles services while promoting highway safety and protecting accurate and secure information.

KEY FINDINGS

The DMV's performance measurement plan provides the start of a firm foundation to provide information to measure the DMV's performance and make budgeting decisions. However, two weaknesses limited the plan's usefulness for assessing performance.

- The DMV's plan lacks adequate goals and objectives specific to DMV's functions
- The DMV's plan lacks adequate outcome-based measures

KEY RECOMMENDATIONS

- The DMV should design goals and objectives specific to its functions.

  Recommendations for DMV specific goals and objectives can be found in the "Assessment of North Carolina Division of Motor Vehicles Performance Management and Strategic Plan" report[1] located in the Appendix pages 9-13

- The DMV should review their performance measurement plan and approve specific measures to ensure they are outcome-based.

  Recommendations for effectiveness, efficiency, and outcome-based performance measures can be found in the "Assessment of North Carolina Division of Motor Vehicles Performance Management and Strategic Plan" report[1] located in the Appendix pages 16-29

---

[1] Report prepared by Dr. Dale J. Roenigk, Benchmarking Director, School of Government, University of North Carolina at Chapel Hill. Dr. Roenigk served as the subject matter expert on this engagement.

Beth A. Wood, CPA
State Auditor

AUDITOR'S TRANSMITTAL

The Honorable Roy Cooper, Governor
Members of the North Carolina General Assembly
James H. Trogdon III, Secretary, Department of Transportation
Torre Jessup, Commissioner, Division of Motor Vehicles

Ladies and Gentlemen:

We are pleased to submit this financial related report titled *Department of Transportation, Division of Motor Vehicles, Performance Measurement*. The objective of this audit was to determine whether the Department of Transportation's Division of Motor Vehicles' (DMV) performance measurement plan provides reasonable assurance that meaningful information is available to measure the DMV's performance in serving the users of its services and make budgeting decisions.

The Department of Transportation Secretary, James H. Trogdon III, and Division of Motor Vehicles Commissioner, Torre Jessup, reviewed a draft copy of this report. Their written comments are included on page 34.

This audit was conducted in accordance with *Article 5A of Chapter 147 of the North Carolina General Statute*.

We appreciate the courtesy and cooperation received from management and the employees of the Department Transportation during our audit.

Respectfully submitted,

Beth A. Wood

Beth A. Wood, CPA
State Auditor

TABLE OF CONTENTS

Beth A. Wood, CPA
State Auditor
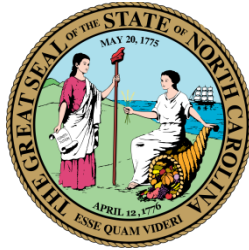
BACKGROUND

The Department of Transportation (DOT) is one of North Carolina's largest government agencies. The DOT is responsible for all modes of transportation in North Carolina, including highways, rail, aviation, ferries, public transit, and bicycle and pedestrian transportation.

The DOT's 2015-2017 Strategic Plan lays out the DOT's mission, vision, and values. The plan also includes six major goals that align to the DOT's mission of "connecting people and places in North Carolina – safely and efficiently, with accountability and environmental sensitivity." The DOT must ensure that its divisions, business units, programs, and employees are fulfilling their responsibilities in order to fulfill its mission.

Divisions and programs under the DOT include but are not limited to: the Governor's Highway Safety Program, the North Carolina Turnpike Authority, the North Carolina State Ports Authority, the North Carolina Global TransPark, and the Division of Motor Vehicles.

The Division of Motor Vehicles (DMV) administers and enforces laws regulating the operation of vehicles and the use of highways in North Carolina. The DMV issues commercial and personal drivers' licenses, registers vehicles, and suspends or revokes drivers' licenses.

The DMV's mission is to deliver quality customer support through professional driver and motor vehicles services while promoting highway safety and protecting accurate and secure information.

The DMV has 113 driver license offices and 130 privately operated license plate agencies and registration offices that serve the state's 7.6 million licensed drivers and owners of the 9.3 million vehicles registered in North Carolina.
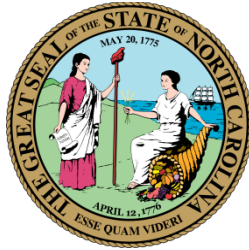
OBJECTIVE, SCOPE, AND METHODOLOGY

The objective of this audit was to determine whether the Department of Transportation's Division of Motor Vehicles' (DMV) performance measurement plan provides reasonable assurance that meaningful information is available to measure the DMV's performance in serving the users of its services and make budgeting decisions.

The audit scope included a review of the DMV activities between July 1, 2016 and June 30, 2017.

To accomplish the audit objective, the Office of the State Auditor (OSA) contracted with a subject matter expert[2] in the field of performance measurement and public administration to evaluate the DMV's performance measurement plan (Plan) with its connection to and construction of performance measures used in the Plan.

The subject matter expert's full assessment of the DMV performance measurement plan, including findings and recommendations, can be found in this report's Appendix starting on page 7.

Additionally, to accomplish the audit objective auditors interviewed personnel, observed operations, reviewed policies, analyzed records, and examined documentation supporting transactions, as considered necessary. Whenever sampling was used, auditors applied a nonstatistical approach. Therefore, results could not be projected to the population. This approach was determined to adequately support audit conclusions.

This audit did not test the accuracy and completeness of the data used to track, monitor, and measure the DMV's performance. Therefore, we express no opinion on the matter.

Because of the test nature and other inherent limitations of an audit, together with limitations of any system of internal and management controls, this audit would not necessarily disclose all performance weaknesses or lack of compliance.

As a basis for evaluating internal control, auditors applied the internal control guidance contained in professional auditing standards. As discussed in the standards, internal control consists of five interrelated components, which are (1) control environment, (2) risk assessment, (3) control activities, (4) information and communication, and (5) monitoring.

We conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objective. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objective.

---

2   Dr. Dale J. Roenigk, Benchmarking Director, School of Government, University of North Carolina at Chapel Hill.
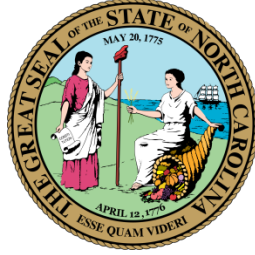
RESULTS AND CONCLUSIONS

We determined that the Department of Transportation's Division of Motor Vehicles' (DMV) performance measurement plan provides the start of a firm foundation to provide information to measure the DMV's performance and make budgeting decisions. However, two weaknesses limited the plan's usefulness for assessing performance.

FINDING, RECOMMENDATIONS, AND RESPONSE

THE DMV'S PERFORMANCE MEASUREMENT PLAN CONTAINS WEAKNESSES THAT LIMITS ITS USEFULNESS

The Division of Motor Vehicles' (DMV) performance measurement plan (Plan) provides the start of a firm foundation to provide information about its performance and make budgeting decisions.

However, two weaknesses in DMV's Plan limit its usefulness in assessing its performance. Specifically, DMV's Plan lacks adequate goals and objectives specific to DMV's functions and lacks adequate outcome-based measures.

As a result, improvements are necessary in order for the Plan to provide DMV management with useful performance measures.

<u>Lack of DMV Specific Goals and Objectives</u>

First, auditors and the subject matter expert determined that DMV's Plan lacks adequate goals and objectives specific to DMV's functions. Instead, the Plan relies largely on Departmental goals specified in the Department of Transportation (DOT) Strategic Plan.

The DOT Strategic Plan contains six major goals. Those goals are futher developed into specific objectives and distinct performance measures designed to measure progress towards goal achievement. However, the DOT Strategic Plan does not contain goals and objectives specific to DMV, and much of its focus falls largely outside of the DMV's functions.

Further, even though DMV reports close to 300 distinct performance measures, goals and objectives for DMV's three main operational areas,[3] and support services[4] have not been defined.

Failure to identify specific goals and objectives could prevent DMV from effectively and efficiently fulfilling its mission. Additionally, time and effort could be wasted if spent gathering data for and reporting on unnecessary performance measures.

Best Practices recommends the identification of specific goals. According to the subject matter expert:

> "The identification of goals is important as it clearly indicates agency priorities and thus highlights what should be measured to assess performance."

Consequently, the subject matter expert provided several suggestions and recommendations for DMV specific goals that will allow DMV to better serve the users of its services. These can be found in the "Assessment of North Carolina Division of Motor Vehicles Performance Management and Strategic Plan" report located in the Appendix pages 9-13.

---

[3] License & Plates, Licence & Theft Bureau, and Processing Services.
[4] Business services, employee training, etc.

Lack of Outcome-Based Measures

Second, the subject matter expert determined that DMV's Plan lacks adequate outcome-based measures. Instead, the Plan mostly relies on workload or output measures.

The DMV currently reports close to 300 specific performance measures. According to the subject matter expert's analysis,[5] nearly every measure is considered an output measure.

The use of more outcome-based measures will help improve performance because they inform on the quality of services and the extent to which objectives have been achieved. In contrast, workload (output) measures only report the direct results of activities and programs.

For example, DMV's Plan included specific measures that reported the number of vehicle registrations received and completed, the number of audits completed, and the number of licenses issued.

While those output measures are useful for assessing basic levels of activity, they are not useful for assessing program impact and effectiveness or showing whether expected results were achieved. Efficiency and effectiveness measures such as how much it costs on average per registration processed, what percentage of licenses are issued in a timely manner, or tracking teen death accident rates over time against various DMV safe driving initiatives could better measure program impact and help improve performance.

Best Practices recommend using of outcome-based performance measures. According to the subject matter expert:

> "Whenever it is appropriate and possible, efficiency and effectiveness measures should be added alongside workload measures and should in fact be viewed as more critical than workload measures."

Consequently, the subject matter expert provided several specific recommendations for effectiveness, efficiency, and outcome-based performance measures. These can be found in the "Assessment of North Carolina Division of Motor Vehicles Performance Management and Strategic Plan" report located in the Appendix pages 16-29.

RECOMMENDATIONS

The DMV should design goals and objectives specific to its functions. Specific recommendations for DMV specific goals and objectives can be found in the "Assessment of North Carolina Division of Motor Vehicles Performance Management and Strategic Plan" report[6] located in the Appendix pages 9-13.

The DMV should review their performance measurement plan and approve specific measures to ensure they are outcome-based. Specific recommendations for effectiveness, efficiency, and outcome-based performance measures can be found in the "Assessment of North Carolina Division of Motor Vehicles Performance Management and Strategic Plan" report[6] located in the Appendix pages 16-29.

---

[5] See Appendix for subject matter expert's analysis.
[6] Report prepared by Dr. Dale J. Roenigk, Benchmarking Director, School of Government, University of North Carolina at Chapel Hill. Dr. Roenigk served as the subject matter expert on this engagement.

AGENCY RESPONSE

See page 34 for the agency's response to this finding.
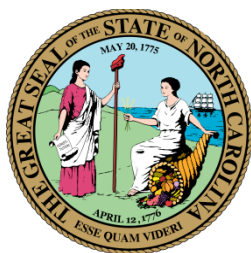
APPENDIX

Assessment of North Carolina Division of Motor Vehicles Performance Measurement and Strategic Plan

Prepared by

Dale J. Roenigk

School of Government

University of North Carolina at Chapel Hill

January 25, 2018

Paper prepared for the North Carolina State Auditor's Office

Introduction

At the request of the North Carolina State Auditor's Office, I have reviewed the North Carolina Division of Motor Vehicles (NCDMV) efforts at performance measurement. The charge was to examine the connection of performance measures to the larger North Carolina Department of Transportation (NCDOT) Strategic Plan and make an assessment and offer recommendations. NCDMV does not have a separate strategic plan but does collect a wide array of data and appears to have some that it has labeled as performance measures based on the information collected by the State Auditor's Office and found in online searches. The assessment here will focus on the development of a framework for a broad system of performance measurement supporting NCDMV's mission and consistent with the larger NCDOT Strategic Plan for both accountability and operational management and improvement.

Overall my assessment of the NCDMV efforts at performance measurement is that in its current form it provides the start for building a firm foundation to provide information to measure the Division's performance. I believe, however, that with a number of changes as will be suggested below the performance measurement can be raised to a notably higher level that will enable more useful assessment of DMV efforts for accountability and also support management decision making in the Division. The first key change is that NCDMV may wish to consider a fuller specification of goals and objectives specific to the Division's functions which builds on the NCDOT Strategic Plan but develop these further to better inform staff and stakeholders and shape the performance measurement effort around the Division's aims. The second significant change DMV could carry out would be to move from the current predominance of output performance measures and make much greater use of efficiency and effectiveness measures. Along with other changes that will be offered below, I believe that consideration and adoption of some of these suggestions could produce an exemplary model of performance measurement for a state level system of vehicle and driver management.

In its current form, the NCDMV's effort adequately addresses one of three major elements[i] that should be part of any effective performance measurement system in that it has a broad array of performance measures. However two elements, goal clarity and use of efficiency and effectiveness measures, are in need of strengthening to provide a better picture of DMV's performance. The three elements and DMV's efforts are assessed as follows:

1. Goal Clarity – Effective performance measurement should be more than just what can be measured but measuring what is important. Agencies may choose to identify goals with a strategic plan, with budget planning documents, or other means. This identification of goals is important as it clearly indicates agency priorities and thus highlights what should be measured to assess performance. DMV's current goal specification is found partly in the North Carolina Department of Transportation Strategic Plan and partly in a NCDMV Business Unit Plan. These documents provide the start of a reasonable foundation but do not appear as complete or as focused as would be desirable. There is an opportunity to develop this strategic goal framework further to better inform Division staff and prioritize performance measures that are aimed at the specific goals for the Division.
2. An extensive set of performance measures – Performance in an agency such as DMV is not just a single target but is varied across a number of assigned functions. Appropriately rather

than relying on just a single or few measures, the DMV documents list an array of measures connected to its goals and its various efforts. This array is a necessary part of a good performance system as it permits a broader more complete picture of performance. While additional measures will be suggested to better connect to goals and capture other dimensions of performance, the breadth of performance measures is appropriate.

3. Performance measures focused on effectiveness and efficiency –Good performance measurement systems should include more performance indicators looking at quality, efficiency, and outcomes. Inclusion of more "higher order" measures as will be explained below are associated with a change in management thinking and possibly higher performance as it causes users to focus on how well rather than simply how much performance efforts are achieving. Currently the DMV performance measures are mostly output or workload measures. The DMV system of measures would be notably improved if efforts were made to add more efficiency and effectiveness measures for assessing performance.

In addition to the gaps noted here around the goal clarity and the need for efficiency and effectiveness measures, a number of other topics will be raised below. Some of these other topics if addressed would further add to the usefulness of the DMV performance measurement. Finally, I would also note that while not a focus of this report, the subject of how to move from performance measurement to performance management is an important one for the Division to deliberate upon. This means considering how the Division will make use of performance measures to guide its decision making and operations beyond the obvious use of performance measures for accountability. Suggestions will be offered on specific issues where changes in the performance measurement portion of the system could support performance management decision making.

The analysis for this report here is presented in three major sections. First, an examination is made of possible strategic goals that NCDMV might use to capture the major functions specific to the Division as a guide to the objectives of their performance measurement system. A framework with some possible alternatives is offered for consideration that can be combined into the larger Department of Transportation Strategic Plan. Second, a variety of performance measures that NCDMV might use to capture performance against these strategic goals is offered based on already collected data and possible measures that may be worth adding. Third a brief discussion is offered on some challenges that will be faced when tracking performance data over time to separate out random variation from true signals of program success

Strategic Goals for DMV Activities

An underlying assumption in performance measurement work is that managers and staff know what their goals and service expectations are. Some form of high level goal specification is therefore essential for guiding efforts at what matters most in terms of identified priorities and service expectations[ii]. Failure to have clarity around a set of goals may also leave an organization turning to simply what can be measured rather than what should be measured. This need for goal specification doesn't require a formal strategic plan as goals can also be set in a variety of venues such as annual budgets or mission statements. Given that NCDOT has already created a full

Strategic Plan with some measures already indicated, NCDMV's work should fit within this Plan. But it may be desirable to supplement these Departmental goals where appropriate to list out further objectives and measures specific to NCDMV which can guide the Division's performance measurement efforts. Ultimately the choice of what the appropriate goals should be is not simply a technical exercise for performance measurement but rather a policy and management concern to identify organizational priorities. The argument that will be offered here is not what those priorities should be but rather the need for having a framework that is sufficiently complete and specific to NCDMV's mission so as to support good performance measurement.

NCDOT Strategic Plan Goals

The NCDOT Strategic Plan lists six separate goals.

1. Make transportation safer
2. Provide GREAT customer service
3. Deliver and maintain our infrastructure effectively and efficiently
4. Improve the reliability and connectivity of the transportation system
5. Promote economic growth through better use of our infrastructure
6. Make our organization a great place to work

Goals 3, 4, and 5 relate to purposes that appear to be largely outside of NCDMV's functions and will not be considered in this report. To stay consistent with the NCDOT Plan, I provide a possible framework for supplementing that Plan. The intent is to provide the next level down for DMV's goals. I simply offer this framework as it may prove useful as a way of organizing the bigger picture. The choice of these goals and priorities should be up to the Division consistent with state law and policy.

Make Transportation Safer – DMV Advances Safe Drivers and Safe Vehicles

In the NC DOT plan, the goal of making transportation safer is expressed with the objective to reduce fatalities by at least two percent or greater. In addition to the fatality rate, NCDOT has identified three other key measures as leading indicators of fatalities: crashes, severe injuries, and seat belt usage. Within the objective of a safer transport system, NCDOT's work might be divided into work that is aimed at producing safe roads, safe drivers, and safe vehicles. Additional activities addressing safety in non-motor vehicle transport isn't addressed here. NCDMV's work can be seen as focused on the last two objectives of **safe drivers** and **safe vehicles**. I offer this for NCDMV's consideration as the two primary ways that the Division's work might be seen as supporting making transportation safer and develop a framework under these two objectives. The intent is not to replace the broader DOT goal but dig down into the ways DMV specifically is making transportation safe. By providing a set of sub-goals that more directly relates to the actual functions that DMV is responsible for it should sharpen the focus and suggest a different way of assessing whether DMV is moving the dial on making transportation safer specifically by advancing safe drivers and safe vehicles. Critically these still support the Department's larger goal of reducing fatalities but effectively suggest stratifying the assessment to focus on the different ways that the Department's various Divisions might affect that goal. Moreover, by choosing such a framework it supports process oriented performance measures that more directly connect to NCDMV's operational responsibilities. A much broader statement of the goal such as to make transportation safer while it represents the highest level of outcome may be somewhat vague

when it comes to DMV. DMV's statutory and regulatory authorization is ultimately narrower than affecting the transportation system as a whole and instead focusses on functions around drivers and vehicles. I would argue by focusing a set of sub-goals more clearly in this way it is more directly in alignment with what DMV can and does do. This clarity should be beneficial for both external and internal audiences in saying what DMV performance should address.

A side question which DMV may want to consider is whether the tasks and measurement of Safe Drivers and Safe Vehicles if adopted as a framework should be broken into two separate categories of individual regulation on the

Simple Framework	Framework focused on drivers versus vehicles	Framework focused on individual versus commercial
Safe Drivers	Safe Drivers • Individuals • Commercial	Individual • Safe Drivers • Safe Vehicles
Safe Vehicles	Safe Vehicles • Individuals • Commercial	Commercial • Safe Drivers • Safe Vehicles

one hand versus commercial regulation. Arguably both categories can be seen as sharing the same aims of safe drivers and vehicles. However, either for operational purposes or clarity DMV might prefer to keep these separate though both sharing the same framework of those strategies and activities targeted at drivers and those targeted at vehicles. The choice of a framework here should be the one that best suits how DMV sees its internal workings and supports communications both internally and externally. The bulk of activity clearly is directed at individuals (drivers and vehicles). Due to what is assumed to be different work processes and probably different levels of intervention activities, it may be worth setting the commercial focused regulation separate from other efforts. The frameworks offered here are simply a suggestion for ways to more clearly communicate DMV's work and should be considered only if they appear to hold value to the agency.

Safe Drivers

NCDMV can be seen as advancing Safe Drivers by its activities which require all drivers to have valid licenses including insurance but also a variety of activities that seek to make sure eligible drivers are safe such as programs aimed at interlock systems or other efforts that restrict those with driving limitations or who have had their licenses suspended or rescinded. All of these efforts, if successful, should help support the larger DOT goal of reducing fatalities. However, by focusing on the activities related to making sure drivers are safe, it becomes possible to incorporate performance measures directly related to the programs and activities of NCDMV and not just the larger final outcomes of traffic deaths. Additionally, breaking this out also suggests some value of breaking down accidents and fatalities by cause where driver errors are identified as the major cause. Considering just the driver connected errors in the fatality data may reveal different findings than the overall traffic fatality rate. For example driver-error caused deaths may be showing a different trend than ones connected to vehicular causes not to mention other factors outside the control of DMV such as weather or road conditions.

Safe Vehicles

NCDMV primarily aims to produce Safe Vehicles by its various registration and inspection requirements aimed at keeping unsafe vehicles off the road. Additionally the inspection requirements for emissions testing is also an aspect of safety but directed at general community health and environmental impacts. Assuming these various efforts at keeping unsafe vehicles off the road are successful, it may similarly make sense again here to drill down to where the causes of accidents and fatalities might be separated out to focus on vehicle related problems.

Vehicle Theft – A possible addition to Safety for NCDMV

Although not addressed in the NCDOT Plan, vehicle theft appears to another key area of NCDMV's efforts. It is not clear from the materials reviewed for this report whether the theft related programs are considered a major or minor focus to the Division's work. The question posed here is whether addressing vehicle theft should be raised up as a third thrust for NCDMV's key performance measures under the framework offered here. The question is not whether this data should be monitored or used for operational purposes but whether it rises up to another major thrust of keeping citizens safe. If this is viewed as a relatively less critical function either in terms of resources or priorities, it need not be elevated for strategic purposes to a third leg to the stool.

Provide GREAT Customer Service

The second key goal in the NCDOT Plan relevant to NCDMV commits to delivering services with a customer focus aiming to achieve high levels of customer satisfaction. Particularly for NCDMV with its regular contact with large numbers of North Carolinians, the need to focus on keeping the customer in mind when providing services is essential. The NCDOT Plan lists four measures of success under this goal.

1. Percentage of positive customer feedback through customer surveys
2. Percentage of employee attendance in classes related to customer service
3. Percentage of customers reached
4. Percentage of change in response time (DMV customer wait time)

The first three measures appear to already be set in place through Department wide systems and will not be considered further here but will be raised again in the measurement section of the report. The last measure of wait times in NCDMV offices is noted as being new and is potentially the most visible to NCDMV's customers. Beyond these measures suggested in the NCDOT Plan, though, there are other dimensions of customer service that NCDMV might wish to consider for its own purposes. Convenience, access, errors, and efficiency are also aspects of customer service that may be worth addressing in additional Division measures. Measures particularly focused on customer satisfaction surveys may be useful for a high level outcome, but do not provide insight into the specifics of where problems may be nor do they always provide clear guidance for operational staff interested in improving service. Measures such as wait time but also errors and use of online services probably will prove more useful to staff looking to improve the customer experience. The suggestion being raised here is whether to include additional dimensions related to customer service beyond those laid out in the NCDOT Plan. Measures will be suggested in the next section of the report to address some of these other dimensions.

Make our organization a great place to work

The third major goal in NCDOT's Plan relevant to NCDMV includes a commitment to valuing its employees by making sure employees are engaged, safe, and retained. The Plan's measures of success here include:

1. Achieve an employee engagement survey score of 5.25 or greater (on a 7-point scale)
2. Percentage of DOT Employees that are paid at the market rate for their classification and level.
3. Number of preventable accidents or injuries in the work place
4. Rate of recordable employee injuries
5. Percentage of employees retained after three years

As with the earlier discussion around customer service, it appears that these measures are already in place at the Departmental level and online searching suggests some and possibly all are being produced at the Division level as well. While these should represent common ways to consider employee engagement and retention, there are additional aspects of DMV's efforts which may merit further measurement for Division level performance beyond these Department wide measures.

NCDMV Collection of Vehicle Property Taxes

A final topic under strategic goals is whether the collection of local property taxes as now handled by NCDMV needs measurement and reporting. The switch from collecting these taxes by local governments to a NCDMV responsibility presumably has had gains in terms of the overall system efficiency as well as timely payment by vehicle owners. Given that the change in state law effectively has put NCDMV in the business of tax collection, it is worth considering whether performance reporting connected to this responsibility should be elevated alongside other Division goals. If the collection of these monies and their distribution back to local governments is seen as a major Division goal then it may make sense to have performance measurement of this task alongside the other goals already listed here. Alternatively, this may be viewed primarily as a pass-through activity that while very important is not a central focus for NCDMV's strategic mission. The materials that were assessed in the various sources accessed did not reveal whether there are any Division goals and performance reporting around this tax collection function. If only to ensure that this function is being handled in an efficient and effective manner, some performance reporting in this area is probably desirable. Measures will be suggested below that may offer some ways this performance might be assessed. This might only need to be done for internal operational uses to make sure service level expectations are being met. But I would encourage consideration of whether this should be a strategic goal for NCDMV as well given the large sums of money being processed and its importance to local governments as a key customer to DMV's operations.

NCDMV Performance Measures Connected to Goals

As already noted under the discussion of strategic goals, there are already a number of performance measures specified in the NCDOT Strategic Plan. The recommendation here is to

supplement that list to include performance measures more focused on NCDMV's responsibilities and that can be useful for operational management. Before suggesting specific measures, it is important to understand two larger themes that shaped these suggestions.

A Need for Higher Order Performance Measures

Many public agencies when they focus on developing and using performance measures rely almost completely on output or workload measures. For NCDMV the number of registrations completed would be a good example of a workload measure. The predominance of workload measures in performance measurement efforts is not unique to NCDMV as it is typical for most governmental organizations at the state and local level. These types of measures are usually easy to track and report as they relate directly to work being performed and are already available from the necessary information collected to support day to day operational needs.

Measuring simple outputs or workload are useful as it provides a basic understanding of the levels of activity of an organization. Just as our financial and budget systems provide accountability of how organizations spend their money relative to set priorities, measuring outputs helps show some sense of what is accomplished or done by an agency. However, workload measures do not tell how well the agency performed in carrying out its tasks. To elevate practice, organizations need to shift to higher order performance measures that capture how efficiently and how effectively the work is being done. In shifting to these higher order measures, organizations can foster what has been labeled "managerial thinking"[iii] where staff and managers are more likely to be prompted to think about service quality and efficiency. As an example, knowing that hundreds of thousands of vehicle registrations are completed each year gives us a sense of scale of NCDMV's operation and responsibilities. However, knowing how much it costs on average per registration processed (efficiency) or what percentage of registrations are completed in a timely manner (effectiveness) naturally leads us to consider if the level of performance is acceptable or whether improvement is needed. Whenever it is appropriate and possible, efficiency and effectiveness measures should be added alongside workload measures and should in fact be viewed as more critical than workload measures. But the focus should not be on one type of measure or probably even a single measure but rather a family of measures that includes workload, efficiency, and effectiveness. Having a collection of measures helps provide a more complete picture and reflects the natural need all organizations frequently have to balance out tradeoffs between being more efficient versus more effective. For example, the choice to use mobile license vans is an effort to address the effectiveness dimension of access to services but this must be counter balanced over concerns about the comparatively lower efficiency of delivering services in this manner. Having a family of measures should help understand these tradeoffs to make better management choices but requires first that we have set up and collected the data to be able to measure it.

Creating efficiency measures is typically fairly easy assuming that an organization can track its spending and personnel by function or program activity where performance is being measured. Efficiency measures are usually simple ratios between outputs (workload) and inputs (dollars or staff). In some cases it may make more sense for workload to be in the numerator and inputs in the denominator. For example registrations completed per staff member would be a readily understood measure providing some understanding of average staff productivity. In other cases

the two items might be inverted such as total costs per registration (as opposed to fees) to reflect the level of inputs in money it takes on average to process a registration. Regardless of which number is being divided by the other (output/input or input/output), the key is that we are looking for a ratio between inputs and outputs. NCDMV already clearly has output or workload measures for its main functions (e.g. number of driver licenses or vehicle registrations). I would encourage NCDMV to assess whether costs and staff in these functional areas can be appropriately measured to support the creation of efficiency measures.

Effectiveness measures usually gauge the quality of services or the extent to which service objectives are met. The NCDOT measure of death rate for motor vehicles is an example of an outcome measure. Measures of customer satisfaction and even employee engagement may also be viewed as at least intermediate outcomes. Outcome measures can be powerful expressions of the ability of program activities to effect change particularly when measured over time. The biggest caution is that some outcome measures may take years to show an effect and may be confounded by many other factors that may affect the outcomes but are outside NCDOT's or NCDMV's complete control. Vehicle deaths, injuries, or accidents are likely shaped by a host of factors including vehicle design, changes in the age of the population, urbanization, and other forces which may not always work in the same direction. Moreover sometimes these varying forces could produce positive or negative change but it would not be the result of NCDMV's efforts. For example the increase in vehicles with air bags has almost certainly lowered death rates making it harder to be clear about the effect of NCDOT's work on this trend versus other forces at play.

Another category of effectiveness measures that should be considered capture more immediate qualities of the processes or activities that NCDMV uses. As an example, NCDMV already has data for both registrations and licenses completed in local offices and online. A simple measure of the percent of total registrations or licenses completed online could be a gauge of both customer convenience and presumably agency preference as well. It would seem reasonable to assume that a rising number here would be a measure of more effective delivery even if customer satisfaction survey data did not reflect any change. When trying to consider what to measure, two big categories to consider would be measures of timeliness and measures of errors or quality. Delays and defects (timeliness and errors) are likely ways that NCDMV might think about the results of their activities that naturally suggest effectiveness measures. For example, the new measure that seeks to capture DMV wait times is a form of timeliness. Most measures of timeliness or defects are also likely to be of direct relevance for the overarching goal of better customer service as we strive for faster delivery with fewer problems.

Balancing Accountability and Operational Needs for Performance Measures

The performance measures suggested in the NCDOT Strategic Plan are arguably framed from a perspective of accountability. They are seeking to show the Department's work is addressing citizen, customer, and worker concerns. These data should prove useful to citizens, elected officials, and managers for what is being accomplished with public dollars. However, in order to focus staff and management efforts, there is also a need to consider performance measures that may be more useful from an operational perspective. There is some research that has begun to suggest that a measurement system more focused on operational decision making may lead to

better performance[iv]. The argument is that performance data that can directly support day to day decision making has a greater likelihood of leading to change. The suggestion being made here is not to choose between an accountability orientation and an operational one, but to look for ways to balance both of these needs. Some measures may be able to meet both needs. However, guiding management and staff decisions on a practical basis especially with an aim at improving performance should require performance measures that could shape operational choices. Measures which only come out once a year or focus on statewide summaries may be sufficient for overall system accountability assessment. But that form of the data is unlikely to provide useful timely information that can help support better decision making for management and line staff. Several ways the performance measures can be made more useful for informing and supporting operational choices could include:

- Frequency or timeliness - performance measures that come out once a year won't be able to shape the need for changes in a timely manner. Depending on the volume and ease of collection, monthly or quarterly data reporting would improve the ability for management and staff to address the need for change early.
- Functional stratification – reporting on all licensing or registration activity in one number serves the accountability concern. But there is almost certainly a need to be able to drill down into subcategories. For example all licenses issued is helpful, but being able to break these down into subcategories (e.g. motorcycle, commercial, etc.) would probably prove useful to understanding where problems might be concentrated or are different than the overall trend. This functional stratification may also extend to different programs. For example efforts directed at seat belt usage versus distracted driving versus drunk driving are all valuable but the rate of problems is likely to vary as well as change over time and performance measurement at functional levels should support more targeted efforts.
- State staff versus contract operations – it appears that most state registration activities are performed by private contractors. Being able to break out performance among different offices (presumably geographic) should be valuable in assessing differences in performance for management decisions.
- Geographic division – At the strategic level, reporting performance for the entire state makes sense. However, it seems unlikely that issues are consistent across the state. Being able to drill down into lower geographic units such as regions, counties, and possibly cities, may help reveal critical differences that would support more focused management efforts which would presumably be more likely to be successful. For example, seat belt use is a broad statewide concern. But if the data shows lower conformance in certain places, a more targeted effort to raise compliance should have a higher chance of success of producing positive change.

Specific Suggestions for Performance Measures for NCDMV Goals

As already noted, NCDMV does appear to have a number of data items it is already tracking over time and labeled as performance measures. The suggestions below build on this data looking for opportunities to fit within the NCDOT goal framework and as expanded in the possible framework offered above. The aim is for a family of measures (workload, efficiency, and effectiveness) and

ones which could be set up for operational use alongside the accountability dimension. An alternative way of reporting these measures, particularly for internal operational purposes, may be to group them relative to the various business units within NCDMV as appears to already be the case. For the purposes here these instead will be reported by the possible goals as they more naturally relate that way to the NCDOT Strategic Plan. A reworking of the measures to report by functional area should not be hard and may be an appropriate structure for internal reporting.

Make Transportation Safer

The larger NCDOT plan has already laid out the key performance measure of traffic fatalities per 100 Million Miles Driven supplemented by measures around crashes, injuries, and seat belt usage. These are good high level outcome measures. However, it should be recognized that they while they represent a natural focus for NCDOT and NCDMV, they also are likely to be heavily driven by factors outside of state control such as motor vehicle design, changes in the age of population, urbanization, and other influences. Separating out the efforts of NCDOT as it impacts on these high level outcomes may not always be easy. Additionally, given the large number of factors influencing deaths and crashes, there should be an expectation that these outcomes may vary from year to year in ways that may not reflect changes to the system or its performance but rather natural variation that all processes exhibit. This latter topic will be addressed in the last section of this report.

Safe Drivers

To advance NCDMV's efforts the suggestion was made to create **Safe Drivers** as a sub-goal for making the transportation system safer. Clearly NCDMV's driver licensing and related programs should play a role in making sure drivers on the road meet at least minimal standards. The suggestion here is to provide a group of measures to capture some of the programmatic aspects of the sub-goal of Safe Drivers.

Workload Measures

1) Driver Licenses Processed – The number of driver licenses issued each year should be a base measure of the work being done for this sub-goal. For reporting focused outward of the agency, this should probably just be a total of all types of licenses combined together as a reflection of this workload or output. NCDMV may wish to supplement the raw numbers with a percentage that would express annual updates as a percentage of all current licensed drivers. This would provide a reflection of the ongoing license issuance and renewal process as something that never ends for people wishing to keep driving.
   a. For internal purposes DMV will of course want to break out the totals by the various subcategories and for new drivers with graduated or learner permits. This should be supporting internal operational needs to understand the levels of work being done. Whether these numbers are included in externally focused reporting should depend on the perception of how much detail is desired. There may be a need here to view this as a tiered set of reports aimed at different audiences.
2) Total Licensed Drivers in the State – In addition to the ongoing renewal of licenses, it may be useful to report on the total number of licensed drivers in the state since all of these

drivers are effectively part of the regulatory system DMV maintains even if in any given year most do not have renewals or other contact with DMV. Presumably DMV connects licenses with various legal system outcomes (drunk driving, points on licenses, etc.) so that the total body of drivers is the real workload. In may be useful to supplement the raw numbers of licensed drivers with a percentage of all adults in NC to reflect the proportion of the driving age population that actually is licensed (15 and over presumably).

    a. As with renewals, for internal purposes this would be broken out by license subcategories.

3) Drivers Suspended or Restricted – This would be counts of numbers of drivers with suspension or restricted actions taken against them. A key part of assuring us of safe drivers is work that DMV does to restrict or suspend licenses. I am not aware of the entire range of programs but at a minimum I assume this includes people convicted of DWI offenses but probably other violations as well. I would recommend reporting this annual number of drivers acted upon and possibly the sum total of drivers currently suspended or restricted if these actions cover multiple years. There may also be other drivers whose privileges are removed as opposed to simply not renewed possibly due to medical or physical limitations. If these numbers are tracked they might be either reported separately or added to the total of licenses restricted or suspended. The rationale behind this measure or set of measures is to show the level of workload DMV spends on getting what would presumably be unsafe drivers off the road or at least unlicensed. Expressing this as a percentage of licensed drivers may provide a better sense of the problem removed.

    a. Interlock systems – This may be a separate measure or it could be a subset for those with DWI convictions. The NCDMV Business unit plan suggests this number may be around 8,800 a year

Efficiency Measures

1) Cost per License Processed – Assuming DMV can add up all the costs associated with the various offices handling driver license issuance, this would be a basic efficiency measure. This would represent the cost to issue or renew a license from DMV's operational perspective and importantly not the fee charged for license issuance or renewal.

    a. For operational purposes it may be helpful to break these costs out by different license types but it is unclear if that level of breakdown will be possible. It may be simply best to start off with a combined number but carefully explain this covers all categories of licenses and steps in the process (issuance, renewal, learner's permit, etc.) and thus represents an average cost.

    b. It may also be possible to break these costs down by different geographic units around the state and use it to focus improvement efforts. Presumably some Division costs are not borne directly by the separate units so this may need to be direct costs (personnel, rent, supplies) per processed license. Since centralized costs (for example IT) would probably be allocated by number of licenses processed, this should still allow for comparative differences by working units.

    c. Given that license renewals can now be processed online and in person, it may be worth considering if the costs for these methods of renewals can be separated

out. My suspicion is that the staff and or the costs for these different methods cannot be easily divided and so this may not be possible. However, if it can it may be useful to report on these numbers to show the value of online processing.

2) Total Cost per Licensed Driver – Again assuming the licensing costs can be separated out appropriately, an alternative measure of efficiency would be all related licensing program costs divided by <u>all licensed</u> drivers. This measure is somewhat less intuitive than the first measure which is more closely connected with activity. However, if we assume all of DMV's efforts connected to licensure must be covered, not just the issuance and renewal each year, this would be a broader measure of subsystem efficiency for licensing. This represents a system level view of what it takes to maintain a licensure system.

3) Licenses Processed per Staff FTE – Assuming the staff time connected with licensing activities can be separated out, this would simply be the licenses processed by the number of FTEs associated with this activity. It should probably include direct management support but it might be done just by direct service staff as well.

   a. Breaking out this efficiency measure by geographic unit would be another way to dig down into work unit efficiency and possibly easier than the cost measure set forth above.

4) All Licensed Drivers per Total Staff FTE – As with the system measure Cost per Licensed Driver, this is a high level system measure representing the workload of operating a complete licensure system in terms of staff required. The total cost measure is probably preferable as it accounts for all costs and not just staff which might be affected over time by changing technology or productivity gains. If adding this total system measure, it should probably again cover all staff associated with the licensing portion of DMV's work and not just front-line service deliverers. While offered here as an efficiency measure, this might also relate to access in terms of the density of resources available.

5) Cost per Interlock System Installed and Operated – My assumption here is the direct costs of installing and maintaining an interlock system are borne by the driver being monitored. But it may be there are identified costs (staff, operating materials, etc.) borne by the state in managing this program. If this is large enough it might be worth monitoring the relative efficiency of this program. Presumably this would just be for internal operational needs and not an outward focused accountability measure.

6) There may be other sub processes under the licensing umbrella that can be divided out by both their outputs/workload and their expenses similar to the Interlock suggestion. For example efficiency measures related to the use of mobile vans for licensing would lend itself to efficiency measures (as well as workload and effectiveness). Lacking detail on the full array of DMV processes or service offerings, I cannot specify what other functions might be examining but I would encourage NCDMV to consider whether efficiency measures focused on various sub-processes might be helpful for internal management either by process or looking at different DMV branches to help focus improvement efforts.

Effectiveness Measures

1) Percent of Renewals Done Online – Presumably the ability to renew licenses online is desirable from both the customer and DMV's perspectives. The data is clearly available to

track this measure. We recommend setting this up as a percentage rather than the raw numbers. There is probably some upper limit to what proportion of licensing activities can be done online due to the need for special attention or other issues with some licenses. So while this number is never likely to go to 100 percent, it would help to track this over time to see if it continues to increase or reaches some plateau. This measure is placed here rather than under customer service though it probably touches on both areas.

    a.   Breaking this out by geographic area would probably useful in understanding whether there are regional barriers or lack of understanding that might be addressed with focused efforts.

2) Percent of Errors with Renewals and/or License Issuance – No data was available to indicate whether a notable number of licenses have to be redone due to DMV errors or possibly quality problems with licenses breaking and needing early replacement. If data is tracked on one or more of these "quality" or error problems, it might be useful to express this error rate as a measure of quality delivered. Assuming this number is very low, the achieved percent <u>with no errors</u> should be above 99 percent which would indicate quality. Expressing this as percent with errors (below 1 percent) might be an easier representation.

3) Unlicensed Drivers as a Percent of Licensed Drivers – Assuming an important objective of the system is to have all actual drivers licensed, it may be desirable to see if some measure of illegal drivers could be created. If there is any centralized reporting of law enforcement data of people without licenses caught driving (probably just those without actual licenses as opposed to those who weren't carrying their valid license) this could be a measure of the success of the system in making sure nearly all drivers on the road are in fact licensed. This could alternatively be expressed as a percent of all adults.

4) Outcome Measures on Crashes, Injuries, and Deaths <u>Specific to Driver Error</u> – these outcomes have already been mentioned as part of the larger NCDOT set of performance measures. However, the crash data for NC suggests that accident and even death data can be divided up into categories of cause. It may be useful to look at different rate data but only including those where at least one of the causes was "driver error" as opposed to weather, vehicle condition, or roads. This type of analysis probably would be particularly appropriate for some of the subcategories that DMV and other state agencies are most concerned about such as alcohol, distracted driving, seat belt use, and teens. The suggestion here is to include outcome data specific to some of these "driver error" outcomes as indications more specific to NCDMV's effort to promote safe drivers. For example tracking specifically teen death accident rates over time may reveal whether various initiatives have helped reduce losses to this at-risk population of drivers.

5) Access to License Facilities – Being able to access licensing offices across the state and keep travel times low for customers depends on having services accessible. With 112 licensing offices across the state, this would seem to provide coverage but it may be helpful to express access in other ways. Assessing access with a statewide number may be useful, but this would probably be most helpful for analysis at the county or regional level.

a. Percentage of Population within 30 minutes (or 20 or some other number that represents an acceptable standard) driving time of a licensing facility would be an ideal measure. However to do this would probably require more sophisticated analysis best done with Geographic Information Systems (GIS). This may not be possible to do in an inexpensive manner so other alternatives may be preferred.

b. Population per License Office – This could be done for the state overall but may particularly be useful at the county (or multi-county level) as a proxy measure for access. Population may be the easiest number to use in the numerator, but adult population or even better licensed drivers would more accurately describe the target population needing access.

c. Population per DMV License Office FTE – Since it isn't just the number of offices but their size as measured by staff, this may represent a better measure of access than per office. Again using adult population or licensed drivers per License Office FTE might be better if the data is readily available.

d. The use of mobile license vans is another element of access. Mobile vans might have their own measures of people served or distance related measures showing how this improves access.

6) Timely Completion of License Renewals – When renewals are sent out there are deadlines attached. DMV could report on the percent of renewals completed by the stated deadline to show the degree of timely renewal completion. An alternative measure might be average days to complete renewal but the percentage measure speaks more directly to the process. Average number of days would give credit for people who renew quickly when the primary concern is probably how many are late.

7) Cost Recovery for Licensing – Assuming costs can be separated out for just the licensing function, DMV might construct a cost recovery ratio defined as licensing revenues divided by licensing costs. Unknown here is whether DMV licensing fees are set with some cost recovery model in mind specific to just the licensing activities. If fees are set to fund a Division wide cost recovery model, it might be inappropriate to use this just for licensing as it would appear the license fees are set too high relative to just licensing activity not realizing fees in licensing and registration are designed to fund Division wide activities.

If DMV fees across all activities are set with a Division level cost recovery model, a cost recovery calculation may still be desirable. This would be simply fee and fine based revenue as a percent of full Division costs. Being able to calculate this overall is important if DMV is presumed to have a high or even full cost recovery objective.

Finally a set of indicators expressive of customer services connected to licensing will be discussed below rather than here even though they are connected to licensing activities. It may make the most sense for outward reporting to keep measures grouped by the overarching goal irrespective of the business unit within DMV but at the same time for internal operational reports regroup measures so they are connected to the work units most directly connected to their achievement.

Safe Vehicles

Registration of vehicles is clearly a major thrust of NCDMV. If we assume that broadly speaking the purpose of vehicle registration is to keep unsafe vehicles off the road as well as supporting theft protection and ownership claims, then performing this task deserves measurement. Vehicle theft will be covered as a separate goal.

Workload Measures

1) Number of New Vehicle and Renewal Registrations Processed – This raw number represents a basic and obviously large workload for the Division. For external reporting, I would recommend reporting the total number and not making distinctions by category.
    a. As with driver licenses it obviously makes sense for internal reporting to break out these output numbers by different registration types (private car, motorcycle, commercial, etc.)
    b. Breaking out these workload numbers by geographic unit or registration office would obviously be useful in understanding and planning for different offices particularly as most registration offices are privately run based on my understanding.
    c. Presumably vehicle registration is done for all vehicles every year unlike operator licenses. If there are vehicle categories that have less frequent renewal, it may be useful to have a separate measure for total vehicle registered, not just those being added or renewed in a particular year.

Efficiency Measures

1. Cost per Registration Processed – The output of renewals and new registrations is obviously available. If the budget costs for the units responsible for registration activity can be separated out from the larger DMV budget, dividing these costs by the number of registrations processed would be a simple easy way of tracking efficiency.
    a. As with licenses, it might be desirable if this could be broken down by different registration types but that is probably not possible.
    b. Being able to break this down by separate geographic units seems potentially possible and would be a good internal measures for comparing unit efficiency. This would particularly seem useful for assessing office efficiency since most units are run by outside contractors.
    c. Separating these out into online versus in office might again be helpful if the expense data can be separated out that way. This presumes that the system costs and people handling online transactions are able to be separated out from other registration resources.
2. Registrations Processed per Staff FTE – Assuming that the staff working on vehicle registration can be separated out, a simple measure of the number of registrations processed divided by the number of FTEs would be a good efficiency measure. This should include supervisory staff but a separate measure targeted at just direct service delivery staff could be used as well. Since all but one of the registration offices are contract operations, it is unclear if these staff numbers are available to DMV. If they are, I would

recommend using them as people engaged in providing the service should be a good measure of how much is being accomplished for a given set of staff.

    a. Being able to separate these by geographic work unit would be another helpful comparison point for looking at registration efficiency.

3. Registered Vehicles per Staff FTE – If all vehicles are registered every year, this would be the same as the prior measure but if some vehicles are measured less frequently, this would be a high level system efficiency measure of the workload of all registered vehicles divided by the staff doing this registration work. Again this may not be possible if staff FTEs for contractors are not available.

Effectiveness Measures

1. Percent of Renewals completed Online or by Mail-In – As with licenses, the different processes for letting vehicle owners complete their registration without going to a DMV office should be more convenient for customers and presumably more efficient for DMV. Whether online versus mail-in should be separated out for the larger numbers is not clear. At a minimum I would assume both should be combined into one larger number. But if the distinction between online versus mail-in is important, there could be two separate percentages expressed here.

    a. As with license renewal, I would assume that drilling down in the data and looking at differences by vehicle category and by geographic unit would potentially be revealing for suggesting more targeted efforts to raise this number.

2. Percent of Renewals Requiring Vehicle Repairs – as part of the annual renewal process for vehicles, each has a safety inspection aimed at keeping unsafe vehicles off the road. If the data is available I would recommend dividing the number of vehicles that require some form of repair work for renewal by the total number of vehicles processed. The intent would be a measure of the vehicle stream that would otherwise have had safety defects but got corrected due to the DMV renewal process. Since it appears that vehicles can have repairs done immediately, it would be useful if this is focused on repairs made rather than failing the inspection if immediate repairs don't count as a failure.

3. Percent of Renewals Failing Air Quality Inspection – In addition to the safety inspection, the idea here is similar to capture the result of the percent of vehicles fixed due to failing air quality requirements. My understanding is that newer vehicles and possibly others may be exempt from this requirement so depending on how the testing regime is set up, the measure should reflect in the denominator the appropriate base of vehicles actually tested.

4. Timely Completion of Registration Renewals – When renewals are sent out there are deadlines attached. DMV could report on the percent of renewals completed by the stated deadline to show the degree of timely renewal completion. An alternative measure might be average days to complete renewal but the percentage measure speaks more directly to the concern.

5. Access to Registration Facilities – Being able to access registration offices across the state and keep travel times for customers depends on having services accessible. With 123 registration offices across the state, this would seem to provide adequate coverage but it

may be helpful to express access in more direct ways. Addressing access with a statewide number may be useful, but this would probably be most helpful for analysis at the county or regional level.

    a. Percentage of Population within 30 minutes (or 20 or some other number that represents an acceptable standard) driving time of a registration facility would be an ideal measure. However to do this would require more sophisticated analysis best done with Geographic Information Systems (GIS). This may not be possible to do in an inexpensive manner so other alternatives may be preferred.

    b. Population per Registration Office – This could be done for the state overall but may particularly be useful at the county (or multi-county level) as a proxy measure for access. Population may be the easiest number to use in the numerator, but adult population or even better registered vehicles would more accurately describe the target population needing access.

    c. Population per DMV Registration Office FTE – Since it isn't just the number of offices but their size as measured by staff, this may represent a better measure of access than per office. Again using adult population or registered vehicles per Registration Office FTE might be better if the data is readily available.

6. Inspection of Testing Stations – The DMV business unit work plan indicates close to 10,000 audits of testing stations are done per year. Given the importance of these inspection stations for ensuring that vehicles are actually safe, some quality assurance measure here would seem desirable. Possibly something like Percent of Testing Audits found to be deficient (or meeting criterion to be positive) could be constructed. It may be that as part of audits, problems are corrected immediately. As with the inspections, it would be desirable to reflect any audit that resulted in a corrective action even if the audit still passed the station.

7. Outcome Measures on Crashes, Injuries and Deaths <u>Specific to Vehicle Problems</u> – The crash data for NC would seem to suggest the numbers of crashes and other consequences where vehicle failure of some kind played a role might be separated out. My suggestion is that these rates of failure due to vehicle specific issues leading to crashes, injuries, and deaths, would be helpful in assessing the effectiveness of keeping unsafe cars off the road as opposed to accidents in general. Tracking this over time may help to see if vehicle failure as opposed to other causes such as driver error are increasing or decreasing in absolute or relative terms.

8. Cost Recovery for Registration – Assuming costs can be separated out for just the registration function, DMV might construct a cost recovery ratio defined as registration revenues divided by registration costs. Unknown here is whether DMV registration fees are set with some cost recovery model in mind specific to just the registration activities. If fees are set to fund a Division wide cost recovery model, it might be inappropriate to use this just for registration as it would appear the registration fees are set too high relative to just registration activity not realizing fees in licensing and registration are designed to fund Division wide activities.

As with licensing, various measures of effectiveness related to customer service will be covered below rather than here even though they relate directly to the registration process.

Vehicle Theft

The exact purpose and operations connected to the Theft Bureau were not determined from my online searching. However, the business plan suggests that among other purposes this unit is supposed to aid with the recovery of stolen vehicles. As noted in the section discussing Division goals, it is unclear from my investigations whether this is viewed as a major priority for the Division and therefore whether it requires a goal and performance measures for external reporting. However, given this is clearly a function aimed at citizens it seems desirable to track performance even if it is primarily done for internal management.

Workload Measures

1. Number of Stolen Vehicle Reports Processed - The business plan indicates this number would be about 900. This seemed low as I would have thought the number of stolen vehicles statewide was higher on an annual basis. If the work of this Bureau is only focused on a subset of stolen vehicles statewide, the definition should be clearly stated and incorporated into the measure's title.
2. Number of Stolen Vehicles Recovered – There was no data showing indicating the number of vehicle actually recovered, but if available this would be good to report to show the volume returned.

Efficiency Measures

1. Unit Costs per Stolen Vehicle Reported – Assuming costs directly connected to the Theft Bureau can be separated, a simple ratio here would be a useful efficiency measure to show the costs associated with reporting and possibly investigation irrespective of whether the vehicle is recovered.
2. Unit Costs per Stolen Vehicle Recovered – Again assuming costs can be separated, this is a more targeted efficiency measure as it shows what it is costing relative to those vehicles actually retrieved.

Effectiveness Measures

1. Stolen Vehicles Recovered as a Percent of Those Reported – Assuming recovery of vehicles is reported, this simple ratio represents probably the best measure of unit success. It seems unlikely this measure is a high percent given the challenges around vehicle theft and some context to help users understand that would be needed. Providing data over time or comparisons to other states may be useful.

Provide GREAT Customer Service

As already noted in the discussion of the NCDOT Strategic Plan, the Department lists four measures of success under this goal.

1. Percentage of positive customer feedback through customer surveys
2. Percentage of employee attendance in classes related to customer service

3. Percentage of customers reached
4. Percentage of change in response time (DMV customer wait time)

All of these appear to be useful measures. We would encourage particularly for the first three that this data be gathered if possible specific to DMV but this may not be possible. The customer surveys that I have found online appear to be broader and focused on the NC Transportation system broadly. It is unclear how much these can help DMV specifically in its planning and operational decisions. If possible DMV may wish to consider its own customer surveys of its direct customers (people visiting offices, using online services, etc.) to better understand their concerns than what appears to be available in the NCDOT survey. Customer surveys for online services are increasingly common and may be a way for DMV to better understand this particular group of customers.

In addition to customer surveys, effective delivery of service can be seen as providing service in a timely, convenient, and error free manner. The timeliness question should be addressed by the DMV customer wait times when they become available.

Effectiveness Measures

1. Easy access to Service – There are several ways DMV might measure easy access and this has been discussed under the licensing and registration sections already. Access when measured by raw availability of service locations or service personnel is likely to be most useful when making comparisons within the state across different regions or counties; measures like Population per Licensing or Registration office. If estimates of travel time were possible with some GIS assistance, being able to show percent of the population within some driving standard (e.g. 30 minutes) would be useful as a state level measure but also for smaller area analysis.
2. Use of Online and Mail-in Services – The use of online services for both registration and licensing has already been mentioned. However, they might be repeated or moved here as measures of customer ease of access. Presumably higher uses of online or mail-in represents more convenient service delivery for customers.
3. Wait Times for DMV customers –I was not able to locate wait time data yet for DMV service customers. If possible I would encourage DMV to consider different ways of measuring timeliness of service. Average wait time may be the easiest but a fractile measure such as percent of customers served within some time frame (e.g. 20 minutes) might be a better way of expressing how often customers are waiting long times.
   a. Wait times will almost certainly vary by time of month, time of day, and geographic location. I would encourage DMV to collect this data in as disaggregated manner as possible to enable careful analysis to suggest when and where the problems are most acute. A broad effort to shorten wait times is less likely to be effective than targeting where the problem is most severe whether due to resource shortages, processing issues, or other factors.
4. Errors in Processing – I was not able to find information to suggest how often DMV transactions result in errors or problems, both those directly obvious to the end customer as well as those that might be limited to work within the Division. Being able to report on these error types relative to the volume of transactions would provide an alternative

measure of quality of service as it impacts the customers. This might include clear error processing that results in customers having to come back but might include other problem types such as licenses deteriorating.
   a. This probably would be broken out separately by registration and licensing though an overall transaction error rate might be possible.
   b. If some form of error percent data could be reported, this again might be useful to track by different types of licenses, vehicles, and geographic offices.
5. Timely Payment – Measures for timely payment for registration and licensing have already been mentioned above. They again might be repeated or moved under customer service as indications of whether this is a problem for customers. The conclusion would not have to be this is DMV's fault but rather whether customers have difficulty meeting deadlines for DMV operations. Working to improve timely payment would seem to be desirable for all parties.

Make our organization a great place to work

The NCDOT Strategic Plan makes mention of key employee satisfaction related performance measures that appear to already be implemented or soon to be. These measures included:

1. Achieve an employee engagement survey score of 5.25 or greater (on a 7-point scale)
2. Percentage of DOT Employees that are paid at the market rate for their classification and level.
3. Number of preventable accidents or injuries in the work place
4. Rate of recordable employee injuries
5. Percentage of employees retained after three years

These all seem like good measures but we would encourage making sure this data will be available specifically for DMV separate from other Divisions and possibly even specific to some work units to allow finer understanding of differences. However, in addition to these measures, there are several others DMV may wish to consider as further ways of digging into employee satisfaction.

1. Applications Processed for DMV Job Openings per 100 DMV Employees or Applications Process per Job Opening – This provides a measure of the workload of the HR function within DMV. However, it also provides some sense of the attractiveness to potential employees of DMV employment. When the number of applications relative to the numbers of employees climbs, outsiders are showing the relative attractiveness of these positions.
2. Vacancy Rates – The percentage of budgeted positions that are vacant can be a useful indicator of the relative attractiveness of an organizations jobs. Many factors may drive vacancy rates so it may not be possible to readily determine the cause but high vacancy rates are a sign that an organizations may not be the great place to work that is the aim here.
3. Turnover Rates – This is related to the measure of retention over three years, but provides a quicker count of possible problems. Counting up the number of employees who leave employment compared to the total number of DMV positions is an alternative way of looking at the retention question. DMV might consider further breaking this out into the percent leaving voluntarily (retirements and resignations) versus involuntarily (firing, reductions in force, death). The percent of employees who leave voluntarily and in particular due to

resignations is a good measure of attractiveness. This number of course will vary over the economic cycle as well as due to other factors such as staff reaching retirement but there should be a baseline that can be determined. Rapid rises or falls in this percent can be early indications of problems that are not obvious from efforts like surveys.

4. Use of Sick Time – Sick time is provided as a benefit and we want staff to use it. However, high use of sick time can also be a subtle signal of employee dissatisfaction. Tracking the percent of sick time used or average hours used per employee may be easy as the data should be in the HR system. As a cautionary note, the suggestion here is not to be tracking this at the individual level as we know different individuals may have varying needs over time. But at a Division level, high use of sick time may be suggestive of dissatisfaction that might not be fully expressed in other survey methods.

NCDMV Collection of Vehicle Property Taxes

Due to changes in state law, NCDMV now collects property taxes and associated vehicle fees on behalf of counties across the state. As discussed earlier, this may not be seen as a major focus for NCDMV in the context of its performance measurement and management. However, a few measures are suggested below which may be helpful to track both for assuring DMV's customers, in this case the 100 counties in North Carolina, and to determine if there are performance issues over time.

Workload Measures

1. Number of Vehicles for Whom Property Taxes or Fees were collected – Presumably this is the same number as the number of vehicles registered each year but given there may be exceptions for publicly owned vehicles or possibly other categories, it would be useful to report the number for just those that had property tax collected.

Efficiency Measures

1. Cost per Tax Collection Transaction – Given that the process of tax collection seems to be simply a marginal effort added to the registration process, it may not be possible to separate out what it is costing DMV to process these property tax bills. However, if there are separate system costs (possibly IT systems or special staff who do just the back office processing of the collected property tax bills), a simple ratio here would show what it is costing DMV as the marginal cost to run the property tax collection work. I would not try to count some proportion of the regular service staff time spent on registration as I would assume the additional labor is marginal.

Effectiveness Measures

1. Percent of Property Tax Billings Actually Collected – This may not be worth collecting. If the registration process has effectively created a situation where all the bills are collected since registration would otherwise not be forthcoming, it may be this number is 100 percent. However, if there is some reporting and tracking that does show unpaid bills, calculating a collection rate would be a useful effectiveness measure overall. If this

> number varies by county that might also be valuable to be able to report and share with the counties (the customers in this case).

2. Timely Payment to DMV by Vehicle Owners – When payment notices along with registration are sent out, presumably DMV can track what percent are paid by the deadline. Reporting on the percent of bills paid by vehicle owners by the deadline would help show timely payment by owners. An alternative measure might be average days to pay but the percent measure is preferable as it gets most directly to the issue of paying by the deadline.

3. Timely Payment to Counties for Taxes Collected – After property taxes are collected by DMV, I would assume there is some process for disbursing those collected monies to county tax collection offices. Getting those monies in a timely manner is an important concern for tax collection offices to manage local government cash flow. I have no information to indicate this is presently a concern but it might be useful if the issue arises to be able to show the average number of days to make payment or alternatively percent of payments made within some appropriate time window such as 30, 60, or 90 days.

Other Business Unit Performance Measures

Lacking sufficient information or data on various "back office" functions such as budget or Lean Six Sigma training, I have not offered performance measures for those functions. I would encourage DMV staff in these areas to build on the workload type measures reported in the DMV Business Unit Work Plan to develop efficiency and effectiveness measures where appropriate to elevate their efforts at measuring their performance.

Tracking Performance Data Over Time

A final issue that NCDMV may wish to consider is how to understand and interpret performance measurement over time. Because of the great number of factors which are likely driving DMV's performance and the final outcomes identified in the NCDOT Strategic Plan, there should be an expectation of variation in the performance numbers. The critical question to consider is whether differences in the numbers observed over time reflect changes in the underlying processes or are reflective of more random variation. The concern here is that seeing every difference in any given reported number as a call to correction or a cause for celebration may lead to incorrect reaction and overreactions to the changing data. The question of variation in data is a critical one to understand performance driven management. Rather than a full examination of this topic, I'll share some perspective using some of the data on traffic deaths reported by DMV in the annual crash report to illustrate the concern. Importantly the following should not be understood to be a rejection or even minimization of the importance of measuring performance. Rather the hope here is to at least introduce a different way of understanding and interpreting performance data with the aim of better support of efforts to improve performance management.

The chart on the right shows the number of NC traffic deaths per 100 million miles driven as reported in <u>North Carolina 2016 Traffic Crash Facts</u> put out by NCDMV and done so annually. The chart shows the death rate when adjusted for estimated miles driven has been in decline for the

last twenty five years and indeed this declining trend precedes the period shown. Given this is the key performance measure identified in the NCDOT Strategic Plan for making transportation safer, it paints a positive picture of continuing improvement. However, it is also possible to see it
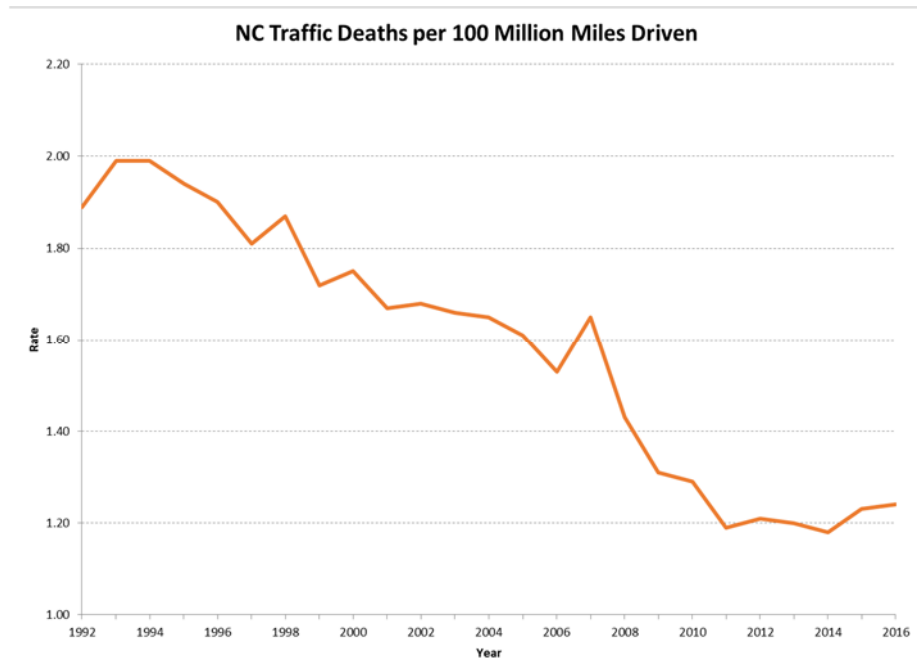
is not always consistently declining and possibly worrying may appear to be leveling out in the last few years. The NCDOT Strategic Plan lays out a specific numeric goal to see this rate decline by two percent per year. There is no rationale provided in the Plan for that specific numeric target. Over the last twenty five years the annual compounded rate is 1.7 percent decline per year which may be the basis for the target NCDOT target. However in only 16 of those 25 years did the rate actually decline and in only 11 did it decline by at least 2 percent meeting the DOT target. Assuming this downward trend continues and doesn't level off, year to year comparisons may lead to the interpretation that this goal is being missed more than half the time. If every change in the rate is in fact a function of system changes then this would be the correct interpretation. However, if we see the need to recognize and try to account for the variation, we are led to a different perspective using a different type of analysis.

The next chart shown below uses the same 25 years of data but sets boundaries based on the variation observed over time. The chart is what is known as a process behavior chart or more commonly a control chart and is used in quality improvement efforts. In this case the downward trend is recognized but has boundaries set above and below it which should contain the data if it does not exhibit unusual variation. In this case with exceptions at 2007 where it briefly popped above the outer boundary and for 2009-2012 when the numbers were closer to the bottom of the channel than would be expected by chance, the data stays within this downward channel and would be said to reflect a predictable downward trend but one that varied up and down at different times. Using this different approach for looking at the data, one would not react to each movement up or down as signaling a change but rather focus on the general trend and focus attention there for future improvement rather than the change in numbers from year to year. This representation provides an importantly different perspective for considering the

measurement of performance data over time. I am not sure if presentation of such information in this way is easily handled for external communications where we are more used to hearing about changes from year to year. However, at a minimum for operational decisions,
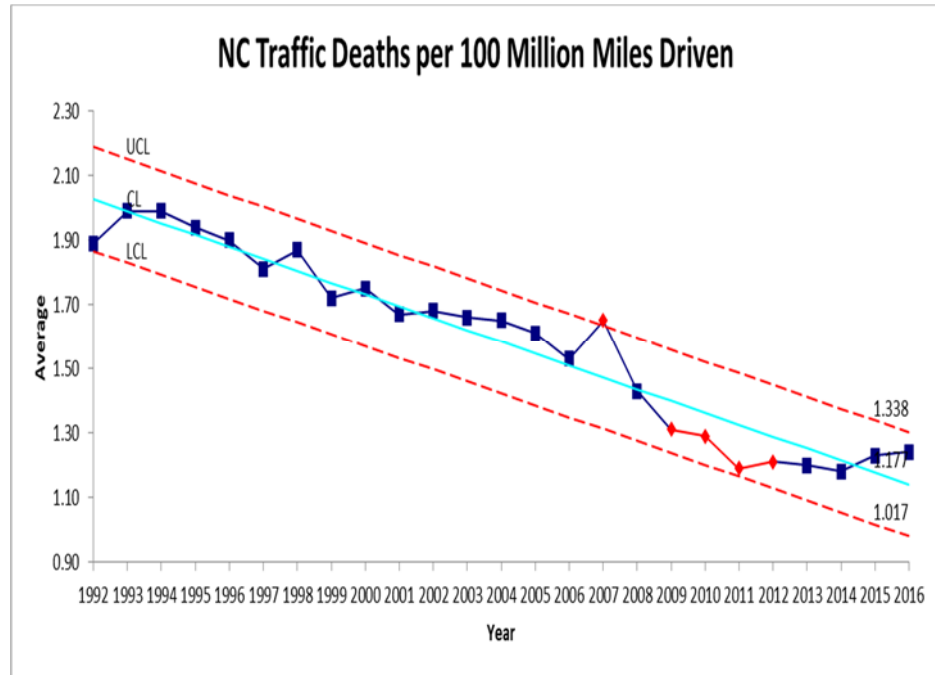
management and staff need to be able to see this variation to better understand what may be happening. The positive side of this understanding of variation is we don't overreact to a rise of the numbers if they stay within predictable patterns of variation, in this case a long term decline. However on the negative side, the relatively wide bands suggest that changes from year to year may vary substantially more than the Strategic Plan target of two percent and yet not reflect fundamental change in the process of the last two decades. Even a rise in the number for 2017 would not necessarily reflect a change here in our interpretation of a long downward trend in the process if it were to stay below 1.338 deaths per 100 million miles driven.

I should caution that the potential signal in the 2009-2011 period led me to look at the data for the most recent six years separately in another control chart for just those years. That chart is shown to the right. It suggests that though the most recent six years show some upward movement it should
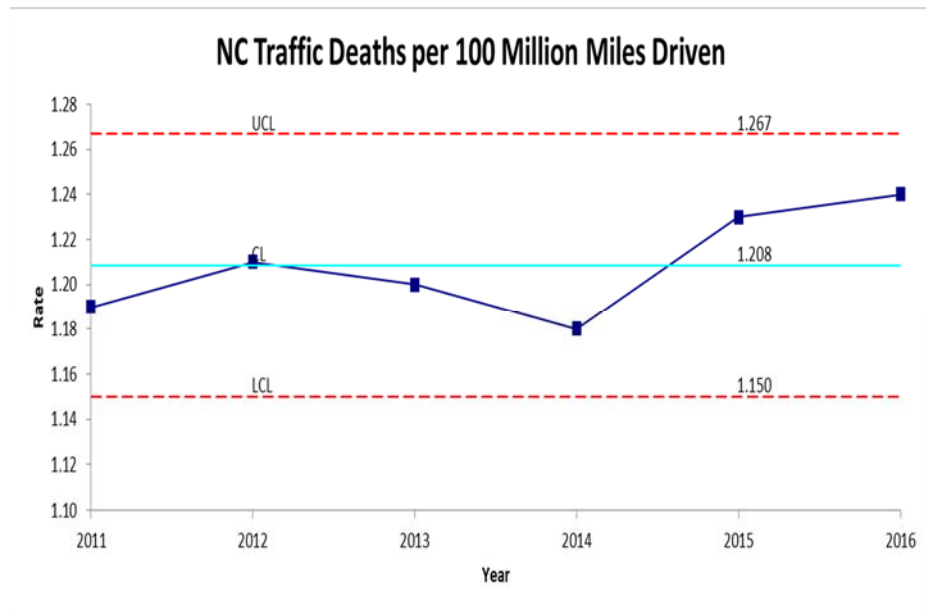
be viewed as within predictable bounds but unfortunately a flat trend rather than the longer downward trend. Assuming this is representative of a new shift in the "system", the data suggests

we should expect the fatality rate to stay between approximately 1.15 and 1.27, averaging about 1.208. These outer numbers are respectively about two percent higher or seven percent lower than the data for 2016. Thus, a fairly wide variation is still possible here before we would be convinced that the trend had resumed its prior downward march as opposed to leveling off or even increasing based on the last six years of data. Examination of some of the monthly data looking at just raw deaths also suggests a leveling off or possibly even a shift upwards in the last two years.   I would note I looked at annual fatality rate data for the state of Virginia which exhibited a similar pattern though at a lower absolute level so this does not appear to me to be a quirk of the NC crash data.

Given this is the major measure of transportation safety and the easy access to the data, it represented a quick test for this report. However, this type of analysis could be applied to data streams connected to the processes most directly under NCDMV's control and management and particularly for those seen as priority goals. I would encourage this type of analysis for performance data as a step up from looking at every data point as a signal that something may have changed. Recognizing variation and being able to use such charts correctly could help the Division more appropriately target its efforts on performance improvement by selecting appropriate strategies and not overreacting to every movement of the data. The cautionary note here is not to misinterpret the assessment offered here as a suggestion to not collect or report performance data. Instead the suggestion is to consider bringing more nuanced understanding to data from the processes we seek to measure and improve.

Useful Documents

In our search of documents and reporting from other states, several items from the State of Virginia stuck and out and may be worth reading.

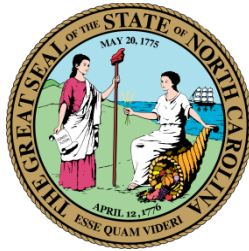Assessing the Performance of Virginia's DMV 2015, prepared by the Joint Legislative Audit and Review Commission, Report No. 474. http://jlarc.virginia.gov/pdfs/reports/Rpt474.pdf

Virginia Performs – State website on performance measurement with this link being for DMV. https://solutions.virginia.gov/pbreports/rdPage.aspx?rdReport=vp_Agency&rdAgReset=True&Agency=154

---

[i] For a discussion of what is in performance management doctrine (measurement and management) see David N. Ammons and Dale J. Roenigk (2015) Performance Management In Local Government: Is Practice Influenced by Doctrine?, Public Performance and Management Review, 38, 514-541.

[ii] For example Edwin A. Locke and Gary P. Latham, (2002) Building a Practically Useful Theory of Goal Setting and Task Motivation: A 35-year Odyssey, American Psychologist, 59:9, 705-717. And
M.B. Sanger (2008) From Measurement to Management: Breaking Through the Barriers to State and Local Performance, Public Administration Review, 68, Special Issue, S70-S85

[iii] David N. Ammons (2002) Performance Measurement and Managerial Thinking, Public Performance and Management Review, 25:4, 344-347.

[iv] M.B. Sanger (2008) From Measurement to Management: Breaking Through the Barriers to State and Local Performance, Public Administration Review, 68, Special Issue, S70-S85. And
D.P. Moynihan, (2008) The Dynamics of Performance Measurement: Constructing Information and Reform, Washington, DC: Georgetown University Press.
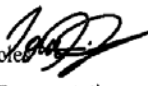
Response From Department of Transportation

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF MOTOR VEHICLES

ROY COOPER
GOVERNOR

JAMES H. TROGDON III
SECRETARY

Date: April 25, 2018

To: Beth Wood, NC State Auditor

From: Torre Jessup, Commissioner – Division of Motor Vehicles

CC: James H. Trogdon, III, Secretary – NC Department of Transportation

       David L. Howard, Chief Deputy Secretary – NC Department of Transportation

Subject: Performance Measurement Audit – NC Division of Motor Vehicles Response

___

As it relates to your report of the North Carolina Department of Transportation's Division of Motor Vehicles (NC DMV) Performance Measurement Audit completed April 2018, and for the period under audit, I thank you for your staff's courtesy and cooperation in conducting the assessment.

NC DMV agrees with the findings in this audit and will take the following steps to correct these deficiencies:

Finding 1. *The DMV's plan lacks adequate goals and objectives specific to DMV's functions.*

Finding 2. *The DMV's Plan lacked adequate outcome-based measures.*

DMV needs a comprehensive strategic plan. Within the next 90 days, DMV will engage an outside expert to assist with the development of a DMV specific strategic plan. The plan will provide appropriate goals and objects for all of DMV, including, where and when appropriate, specific goals for individual business units. In addition, the strategic plan will have outcome-based measures that align with the goals and objects.

ORDERING INFORMATION

This audit required 1,488.5 hours of auditor effort at an approximate cost of $153,316. The cost of the specialist's effort was $13,608. As a result, the total cost of this audit was $166,924.