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Better revenue forecasting: Is fiscal stress a stimulant? A look at Nevada local governments

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Better Revenue Forecasting:
Is Fiscal Stress a Stimulant?

A Look at Nevada Local Governments

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Introduction

Revenue forecasting is one of the most critical and often difficult tasks in governmental budgeting. It is critical because it determines the parameters upon which the budget is based. It is difficult because many outside influences can impact revenue results and cause variances with the forecast. If revenue is under projected, valuable services may not be provided during the fiscal year and an unexpected surplus may be created at year-end. By the time it becomes apparent that surpluses are developing, the damage to on-going programs and services, which may require consistency and budget stability for efficient delivery, may be done. If revenue projections are overestimated, cuts in services may be necessary in order to realign the budget and bring it back into balance.   Over-projections could also deplete reserves, leaving the municipality even more vulnerable to future shortfalls. Such variations are not very palatable to taxpayers who desire efficiency in government and continuous high quality services.

The need to pay even closer attention to revenue trends and the importance of financial forecasting have increased over the years as a result of fiscal stress on local governments. Fiscal stress can be caused by a variety of factors; including overall diminished resources, sluggish national and regional economic activity, taxpayer protests, deteriorating infrastructures, and an increasing demand for services by citizens. This increased fiscal stress does not appear to be a short-term issue, but rather a long-term concern that will require better long-range financial planning and management (Wong, 1995).

Research has generally shown that quantitative methods typically

outperform judgmental approaches in most instances (Frank and Gianakis, 1990). However, many local government officials continue to primarily rely on judgmental forecasting techniques, particularly in smaller jurisdictions and especially jurisdictions that have not experienced prior fiscal stress. This paper evaluates revenue forecasting techniques and accuracy of local municipalities within the State of Nevada. The main focus of this research is to identify whether fiscal stress has stimulated more sophisticated forecasting techniques in Nevada cities and counties. Forecasting sophistication for the purpose of this research is measured in terms of frequency of forecasts and revisions, complexity of forecasting models, degree of computerization, diversity of the forecasters academic backgrounds, level of reliance on the private sector, and the amount of circulation of forecasts among government leadership and staff.

This work follows earlier research conducted by MacManus and Grothe (1989), which looked at fiscal stress as a stimulant to better revenue forecasting and productivity in fifteen select counties throughout the United States. Upon reviewing existing literature, there appeared to be a void in the available research with regard to forecasting techniques and strategies of municipalities within the State of Nevada. The information in this study will allow researchers and interested parties to better understand the effects of fiscal stress on municipalities and its impact on forecasting techniques. The data gathered will provide a statistical description of the forecasting methods used by Nevada local governments. This will be useful information that currently does not exist. Finally, the data will help answer the question; has fiscal stress caused an increase in

forecasting accuracy within Nevada governments?

Review of the Literature

There is an interesting literature base with regard to forecasting techniques of local governments and a number of informative articles on fiscal stress in local governments. After reviewing the available literature, two questions arose. The first is; how do local governments forecast revenue; and second, what role does fiscal stress have in an entity's forecasting behavior?

How do local governments forecast revenue?

Accurate revenue forecasts are important because they form the guidelines for budget development and set the tone for the budget process. According to Agostini (1991), "in public-sector budgeting, the availability of resources circumscribes discussions about expenditures. As these discussions intensify in the face of mounting fiscal duress, reliable and informative revenue forecasts become critical elements of the budgetary process" (p. 14). However, local governments rarely methodically forecast revenues for longer time periods than the next budget year (Wong, 1995). Forecasting beyond one year can be very useful in identifying the direction and significance of financial and economic trends. This can also assist budget and finance officers, as well as, senior management to anticipate future challenges and develop long-term plans.

Another important characteristic of a sound revenue forecasting system is that it forces budget and finance officers to identify assumptions related to future economic issues. It forces them to be more aware of economic conditions and

relational impacts that could occur from national events. According to Ascher (1978), the assumptions employed are more important determinants of reliability of the forecast, than are the specific techniques employed to produce the forecast.

Time series forecasting models such as moving averages, exponential smoothing, and Box-Jenkins have not been extensively used in local government (Bretschneider and Gorr, 1987). However, empirical evidence indicates that these types of techniques can substantially improve accuracy in identifying the annually budgeted resource constraints and in updating current year forecasts (Frank and Gianakis, 1990). The limited use of these techniques has been linked to several derivative factors. Much of the research shows that many local government budget and finance officers are not adequately exposed to these techniques in either their formal education or professional training (McCollough and Frank, 1992). Any exposure they did have was not sufficient for the officers to take the techniques to their own local governments and apply them on a daily basis. Finance officers may also be reluctant to implement the new techniques due to an aversion to risk when it comes to experimenting with new methodologies (Frank and Gianakis, 1990). In addition, many local government forecasters may have little incentive to improve forecast accuracy if they have not experienced adverse consequences due to inaccurate forecasts. Wildavsky (1986) noted that local politicians generally accept revenue forecasts with little questioning or detail. Therefore, if there is no pressure to improve, many finance officers will continue with "business as usual" and not take on the risk of

introducing new and innovative techniques or strategies.

Local budget and finance officers also tend to have a conservative bias because they typically under-forecast their entities' revenues. This is mainly due to the requirement that they maintain a balanced budget (Bretschneider and Schroeder, 1988). Their preference toward judgmental approaches to forecasting may be a reflection of this bias. Rubin (1987) also suggests that decision makers may encourage under-forecasting in order to make discretionary funds available during the fiscal year that can be reallocated outside of the regular budget process. Although many reasons can be sighted explaining why budget officers desire to use mainly judgmental forecasting techniques, empirical evidence continues to support that forecasting accuracy can be significantly improved with the use of a systematic approach.

What role does fiscal stress play in an entity's forecasting ability?

Intriguing research has been conducted related to fiscal stress and its impact on local governments. Fiscal stress has forced local governments to pay increasingly more attention to revenue trends and has raised the importance of financial forecasting in local government (Wong, 1995). This fiscal stress has resulted from diminished resources combined with sluggish national and regional economic performance, taxpayer protests, decreasing cooperation among various levels of government, deteriorating and aging infrastructure, and generally increasing demands for services from citizens and taxpayers. Downing (1991) found that of urban counties 88.9 percent experienced fiscal stress resulting from

increased expenditures for state-mandated programs, 96.5 percent from

decreases in federal grants or other federal assistance, 63.5 percent from

decreases in state grants or other state assistance, 57.9 percent from revenue

constraints because of tax limitation statutes or constitutional amendments, 54.0

percent from increased expenditures for federally mandated programs, 23.0

percent from tax base deterioration because of local business or plant closings,

and 15.1 percent from tax base deterioration because of county population

losses. Much of this fiscal stress appears to be related to shifts in economic

relationships rather than short-term fluctuations. In response to this fiscal stress,

many local governments have started to develop long-range financial plans,

which require objective projections of available resources and the management of

available revenues with the same intensity in which expenditures are monitored

(Wong, 1995).

Local government revenue forecasting technology has tended to be less

sophisticated when compared to its state and federal counterparts (Klay, 1983).

Historically, local governments have generally under-forecasted revenue, making

projections substantially below their true revenue constraint. This serves as a

defense mechanism against revenue shortfalls and as a method of dealing with

increasing costs, growing service demands, and inelastic tax bases

(Bretschneider and Schroeder, 1988).

Research also suggests that forecasting and estimating budget constraints

has become increasingly difficult as local governments become less reliant on the predictable property tax and more dependent on economically sensitive sources such as sales taxes and user charges (Bretschneider, Bunch and Gorr, 1992). These changes may pressure local governments to adopt more sophisticated techniques, which have been successfully utilized in the private sector for over three decades (Armstrong, 1985).

Despite the mandate to maintain a balanced budget and the desire to leave political options open, the existence of some level of fiscal stress may be an incentive to budget closer to revenue constraints. If a jurisdiction is under fiscal stress, can it be generally assumed that the jurisdiction is budgeting as close to the true constraints as existing techniques will allow? (Frank and Gianakis, 1990)

MacManus and Grothe (1989) contend that fiscal stress is an inducement to more accurate revenue forecasting. They believe that "productivity (accuracy) can be increased, even if only incrementally, in fiscally distressed jurisdictions through the use of more sophisticated forecasting personnel and techniques." Their premise appears logical, but their analysis was conducted over twelve years ago and included only fifteen counties throughout the United States, five of which were in Ohio. Does this same premise hold true for other municipal governments such as cities? Does this same premise hold true for counties in Nevada? Has the world changed in some way to invalidate this relationship? This research attempts to fill in the "gap" by applying a similar study to both city and county governments within the State of Nevada.

Research Design Methodology

While very limited research has been conducted with regard to fiscal stress and its impact on a municipality's forecasting technique, there has been no research conducted related to the forecasting strategies adopted by Nevada local governments. This study examines the forecasting practices among Nevada municipal governments and creates a database of information for analysis purposes. A benefit of limiting the survey population to Nevada municipalities is the consistency in their tax structures. Local Nevada governments are heavily reliant on the same sources of revenues with a majority being provided by sales and property taxes. Local governments have little control over their tax rates, which are mainly controlled by the state and/or voter approval.

In order to obtain data for this analysis, a questionnaire was sent to twenty-two budget and finance officers working in Nevada county governments with a population that exceeded 10,000 and Nevada city governments with a population that exceeded 5,000 as of 1999. A total of

Table 1. Nevada Counties and Cities

County/City	Population Size 1999
Counties:	
White Pine	11,150
Humboldt	18,090
Churchill	25,310
Nye	33,550
Douglas	42,590
Elko	50,620
Washoe	323,670
Cities:	
Fernley	8,030
Fallon	8,280
Winnemucca	8,860
Mesquite	14,070
Boulder City	14,860
Elko	18,510
Carson City	52,620
Sparks	64,210
North Las Vegas	117,250
Reno	176,910
Henderson	177,030
Las Vegas	465,050

Source: State of Nevada Department of Taxation

nineteen surveys were returned, resulting in a response rate of eight-six percent.
A listing of the responding counties and cities and their populations is found in
Table 1.

The survey instrument was a sixteen question, two-page questionnaire that
included a cover letter and a self-addressed, stamped envelope. A copy of the
cover letter and survey are found in Appendices A and B of this document. The
content of the survey was based on reviewed literature as well as a survey
conducted by MacManus and Grothe in the late nineteen-eighties. The survey
questions used for this research were broken down into categories designed to
measure different characteristics of the forecast process. These questions and
categories represent the dependent variables in this research. The main
categories included: the forecast process including the timing and frequency of
forecast revisions; substantive factors such as the type of forecasting model
used; technological factors such as the degree to which computers were utilized;
and finally personnel oriented factors such as the sophistication of the forecasting
staff, their training and the involvement and use of the private sector. The study
also attempted to ascertain the government's revenue forecasting accuracy
levels.

A designation was made related to the forecasting methods used by
governments whose fiscal conditions worsened between 1995 and 1999 and
those where the conditions remained stable or improved. The fiscal condition of
the municipal government was considered an independent variable for this
analysis. Initially, the entity's fiscal condition was to be measured by the

organization's bond rating.   This is a common barometer of fiscal health used by many researchers in literature today (Marquette, Marquette and Hinckley, 1982).

However, because of Nevada's limited population base, many of the cities and counties are small and are not typically rated by bond agencies such as

Table 2. Per Capita Revenue / Ending Fund Balances

County/City	Per Capita Revenue		Ending Fund Balance	
	1995	1999	1995	1999
County:				
White Pine	$ 465	$ 552	$ 102,621	$ 816,378
Humboldt	532	543	5,454,633	10,548,381
Churchill	315	383	2,028,436	1,714,168
Nye	596	543	1,106,476	1,516,271
Douglas	476	518	4,299,613	5,218,919
Elko	298	284	2,502,950	2,543,833
Washoe	467	583	17,828,019	28,896,224
City:				
Fernley	55	75	251,564	261,937
Fallon	436	637	584,617	1,078,727
Winnemucca	609	547	1,514,824	1,895,620
Mesquite	911	695	1,961,845	7,391,440
Boulder City	627	828	3,547,967	4,322,375
Elko	536	558	2,455,043	987,081
Carson City	583	690	3,800,332	6,888,089
Sparks	480	586	3,809,551	3,866,220
North Las Vegas	570	566	6,545,128	7,976,755
Reno	496	596	7,909,377	19,992,398
Henderson	475	571	8,590,866	26,597,632
Las Vegas	499	601	20,093,001	46,338,846

Source: State of Nevada Department of Taxation

Moody's or Standard and Poors. After discussions with a bond-rating analyst, it was determined that two main criteria would be used in this research to determine if a municipality had experienced fiscal stress. The criteria included the municipality's general operating ending fund balance and their revenue per capita. Both criteria were compared and contrasted between the time period of

1995 and 1999. If a jurisdiction received less revenue per capita in 1999 than it

did in 1995, they were categorized as fiscally distressed for the purpose of this

analysis. Similarly, if a government's ending fund balance decreased from 1995

to 1999, and it appeared as if they were using their reserves, they were also

categorized as fiscally stressed. The reduction in fund balance may have been a

result of their revenues not keeping pace with the demands for services from their

citizenry. Municipalities showing a decrease in either criterion are highlighted in

Table 2.

The constant battle for local governments to do more with less continues to

intensify in the State of Nevada. Accurate forecasts can help minimize the

negative repercussions of cutbacks in services and avoid the potentially

significant end-of-year budget surpluses. I expect to find that fiscal stress has

worked as a stimulant to cause local jurisdictions to improve their forecasting

sophistication and techniques in the nineteen city and county governments

surveyed in the State of Nevada.

Findings

Fiscal Condition

As depicted in Table 2, seven of the nineteen, or thirty-seven percent of

the cities and counties surveyed, showed signs of fiscal stress. These

municipalities experienced a decline in their per capita revenue or a decrease in

their ending fund balance between 1995 and 1999. This group included three

counties and four cities throughout the state.   Some of the fiscally stressed

geographical areas of Nevada are heavily reliant on mining, an industry that has

experienced difficulties in recent years. Some mines have closed their operations

in these areas, which has caused a loss in property tax dollars and sales taxes,

and resulted in a loss of job opportunities for residents in the affected areas. The

remaining twelve entities showed growth in both their revenue per capita as well

as ending fund balance reserves.   Many of the southern jurisdictions appeared to

have done well during the time period analyzed, products of the continued strong

growth in the Las Vegas metropolitan area.   The only notable exceptions

appeared to be North Las Vegas and Mesquite, both losing some ground in their

revenue per capita. In these areas, it appears growth may be outpacing revenue

increases, which can cause fiscal stress and a dilution in the quality of services

provided.

Forecasting Techniques

The results in Table 3 generally confirm my hypothesis that cities and

counties experiencing fiscal stress have increased their forecasting sophistication.

Table 3. Forecast Process Responses

		Fiscal Condition 1995-1999	
Activity	Percent of All Respondents (n=19)	Worsened (n=7)	Stayed Same/ Improved (n=12)
Forecast Process			
Timing of Forecast			
Before budget process begins	16%	0%	25%

During budget process	10%	0%	17%
Both	74%	100%	58%
Time Frame of Forecast			
Annual	42%	29%	50%
Multiyear	16%	14%	17%
Both	42%	57%	33%
Frequency of Forecast Revisions			
Monthly	0%	0%	0%
Quarterly	16%	0%	25%
Trimester or midterm	5%	0%	8%
As needed	74%	100%	59%
Other	5%	0%	8%
Formalization of Revision Cycle			
Regularized	11%	0%	17%
As needed	47%	57%	42%
Both	42%	43%	41%

Research has shown that forecast accuracy can be improved by changing different characteristics of the forecasting process. These characteristics can include the timing of the forecast, the time frame of the forecast, frequency of forecast revisions, and formalization of the revision cycle.

The timing of the forecast can be very important. Many jurisdictions will update their forecast prior to beginning the budget process and set allocation targets based on this estimate. However, even during the budget process, revisions may need to be made to the forecast to ensure its up-to-the-date accuracy. The state of Nevada releases its estimates of various revenue streams including sales and property taxes in February (Tentative) and March (Final) of each year for the ensuing fiscal year. If a jurisdiction does not adjust its forecast to incorporate these estimates, they risk a lower accuracy rate. Economic conditions can also change during the budget cycle, and this can sometimes

necessitate an adjustment to the forecast.

Fiscally stressed jurisdictions were almost twice as likely (100 percent versus 58 percent) to prepare revenue estimates both before the formal budget process begins and during the process reflecting a desire to improve accuracy. These same municipalities were also more likely to look at both an annual and multiyear (57 percent versus 33 percent) timeframe. This could indicate the desire for better long range planning, which could be necessitated by limited resources and increased pressure on the governmental entity.

Fiscally healthier cities and counties appeared to have a slightly more routine frequency of forecast revisions, with one-fourth reporting quarterly updates. In contrast, fiscally stressed entities all (100 percent) reported updating their forecasts on an as needed basis, which could reflect a less routine, more aggressive adaptation to their surroundings. In my experience, forecast updates on an "as needed" basis can occur even more frequently than systematic updates, precipitated by economic changes, interest rate variations, or market fluctuations. Their formalization of the revision cycle also tended to be more on an as needed basis (57 percent) than fiscally healthier cities and counties (42 percent).

Overall, the forecasting techniques survey results appear to support the hypothesis, that fiscally stressed governments forecast more often during their budget process, are more likely to engage in multiyear forecasting, and may be more adaptive to updating their forecasts during the year than more fiscally

healthy cities and counties.

Substantive Factors

Fiscal stress also appears to influence the sophistication of the model

cities and counties use in forecasting their revenues as depicted in Table 4. In

fiscally stressed jurisdictions, the entities typically utilized more complex models.

Table 4. Substantive Responses

Activity	Percent of All Respondents (n=19)	Fiscal Condition 1995-1999	
		Worsened (n=7)	Stayed Same/ Improved (n=12)
Substantive			
Type of Forecast Model (multiple responses possible)			
Qualitative (judgmental, expert, consensus)	74%	71%	75%
Trend Analysis	68%	71%	67%
Time Series (moving averages)	26%	57%	8%
Regression (uni/multi-variate)	0%	0%	0%
Regression (econometric)	0%	0%	0%
Source of Models			
Developed in-house	68%	43%	82%
Developed externally (consultants)	11%	14%	9%
Both	21%	43%	9%
Model Revisions in Past Three Years			
Yes	58%	71%	50%
No	42%	29%	50%

For example, 57 percent of distressed cities and counties used a time

series model (moving averages, exponential smoothing), versus only 8 percent of

fiscally healthy jurisdictions. It is interesting to note that no survey respondents

used regression analysis. This is in contrast to prior research of jurisdictions in

other states that showed regression analysis was more readily utilized. Perhaps, with Nevada's unusually small population and government size, their overall sophistication has not yet advanced to the level of integrating regression techniques into their forecasting models.

Fiscally stressed jurisdictions were also more likely to rely at least partially on external expertise in developing their models, 43 percent for fiscally stressed versus 9 percent for fiscally healthy. Perhaps fiscally stressed municipalities have attempted to improve accuracy by relying on external assistance from consultants and subject matter experts. The need to improve their models also appeared to be more important to fiscally stressed entities with 71 percent responding that their forecasting models have been revised in the past three years, as contrasted with only 50 percent of healthy jurisdictions revising their models during the same time frame.

Technology

As would be expected, fiscally stressed cities and counties were more likely than healthier jurisdictions to have used computers longer in their forecasting with 42 percent using them five or more years, versus only 33 percent for healthier jurisdictions. However, an unexpected finding was that 29 percent (two of seven) of fiscally challenged municipalities did not use computers at all in their forecasting process as depicted in Table 5. This is a surprising phenomenon, in light of the relatively low cost of computers as well as the versatility of available software.

Table 5. Technology

		Fiscal Condition 1995-1999

Activity	Percent of All Respondents (n=19)	Worsened (n=7)	Stayed Same/ Improved (n=12)
Technology			
Use of Computers in Revenue Forecasting			
Yes	89%	71%	100%
No	11%	29%	0%
Length of Time Computers Used			
1 year or less	11%	0%	17%
2-4 years	41%	29%	50%
5 or more years	37%	42%	33%
Computers are not used in forecasting	11%	29%	0%

Personnel

Fiscally stressed cities and counties appeared to have a slightly smaller forecasting staff with 71 percent having two or less people versus 50 percent in fiscally healthier jurisdictions. This may be more a function of the size of the entity versus the importance of the task. Many of the fiscally stressed jurisdictions were smaller in population and government size and this may be more likely to explain why their forecasting staff was smaller than other jurisdictions. The background diversity as presented in Table 6 appeared to be a little greater in fiscally challenged jurisdictions with all background areas being represented. Perhaps this represents a desire of the government to acquire staff with a varied background and well-rounded experience levels.   The distribution of forecasts shows all fiscally stressed jurisdictions sharing forecast projections with the Chief Executive Official, versus only 58 percent of fiscally healthy jurisdictions.

Table 6. Personnel

		Fiscal Condition 1995-1999	
	Percent of		Stayed Same/

Activity	All Respondents (n=19)	Worsened (n=7)	Improved (n=12)
Personnel			
Number of forecasting staff			
2 or less	58%	71%	50%
3-4 staff	32%	29%	33%
5 or more staff	10%	0%	17%
Diversity of Forecasters' Backgrounds			
(multiple responses possible)			
Economics	5%	14%	0%
Accounting	68%	71%	67%
Public Administration/business	32%	29%	33%
Finance	42%	29%	50%
Distribution of Forecasts			
(multiple responses possible)			
Chief executive official	74%	100%	58%
Board/Council/Legislative officials	74%	71%	75%
Budget officer	42%	43%	42%
Finance officer	42%	43%	42%
Treasurer	5%	0%	8%
Controller	11%	0%	17%
Departments/divisions	32%	0%	50%
Other local governments	11%	0%	17%
Private Sector	0%	0%	0%
Private Sector Consulted			
Yes	47%	43%	50%
No	53%	57%	50%
Type of Private Sector Consulted			
(multiple responses possible)			
Bankers	11%	0%	17%
Financial Advisors/Bond Counsel	56%	67%	50%
Investors	0%	0%	0%
Other	56%	33%	67%

Typically a higher circulation of revenue forecasts among government officials in distressed jurisdictions may represent an attempt to minimize the political fallout that could result from potential budget cuts. In other words, the executive management (CEO) is well aware of projections ahead of time, thus avoiding "surprises" later on. Fiscally healthy jurisdictions appeared to have a

more diverse distribution. However, this again could be more of an indicator of their larger size of government, with more employment categories than the smaller fiscally challenged municipalities.

Accuracy

Forecasting accuracy also appeared to have improved in fiscally challenged cities and counties. As depicted in Table 7, over 86 percent of fiscally stressed jurisdictions reported improving their accuracy in the past three years versus only 67 percent in fiscally healthy municipalities. This indicates that many of their process improvements may have been successful and positively impacted their accuracy levels.

Table 7. Accuracy

| | | Fiscal Condition 1995-1999 | |
Activity	Percent of All Respondents (n=19)	Worsened (n=7)	Stayed Same/ Improved (n=12)
Accuracy of Forecasts			
Improved Accuracy in Past Three Years			
Yes	74%	86%	67%
No	26%	14%	33%
Estimated level of forecast accuracy			
Below 90 percent	11%	0%	16%
90 to 94 percent	47%	57%	42%
95 percent or better	42%	43%	42%

The estimated forecast accuracy is also higher in fiscally stressed jurisdictions. All fiscally distressed cities and counties reported accuracy of 90 percent and above, versus only 84 percent of fiscally healthy jurisdictions. Again, it appears the pressure on forecasters for accuracy in fiscally challenged areas is working and resulting in slightly better forecasts.

Conclusion

Revenue forecasting is one of the most critical and often difficult tasks in governmental budgeting. This research has shown that fiscal stress can be a stimulant to improving the forecasting process and techniques within an organization. Through the use of survey data from nineteen of the largest cities and counties in the state of Nevada, this research shows that fiscally stressed cities and counties are more likely to:

1. Compile their revenue forecasts before and also during the budget process

2. Forecast looking at a multiyear timeframe

3. Update their forecasts continually, on an as needed basis

4. Use more sophisticated forecasting techniques and models

5. Use externally developed forecasting models

6. Have revised their forecasting model within the past three years

7. Have used computers longer in their forecasting process

8. Circulate forecasts to high-level officials within the organization

9. Have improved their accuracy in the past three years

10. Have a slightly higher level of forecast accuracy

In summary, fiscally stressed cities and counties appear to be more advanced in the forecasting process, substantive areas, technology, and

personnel aspects of revenue forecasting than fiscally healthy jurisdictions. How about other states? Is this a consistent phenomenon? This research could be expanded to include other western states such as Arizona, California or Utah. Another interesting variation would be to look at cities and counties individually to see if both types of governments adapt to fiscal stress in the same way. Regardless of what type of future research is conducted, one question remains. Wouldn't it be a benefit for all organizations to strive to improve their forecasting process as if their fiscal health depended upon it?

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Appendix A

Sample Survey Cover Letter

Steven Hanson
Finance Director
City of Henderson
240 Water Street
Henderson, NV 89015

Dear Steven:

I am writing to request your help in obtaining information about the revenue

forecasting practices of the City of Henderson. I am a graduate student conducting research as part of my curriculum requirements at the University of Nevada, Las Vegas.

The questions in the attached survey focus on timing of the forecasting process, types of models, use of technology, background of the forecasting personnel and accuracy of the forecasts. It should only take about ten minutes to complete all of the questions.

I want to assure you that your responses will be reported in a way that no individual can be identified. There is a number on the questionnaire. It is for the purpose of keeping track of the response rate. Please be assured that individual answers will be kept strictly confidential. Every response is vital to the success of the survey and your voluntary participation is greatly appreciated.

Please return your completed survey in the enclosed self-addressed envelope as soon as possible. <u>No postage is needed</u> on the return envelope. If you have any questions about the research being conducted, please feel free to contact me at (702) 566-2934 at your convenience. If you have questions regarding the rights of research subjects, please contact the Office for the Protection of Research Subjects at (702) 895-2794.

Thank you again for your willingness to assist in this very important survey. I value your participation and appreciate your support of this worthwhile endeavor.

Sincerely,

Richard A. Derrick
Public Administration Graduate Student

Appendix B

Forecasting Activities Survey

For each question, unless otherwise instructed, please circle the number for the ONE response that best reflects your opinion.

1. When does your forecasting process occur?
    1. Before the budget process begins
    2. During the budget process
    3. Both

2. What is the time frame horizon your forecast covers?

1. Annual
2. Multiyear
3. Both

3. How often do you revise your forecast?

   1. Monthly
   2. Quarterly
   3. Trimester or midterm
   4. As needed
   5. Other_____

4. How formal is your forecast revision cycle?

   1. Regularized
   2. As needed
   3. Both

5. What types of forecasting models do you use? (You may choose more than one)

   1. Qualitative (could include judgmental, expert or consensus forecasting)
   2. Trend Analysis
   3. Time Series (could include moving averages or exponential smoothing)
   4. Regression (could include univariate or multivariate regression)
   5. Regression (econometric)
   6. Other_____

6. What is the source of your forecasting models?

   1. Developed in-house
   2. Developed externally (consultants)
   3. Both
   4. Other_____

7. Has your forecasting model been revised in the past three years?

   1. Yes
   2. No

8. Are computers used when forecasting revenue?

   1. Yes
   2. No

9. How many years have computers been used when forecasting revenue?

   1. 1 year or less
   2. 2-4 years
   3. 5 or more years
   4. Computers are not used in forecasting

10. How many staff members participate in the forecasting process?

    1. 2 or less
    2. 3-4 staff
    3. 5 or more staff

11. What is the educational background of the forecasting staff? (You may

choose more than one)

1. Economics
2. Accounting
3. Public Administration/business
4. Finance
5. Other_____

12. Who receives a copy of the forecast? (You may choose more than one)

1. Chief executive official
2. Board/Council/Legislative officials
3. Budget officer
4. Finance officer
5. Treasurer
6. Controller
7. Departments/divisions
8. Other local governments
9. Private Sector
10. Other _____

13. Is the private sector consulted?

1. Yes
2. No

14. If so, which area of the private sector? (You may choose more than one)

1. Bankers
2. Financial Advisors/Bond Counsel
3. Investors
4. Other_____

15. Has the forecasting accuracy improved in the past three years?

1. Yes
2. No

16. What is the estimated level of forecasting accuracy for your organization?

1. Below 90 percent
2. 90 to 94 percent
3. 95 percent or better

Comments/Additional Information:
_____
_____
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_____
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_____
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_____
_____
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THANK YOU FOR COMPLETING THIS QUESTIONNAIRE

ALL OF YOUR ANSWERS ARE COMPLETELY CONFIDENTIAL

PLEASE RETURN THE QUESTIONNAIRE IN THE ENCLOSED ENVELOPE