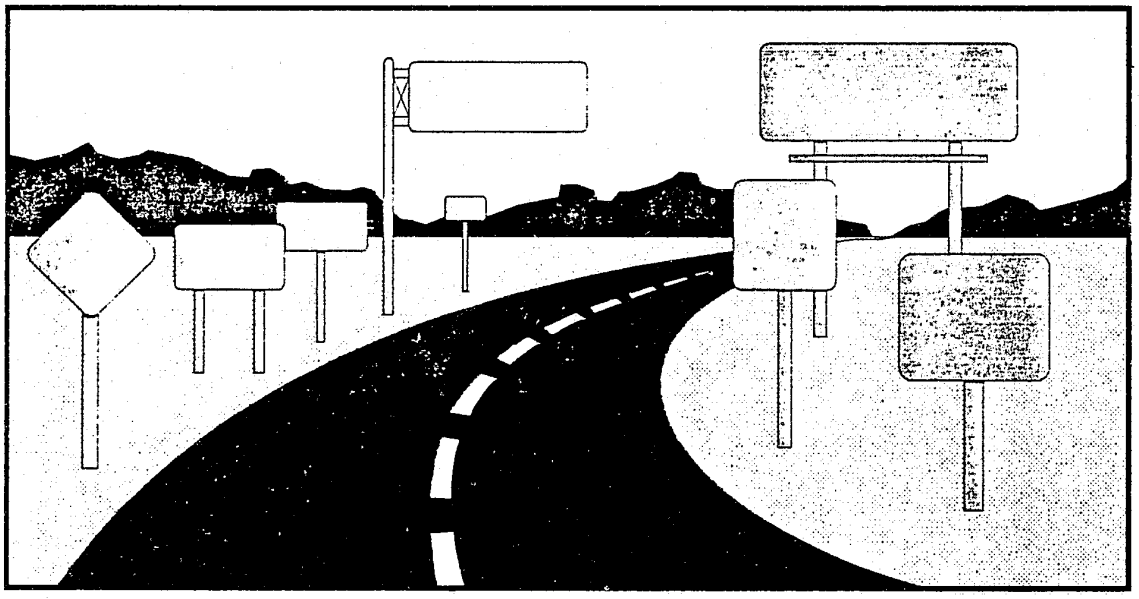
THE RELATIONSHIP OF CALIFORNIA'S AGING POPULATION TO TRAFFIC SYSTEMS MANAGEMENT: WHAT WILL BE THE IMPACT ON THE OVERALL SYSTEM BY THE YEAR 2000?



By
Donald J. Watkins

Command College Class X
Commission On Peace Officer Standards and Training (POST)
Sacramento, California
1990
11-0212

This Command College Independent Study Project is a FUTURES study of a particular emerging issue in law enforcement. Its purpose is NOT to predict the future, but rather to project a number of possible scenarios for strategic planning consideration.

Defining the future differs from analyzing the past because the future has not yet happened. In this project, useful alternatives have been formulated systematically so that the planner can respond to a range of possible future environments.

Managing the future means influencing the future--creating it, constraining it, adapting to it. A futures study points the way.

The views and conclusions expressed in this Command College project are those of the author and are not necessarily those of the Commission on Peace Officer Standards and Training (POST).

SECTION I - INTRODUCTION

A discussion of the issue's background and methodologies used in the project.

SECTION II - FUTURES FORECASTING

What will be the impact of the aging population on California's traffic systems management by the year 2000?

SECTION III - STRATEGIC MANAGEMENT

The development and implementation of a strategic plan to assist the California Highway Patrol in dealing with the impact of an aging population on California's traffic system.

SECTION IV - TRANSITION MANAGEMENT

A description of stakeholders and a management plan for the transition from the present to the desired future state.

SECTION V - CONCLUSIONS AND FUTURE IMPLICATIONS

A discussion of project results, including the necessity to begin active planning to meet the needs of the aging population.

Abstract

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Abstract

The study consists of three parts: (1) a futures study on the impact of the aging population on traffic systems management by the year 2000; (2) a model strategic plan; and (3) a Transition Management Plan for the California Highway Patrol. Literature search, interviews, and nominal group forecasted five trends which have prominent relevance to this study: Life expectancy of Americans; highway speeds, both legal and customary; high-tech traffic management systems; traffic congestion on urban highways; and age of the work force.

High probability events that would significantly impact the California Highway Patrol are as follows: the speed limit is raised to 65 mph on all California freeways and rural highways; due to Middle-East conflict, the price of gasoline reaches $3.00 per gallon; Social Security payments to retirees are cut by 50%; the driver's licenses of persons over 60 years of age are restricted to limited hours in an effort to alleviate traffic congestion; legislation is passed which increases physical standards for California driver's licenses. The Model Strategic Plan includes generic concepts and specific implementation systems. A Transition Management Plan to minimize change conflict and address the needs of both older drivers and traffic systems managers is presented. This Transition Management Plan "operationalizes" the strategic plan and presents a guide for traffic planners and older drivers to transition into the desired future.

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EXECUTIVE SUMMARY

This study examines past, present and future issues that will influence the impact of an aging population on California's traffic systems management by the year 2000. To accomplish this study, the project is divided into three main parts.

Part I - Charting the Future: Futures research is presented in this section. The involved issue question is structured for study by identifying sub-issues to be answered in the project.

1. What will be the transportation needs of older citizens by the year 2000?

2. To what extent will the current system be able to meet the transportation needs of older citizens by the year 2000?

3. What kind of training for law enforcement personnel and design changes will be necessary by the year 2000?

4. How will the individual agencies responsible for traffic systems management collectively deal with the issue?

The futures research completed involved environmental scanning, literature review and personal interviews. Future trends and events impacting the issue were then identified and analyzed by means of a Nominal Group Technique (NGT). The five key trends identified were as follows: (1) Life expectancy of Americans; (2) Highway speeds; (3) High-tech traffic management systems; (4) Highway congestion; and (5) Age of the work force.

Five probable events considered to be most critical were: (1) The speed limit is raised to 65 mph on all California highways; (2) The price of gasoline reaches $3.00 per gallon; (3) Social Security payments are reduced by 50%; (4) Driver's licenses are restricted for older drivers; and (5) Physical standards for driver's licenses are increased.

Part II - Strategic Plan: From data developed in Part I and analyses of situational factors and critical stakeholders, policy alternatives were suggested to manage the impact of the aging population on traffic systems management. The policy alternatives included:

1. California Highway Patrol (CHP) take the lead role in establishing a multi-agency/interest group task force.

2. A comprehensive training program be developed for recruit and in-service personnel.

3. Appropriate legislation be proposed and tracked by CHP.

4. A commitment to the issue included in a Departmental value statement.

5. Support POST in developing a training program for all California law enforcement agencies.

The readiness and capability of individuals and groups critical to implementing the recommended strategic plans were analyzed. A strategic plan was then developed which contains several action steps. These steps include:

- Identify organizational values.
- Determine a base line from which to proceed.
- Create a micro-mission statement.
- Design training for middle-managers and first-line supervisors.
- Communicate changes to all employees.
- Contact agencies and individuals who will serve on task force.
- Begin work of task force.
- Make the public aware of intended actions.
- Establish a monitoring system.
- Periodically repeat training.
- Communicate policy changes to allied agencies.
- Begin work with POST.

Part III - Transition Management: Planned change from the present to a future state described in terms of the recommended strategy will be the responsibility of a Project Manager. This person will be appointed by Executive Management and will oversee the change. It is recommended the Project Manager utilize a small task force to assist him/her in ensuring the requisite support from the stakeholders.

CONTENTS

ILLUSTRATIONS

Section I

Introduction

BACKGROUND

The quality of life in any society is reflected in that society's treatment of its older members.

American society is currently undergoing a demographic transformation which will result in an ever increasing percentage of the population being older. This transformation has been recognized by policy makers and researchers in such fields as health care, retirement, and housing, but to date there has been little attention paid to the impact of these older citizens upon traffic systems management.

Members of the current older population are different from their predecessors. Increasing numbers of individuals in the 55 to 75 age range are more affluent, healthier, and more likely to live in suburban areas. By the year 2000, most of the older population will have grown up in a society wherein the use of an automobile was a common, if not integral, part of everyday life. Certainly the majority of these people in California will have developed a true dependence upon the automobile for their primary means of transportation. It is reasonable to conclude they will have high expectations about driving and will equally expect, and in fact demand, that there be the proper planning amongst the relevant agencies to facilitate this need. Because the number and proportion of older people with driver's licenses are rising, and the fact

that more older persons reside in the suburbs, we will see an increase in the mileage driven in the future.

Studies have shown that most older drivers have good driving records when compared to younger citizens, and up through age 75, studies indicate drivers perform as well as middle aged ones. However, even though this group is involved in fewer traffic accidents, they are more vulnerable to injury in motor vehicle crashes. Vehicle occupants 65 years and older are more than three times more likely to die than a 20-year-old occupant from serious injuries of equal severity. It is also well documented that generally visual and cognitive performance on driving-related tasks diminish with age.

Automotive technology and the roadway system have matured considerably since the dawn of the automobile age.. Although automobiles and highways have improved sharply during this century, many design assumptions used today are based upon the performance characteristics of a younger population. For example, most highway signs today were developed for drivers with a visual ability which exceeds that of about 40 percent of motorists aged 65 to 74. The older driver also has more trouble reading signs at night because of poorer vision under low illumination and a susceptibility to "visual clutter." Older drivers, especially in urban areas, tend to have a disproportionate number of accidents when turning, whether merging into a lane or turning across a lane of traffic. In particular, they have difficulty with left

turns, since they must judge gaps in oncoming traffic and react quickly to turning opportunities.

The most difficult situations for older drivers are those times when they must process a great deal of information and react accordingly. Studies have shown this to be the reason for right-of-way being the most common accident causing factor for this group.

Automotive technologists and roadway design engineers are currently developing more sophisticated electronic gadgetry to facilitate the smooth flow of traffic on the overly congested California highways. While this will undoubtedly have a positive impact on the overall traffic system, it may have a deleterious impact upon the older drivers due to the concomitant need for prompt information processing. It is feasible that by the year 2000, most automobiles will be equipped with on-board computers which may be integrated with a telemeteric system installed in the highway and linked to a traffic operations center from which various and sundry pieces of data will be transmitted to the driver.

It becomes very apparent that those persons charged with the responsibility for planning and implementing future policies for traffic systems management must look to the realities of this demographic transformation and plan accordingly. While this encompasses automobile manufacturers, Federal and

State Legislators; Federal, State, county, and city transportation planners; and State licensing agencies, we will focus on the strategy required of one agency, the California Highway Patrol, in dealing with the impact of the aging driver. This study will address and recommend how executives and administrators of the California Highway Patrol (CHP) might effectively manage the impact of the aging drivers as it relates to their responsibility as a primary traffic law enforcement agency in California. The intended product of the study will be a strategic plan and intended policies and programs to manage the issue. A transition plan will be developed to guide the implementation of the strategic plan and recommendations.

While the focus of the study will be limited to the CHP, the findings and recommendations should also benefit local law enforcement agencies contending with the issue of dealing with impact of an increasing number of older drivers. The study will use specific methodologies to accomplish these needs.

METHODOLOGIES

The first project objective is futures forecasting. This will involve environmental scanning, literature review, personal interviews, forecasting of relevant trends and events by means of a Nominal Group Technique (NGT), cross impact analysis of those same trends and events, alternative future scenarios, and policy considerations.

The second objective is development of a strategic plan based upon a scenario developed in the first phase. The strategic plan will include a mission statement and situational analysis leading to the desired outcome.

The third and final objective is the transition management plan that will lead the California Highway Patrol from the present to the desired future.

Section II

Forecasting the Future

THE_ISSUE

The relationship of California's Aging Population to Traffic Systems Management: What Will be the Impact on the Overall System by the Year 2000?

SUBISSUES

1. What will be the transportation needs of older citizens by the year 2000?

2. To what extent will the current system be able to meet the transportation needs of older citizens by the year 2000?

3. What kind of training for law enforcement personnel and design changes will be necessary by the year 2000?

4. How will the individual agencies responsible for traffic systems management collectively deal with the issue.

LITERATURE_REVIEW

There are numerous publications available which discuss the aging population. Literature review for this study included automotive trade publications, magazine and newspaper articles, and studies conducted by groups such as American Association of Retired Persons (AARP), National Institute on Aging,

and the Transportation Research Board of the National Research Council. The literature review revealed there are indeed current problems associated with older drivers operating in today's traffic systems. Additionally, there is a strong need to gather more accurate information about highway design and physical limitations in relation to the driving skills of older drivers.

PERSONAL INTERVIEWS

Three interviews were conducted with individuals who could provide information relative to various aspects of the issue. All three interviewees were provided with background information relating to the issue, and were briefed regarding the futures orientation of the project. While all three individuals interviewed had a common understanding of the issue of the study, they came from distinctly different areas of expertise. These differences provided a broad perspective on the issue and necessitated a flexible interview format.

The first interview was conducted in August of 1990. This interview was with Captain Duane Clements of the California Highway Patrol. Captain Clements is working on a project wherein the CHP and the California Department of Transportation (Caltrans) are developing Traffic Operation Centers (TOC) on a statewide basis. These centers will serve as command centers for monitoring the traffic flow on designated highways, and will provide real-time information to their respective agencies as well as affected motorists.

Captain Clements provided a thorough overview of the current traffic problems as well as an in-depth discussion of the anticipated effects of the TOC.

Captain Clements feels that the rapidly expanding technological advancements have made available a number of technologies which will serve to enhance overall traffic management.

The plans as they are currently developed call for a number of electronic enhancements to facilitate the smooth, effective flow of traffic. He discussed sensors which will be built into the highways which will relay real-time traffic information into the TOC. The information will be analyzed and data will be transmitted to motorists via such means as on-board computers, AM radios or changeable message signs along the routes. He related there has been a TOC in operation in Los Angeles for several years, and with enhancements this model will be duplicated in other major traffic locations throughout the state. He was asked if consideration had been given to the older drivers in terms of reaction time and their ability to process this type of information in a timely manner. He stated they have in fact given this consideration and are currently studying the matter. He agreed this is an extremely important aspect of the overall plan and will be incorporated into the design. He also related he is aware of the fact that the automobile manufacturers have built this consideration into their engineering units and are in fact addressing the needs of the older drivers in the development of

the on-board computer systems as well as other innovations requiring visual acuity and good reaction time.

In September of 1990, Mr. Charles A. Woods was interviewed. Mr. Woods, a senior citizen himself, has written a textbook which is used in the instruction of the California "Mature Driver" course. In discussions with various individuals in the industry, it was determined that Mr. Woods' textbook is recognized as the finest available and is used in instructing this course throughout the state of California. The same interview format was used.

Mr. Woods related that the "Mature Driver" course was produced as a result of legislation passed in January of 1986, which prescribed course criteria and a recommendation that insurance companies reduce the liability premiums of those who successfully complete the course. Mr. Woods has personally instructed several hundred individuals and is in constant contact with other instructors throughout the state. Mr. Woods stated that his experience is consistent with the background information he was provided regarding the types of problems encountered by the older drivers as well as their personal concerns. He feels that group does, in fact, have high expectations for their driving and most feel they would be "lost" if unable to continue. While they want desperately to carry on with this activity, they also recognize driving has changed significantly in the past few years. Most find that due to where they live in relationship to when they must travel does not allow them to stay on the

slower surface streets to reach their destinations. They are compelled to drive on the freeways and other higher speed highways. He stated many feel intimidated on these roadways and have a difficult time making the "split-second" decisions required in this type of environment. He also said many feel it very difficult when they reach an intersection where much more information must be processed in a relatively short period of time. In his course he devotes an entire segment to the physical demands of driving and asks them all to do an in-depth self-analysis of their own abilities and limitations prior to getting behind the wheel.

Mr. Woods was asked specifically what recommendations he would have for improving the overall driving experience for older California drivers. He had three primary recommendations. First, he felt the automobile manufacturers could help by making the vehicles safer. Specifically he recommended the following:

1. Make safety belts accessible and <u>easy</u> to use.

2. Install air bags in conjunction with safety belts.

3. Design the seats in the automobile to be safer.

4. Install larger rear view mirrors.

5. Develop better crash protection in vehicles' side panels, since many older drivers are involved in crashes while turning or in intersections.

6. Improve headlight performance to compensate for older drivers' diminished eyesight, particularly at night, plus their sensitivity to glare.

7. Develop bigger knobs on the dashboard, larger visual displays and clearer operating instructions.

His second recommendation had to do with the physical abilities of the driver. He recommends drivers over 60 years of age be licensed by the Department of Motor Vehicles (DMV) only upon in-person renewal. He based this recommendation upon the importance of vision screening. He felt this screening should also include an examination of peripheral vision. Drivers with impaired visual field should be required to install special mirrors to compensate for their loss. Mr. Woods feels they should also be screened for perception-reaction speed. He feels competent medical authorities should review these standards and help the DMV make the necessary determinations regarding the minimum physical abilities required to drive. He recommends individuals over 60 years of age be required to complete a driver training course similar to the "Mature Driver" course and then have a refresher at least every licensing period.

He also feels law enforcement personnel, particularly the CHP, should receive additional training in geriatrics. Specifically, he feels officers may not be sensitive to the needs of the older driver and, if not properly trained, will do more to confuse and disorient the individuals than help them.

His final recommendation was to improve the highway environment. He recognizes that the higher speeds and increased traffic has placed greater demands upon the driver. His primary recommendation is that our highway signing be revamped as quickly as possible. In a priority order he would start with the highways with the highest speeds and proceed in a descending order on the secondary roadways. Specifically, he feels the signs should be larger and more easily recognized and that the information provided on the signs allow more time for reaction and processing. His examples were signs indicating lane reductions, off-ramps, and interchange mergers.

In September of 1990 an interview was conducted of Dr. Richard Smith, M. D. Dr. Smith, a full-time physician, works part-time with the CHP in their Emergency Medical Technician Program. Dr. Smith has done extensive work with geriatric patients and has lectured on the topic.

He was first asked to provide an overview regarding the physical limitations of older persons as they relate to the task of driving and then to conclude by providing his recommendations for improvement of the traffic management system

in this context. Dr. Smith started by outlining his perceptions of the physical demands associated with driving. Essentially he stated that first the driver must be able to clearly see or perceive situations as they develop. They then must recognize what they are seeing at the cognitive level and decide how to respond. Once these processes are complete, the individual must then execute the physical maneuver dictated by the above factors. Given those parameters, he related the following concerning the physical abilities of older persons to complete these tasks.

He said eyesight generally declines with age. Although the declination occurs at varying rates amongst individuals, it can be expected that older persons will, in fact, experience a loss of visual function. In his opinion, the most significant aspects of this loss are twofold: First, the lessening of ability to distinguish detail in moving objects, and second, the contraction in the overall field of view. Next he said the loss of hearing function is common in older persons and this too would affect the individual's ability to perceive situations as they develop. He stated there would also be a lessening of cognitive performance in older persons. He feels there is a definite slowing of a person's ability to process information as a person ages. When older persons are required to solve complex, multi-factor tasks, there is generally a decline in performance which correlates to their age. Finally, he stated there is a great deal of evidence available to support the idea that the speed of simple motor response declines with age. Dr. Smith said that while there

are a wide range of abilities amongst older persons, much dependent upon their individual physical well-being, these physical limitations can be generally assumed.

He was asked to provide an assessment of the physical vulnerability of older persons who may be involved in collisions. He stated there is no question that the outcomes of collisions for older persons are more severe. Bones are more brittle, joint function is diminished, and overall resilience is lessened. Additionally, atheroma of the arteries, which is common among older persons, increases the probability of blood loss.

The interview was concluded by Dr. Smith offering the following recommendations for improving the current situation:

1. An advisory group should be formed consisting of medical professionals, automobile manufacturers, and transportation planners. The group would examine the physical limitations of older drivers and develop recommendations to be included in all aspects of future planning for highway and automobile improvements.

2. The DMV should review current licensing practices and evaluate them in the context of this information. Older persons should have much closer scrutiny than they are now receiving.

3. Older persons should receive additional training as it relates to their own physical limitations and the demands of driving in today's environment.

NOMINAL_GROUP_TECHNIQUE_(NGT)

A nominal group was assembled to generate lists of relevant trends and events to compile final sets for forecasting. Members represented a cross section of expertise in the subject area and were as follows:

1. A representative from the American Association of Retired Persons.
2. A physician with geriatric experience.
3. A CHP Field Division Chief.
4. A Captain from a city police department.
5. A transportation planner from Caltrans.
6. A 20-year-old college student.
7. A representative from a local area agency on aging.
8. A former CHP Academy Commander.
9. A manager of a local senior citizen center.

The nominal group met and was provided with an overview of the process that would be utilized to explore the issue and related trends and events. The Group was provided a definition of trends and events for this purpose. They then were given the following criteria prior to beginning the process:

1. Trends and events must be comprehensive and represent major areas of relevance to the issue.

2. Events must include those with low probability, but which would significantly impact the issue if they occurred.

3. Trends must be clearly stated with terms defined and understood by the group.

4. The list of trends and events developed would be distilled down to final sets of five trends and five events.

The group began the process by developing individual lists of trends. A round robin-process permitted each member of the group to identify one trend at a time. After a discussion of the trends, similar trend statements were consolidated based on consensus. The group was then asked to vote on the trends using 3x5 cards, assigning a priority number to each. Through this process, the list of trends was rank ordered. The list of 31 trends was reduced to five during the voting process to identify what was believed to be the most likely dominant trends.

The five trends selected were as follows:

T-1 Life expectancy of Americans

This trend reflects the breakthroughs in health care which have all but eliminated many of the diseases that used to keep us dying young. The life expectancy of Americans has a direct impact on the age of the motoring public.

T-2 Highway speeds both legal and customary

Actual highway speeds do not appear to be consistent with legal mandates.

T-3 High-tech traffic management systems

High-technology as it relates to highway and automobile design is being developed and improved.

T-4 Traffic congestion on urban highways

This trend reflects the change in traffic patterns particularly on the urban highways.

T-5 Age of the work force

This trend is related to the life expectancy of Americans as well as outside economic factors which have a bearing on how long people remain in the work force.

EVENTS

The same process was utilized to develop the list of candidate events. The nominal group identified a total of 21 potential events. The participants arrived at a reasonable level of consensus concerning the final list of five events to be considered. The events selected were as follows:

E-1 The speed limit is raised to 65 m.p.h. on all freeways and rural highways in California.

E-2 Due to conflict in the Middle East, the price of gasoline reaches $3 per gallon.

E-3 Social Security System payments are reduced by 50%.

E-4 The driver's licenses of persons over 60 years of age are restricted to limited hours in an effort to alleviate traffic congestion.

E-5 Legislation is passed which increases physical standards for California driver's licenses.

FORECASTING

The nine persons who comprised the NGT were asked to provide forecasts for the group's selections. The process began with an evaluation of the trends. Members were asked to evaluate where they felt each trend was five years ago, where it is today, and where it will likely be five and 10 years from now. The group was instructed to give each trend a numerical value of 100 for today. Projections included a nominal level (will be) and a normative level (should be). The nominal level is defined as what the anticipated or most likely projection "will be" if no intervention is exercised and strategic planning efforts are ignored. The normative level describes the estimated projection possible in a responsible world, that is to say, what the world "should be." A trend evaluation form was used in an effort to standardize the data. (Trend Statement Table 1)

The results of the trend analysis are depicted on individual graphs.

TABLE 1 - TREND EVALUATION

TREND STATEMENT	LEVEL OF TREND (Ratio: Today = 100)					
	5 YEARS AGO	TODAY	5 YEARS FROM NOW		10 YEARS FROM NOW	
			Will be	Should be	Will be	Should be
T1 Highway Speeds	MEDIAN 80 / RANGE 60 to 90	100	130 / 70 to 125	105 / 80 to 125	135 / 60 to 150	100 / 70 to 130
T2 Life Expectancy	95 / 50 to 110	100	110 / 75 to 140	120 / 80 to 160	120 / 60 to 160	150 / 70 to 180
T3 High Tech Systems	65 / 50 to 125	100	120 / 80 to 130	120 / 80 to 150	140 / 70 to 150	130 / 70 to 160
T4 Highway Congestion	75 / 60 to 90	100	140 / 90 to 160	110 / 75 to 120	90 / 85 to 120	110 / 55 to 130
T5 Age of Workforce	90 / 65 to120	100	120 / 60 to 140	110 / 70 to 140	140 / 50 to 170	120 / 70 to 160

FIGURE 1: TREND EVALUATION

TREND 1 - LIFE EXPECTANCY OF AMERICANS

The group was fairly conservative in their estimate of this trend. There was considerable discussion regarding the potential for major breakthroughs in medicine. However, the median only saw a slight increase in life expectancy in the "will be" range. The pessimism was based upon the rising costs of health care as well as the gloomy forecast for a cure for AIDS. The upturn in the "should be" range in Figure 1b was predicated on further breakthroughs in cancer and cardiac care.

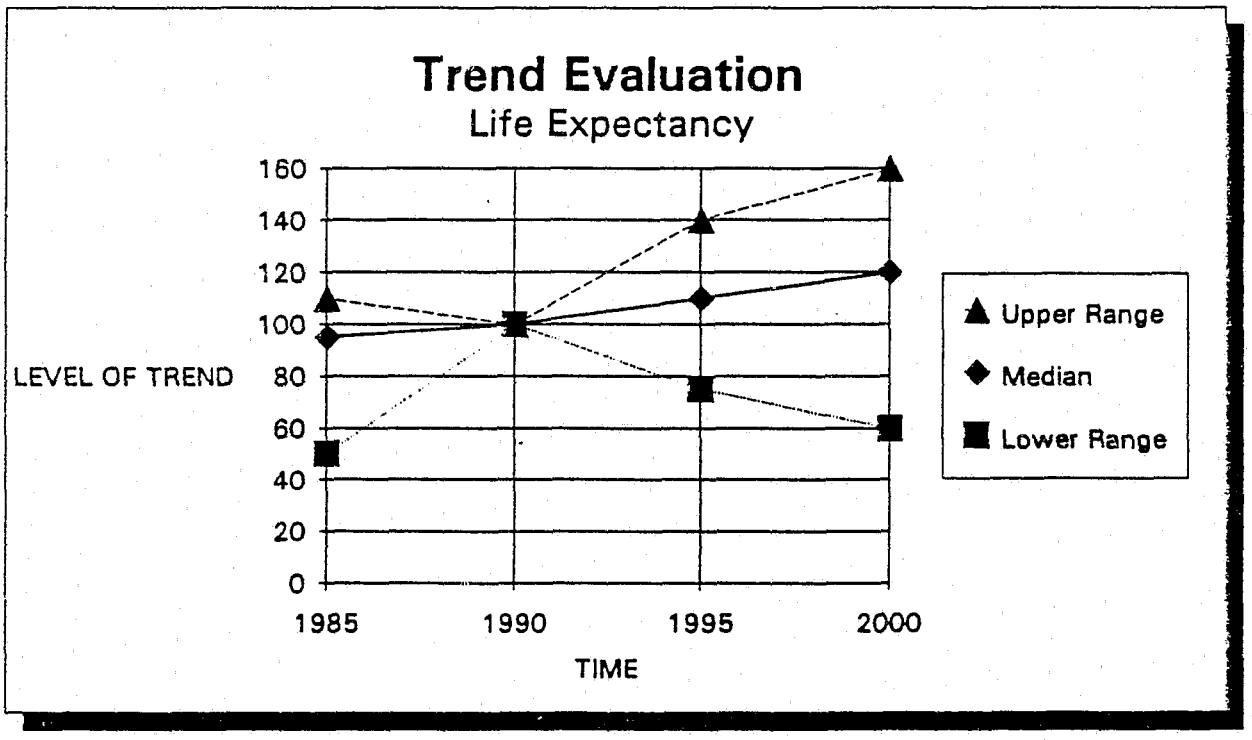


Figure 2a ("Will Be")

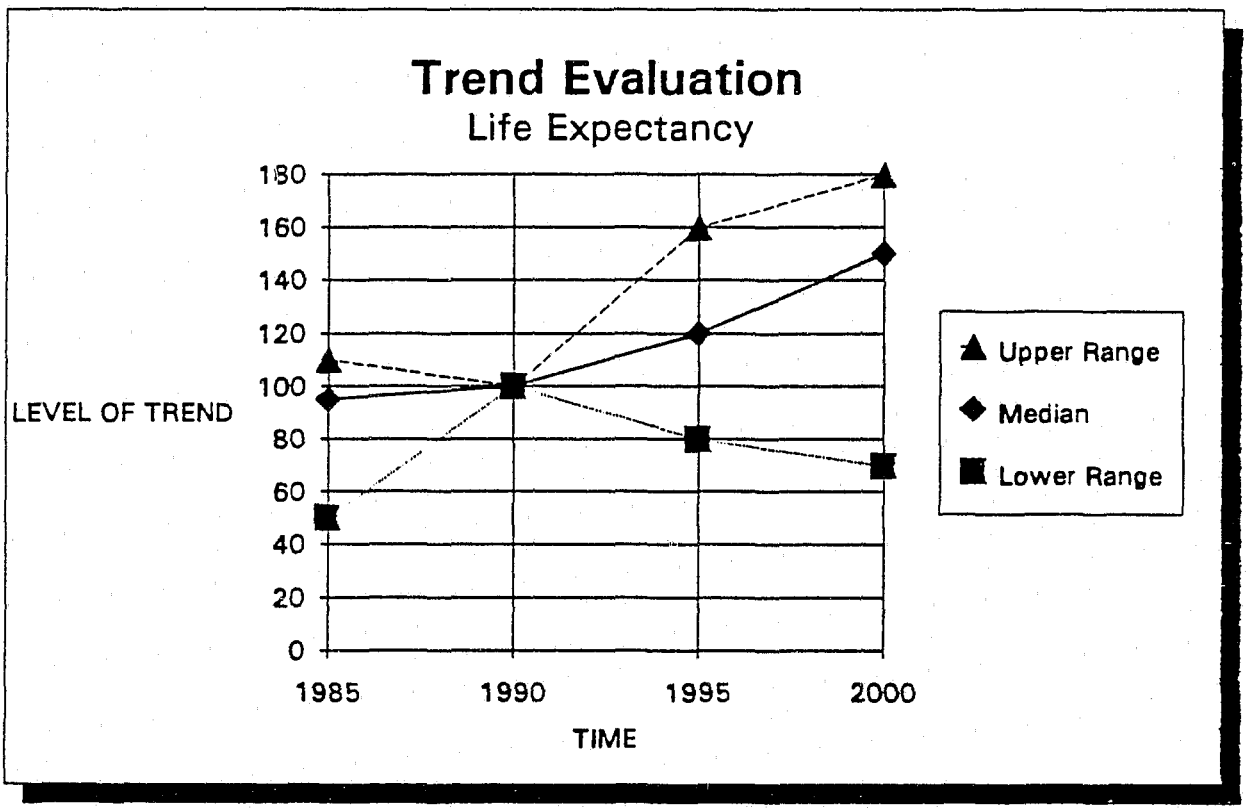


Figure 2b ("Should Be")

TREND 2 = HIGHWAY SPEEDS

The range of the group varied on the analysis of highway speeds. While most felt highway speeds will continue to rise ("Will Be"), they felt ideally the speeds were fast enough and they should stay at the current level. Some felt freeway congestion and higher fuel prices would keep speeds down, but most believed improved highways, coupled with new technologies, would enable the speeds to increase.

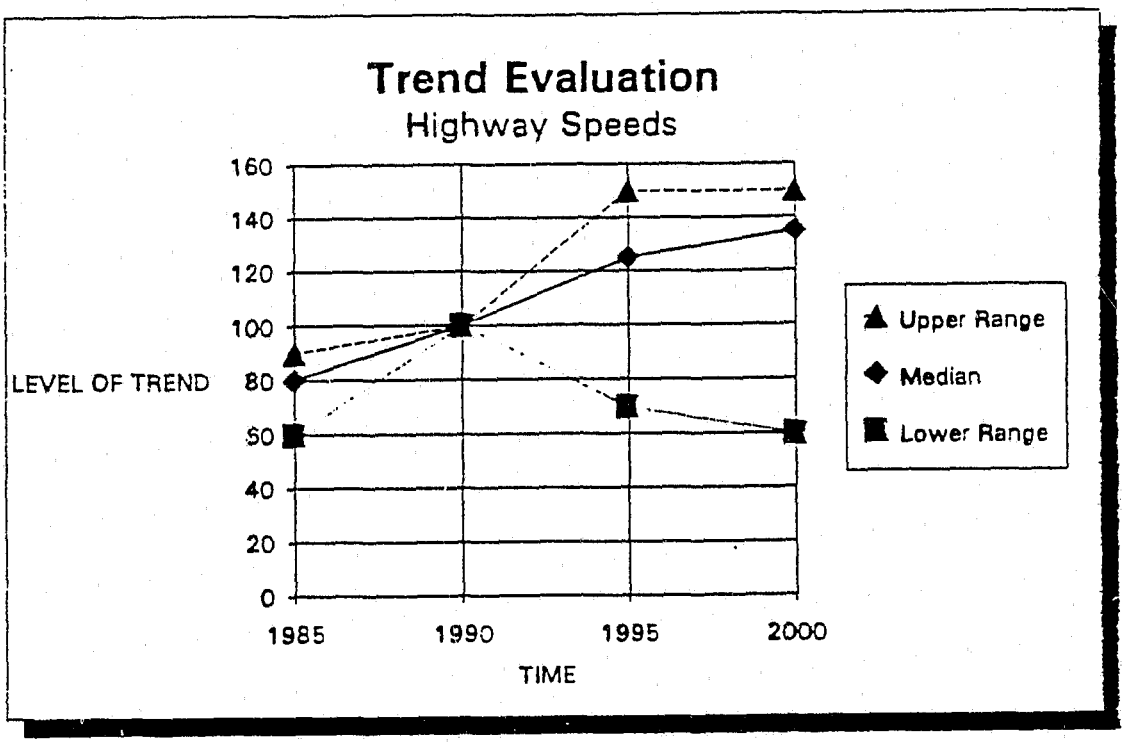


Figure 3a ("Will Be")

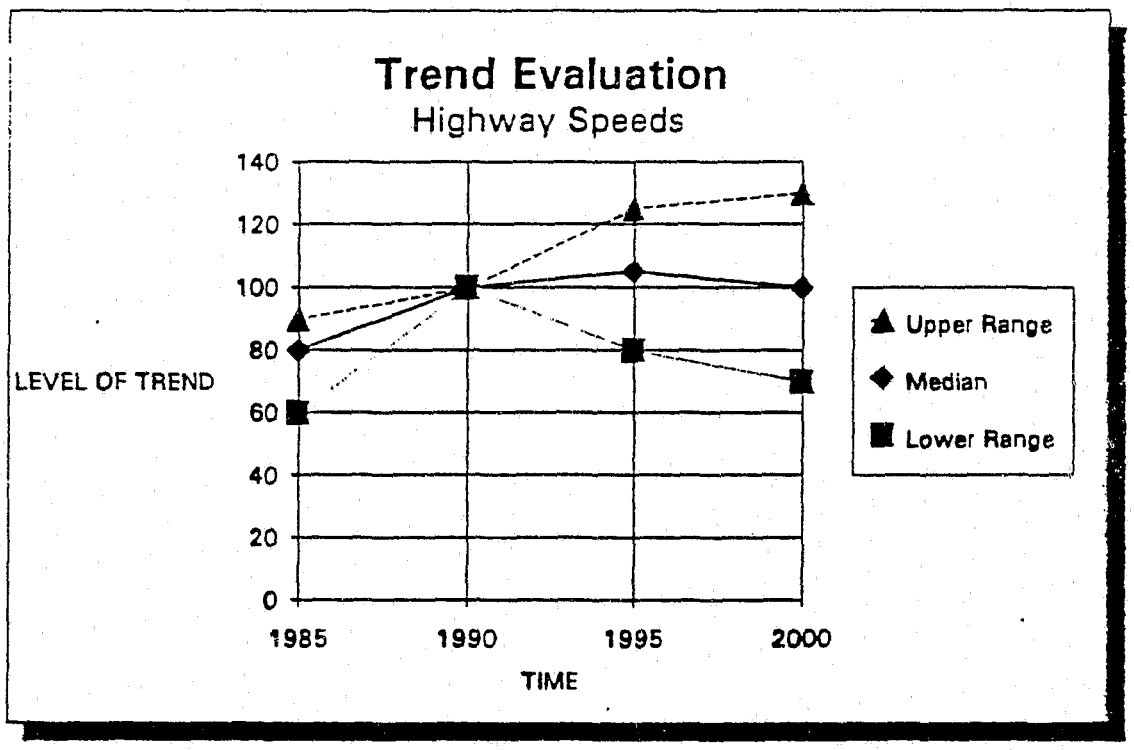


Figure 3b ("Should Be")

TREND 3 - HIGH TECH SYSTEMS

It was interesting that the group forecasted "will be" higher than "should be" for this trend. Many believed technology was advancing too fast, and in fact is advancing faster than the human capacity to deal with it. Most felt there should be a slow-down in this trend, wherein we evaluate where we are now and how far and fast we want to go in the future. Notwithstanding that element, all agreed technology will continue to advance at an exponential rate.

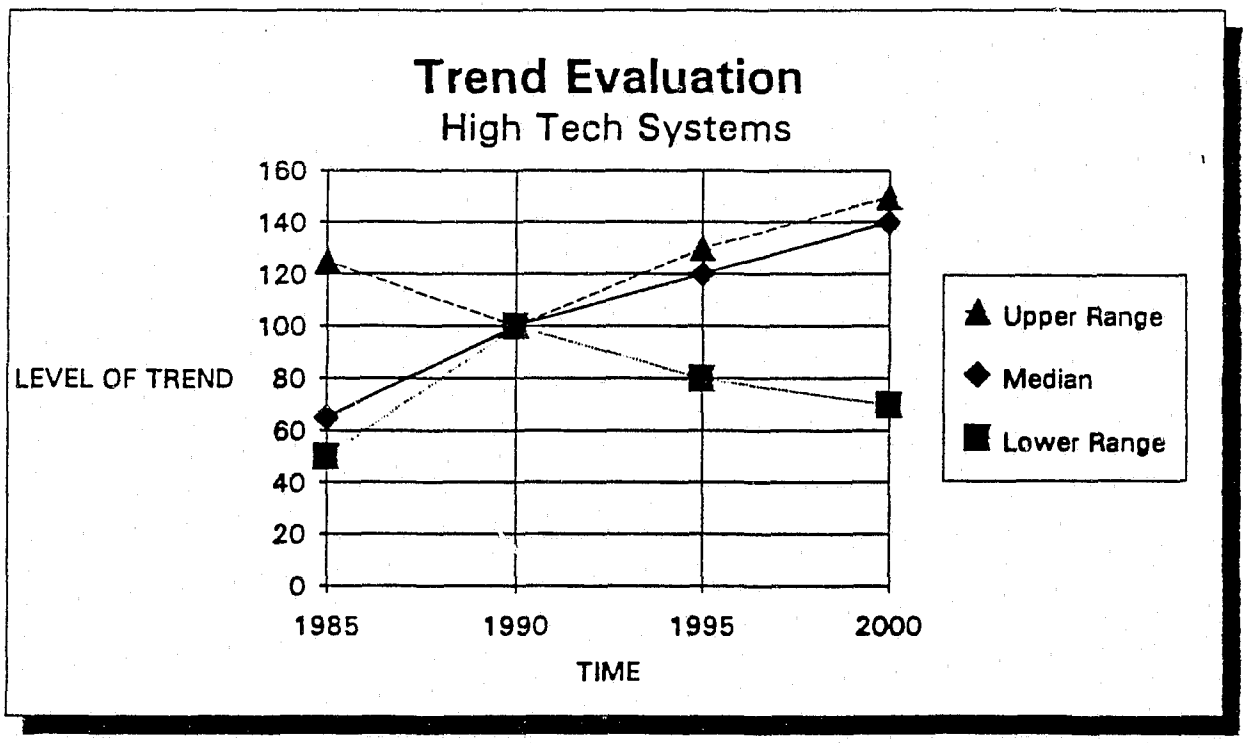


Figure 4a ("Will Be")

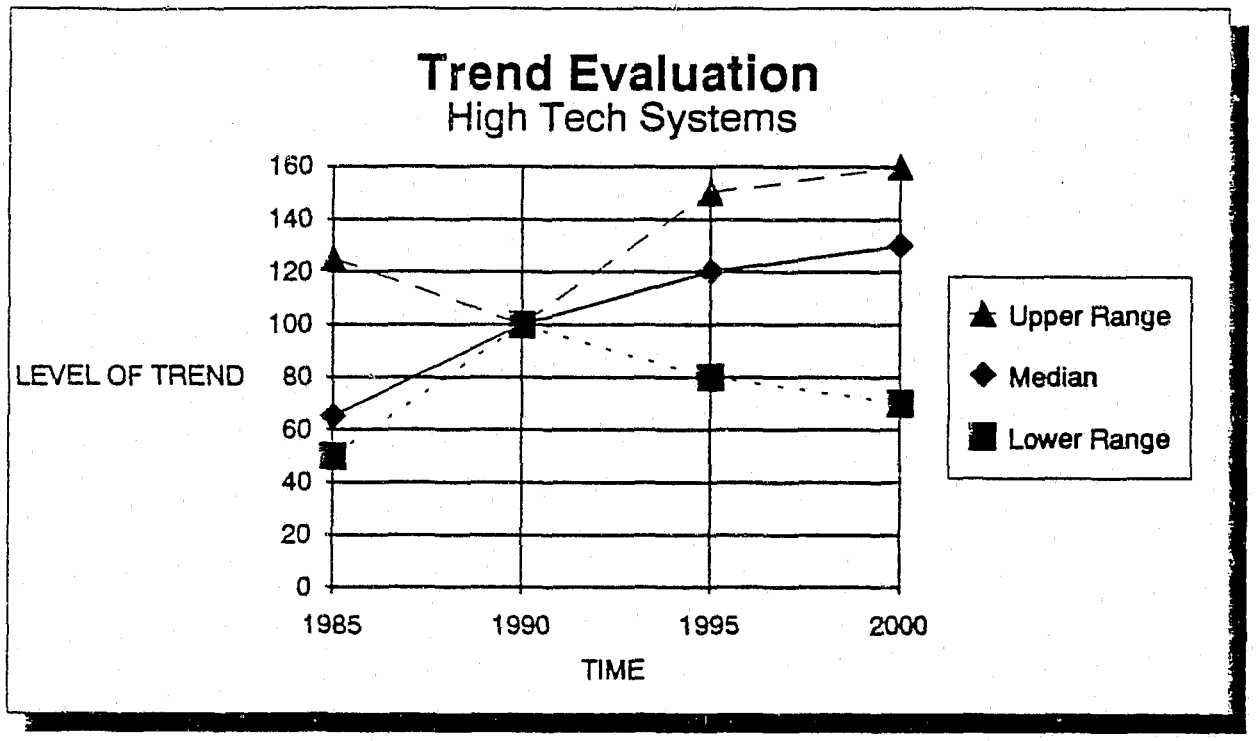


Figure 4b ("Should Be")

TREND 4 - HIGHWAY CONGESTION

The shorter term, or five-year projection, shows a sharp increase in congestion, while the ten-year projection shows a decline. While this seems peculiar, the group believed advances in traffic management and highway design would positively impact congestion in spite of population increases in the state.

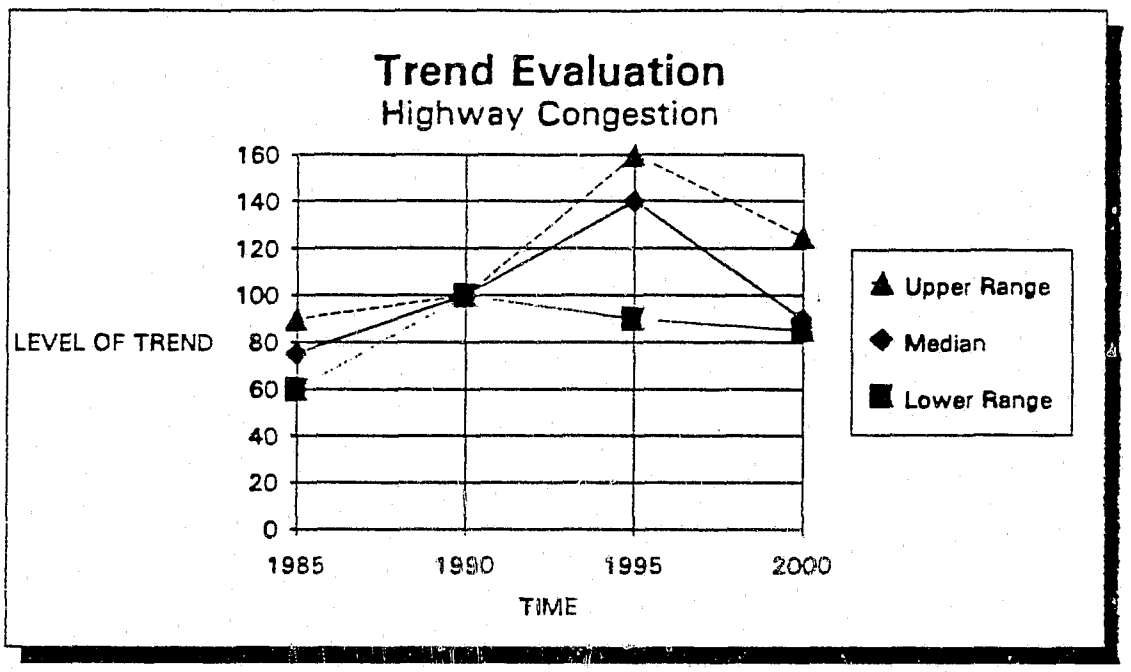


Figure 5a ("Will Be")

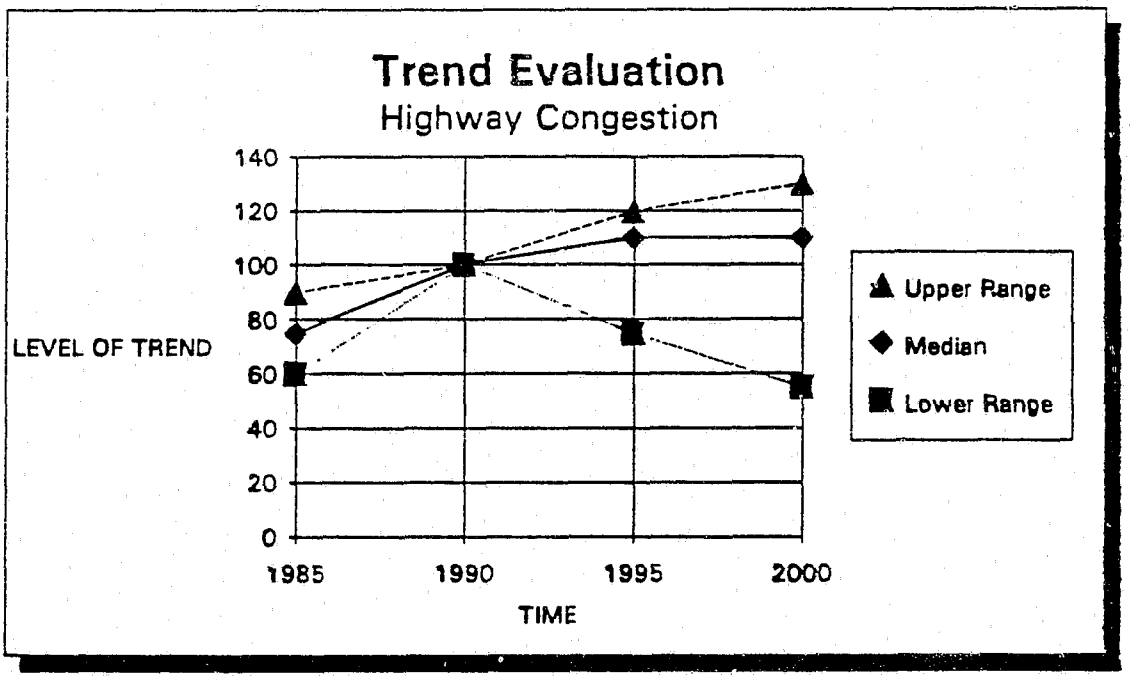


Figure 5b ("Should Be")

TREND 5 - AGE OF WORK FORCE

The sharpest increase in this trend occurs from the years 1995 to 2000. This corresponded to the group's belief that life expectancy will increase, as well as their feelings regarding the potential for future problems with the Social Security System and other negative economic factors.

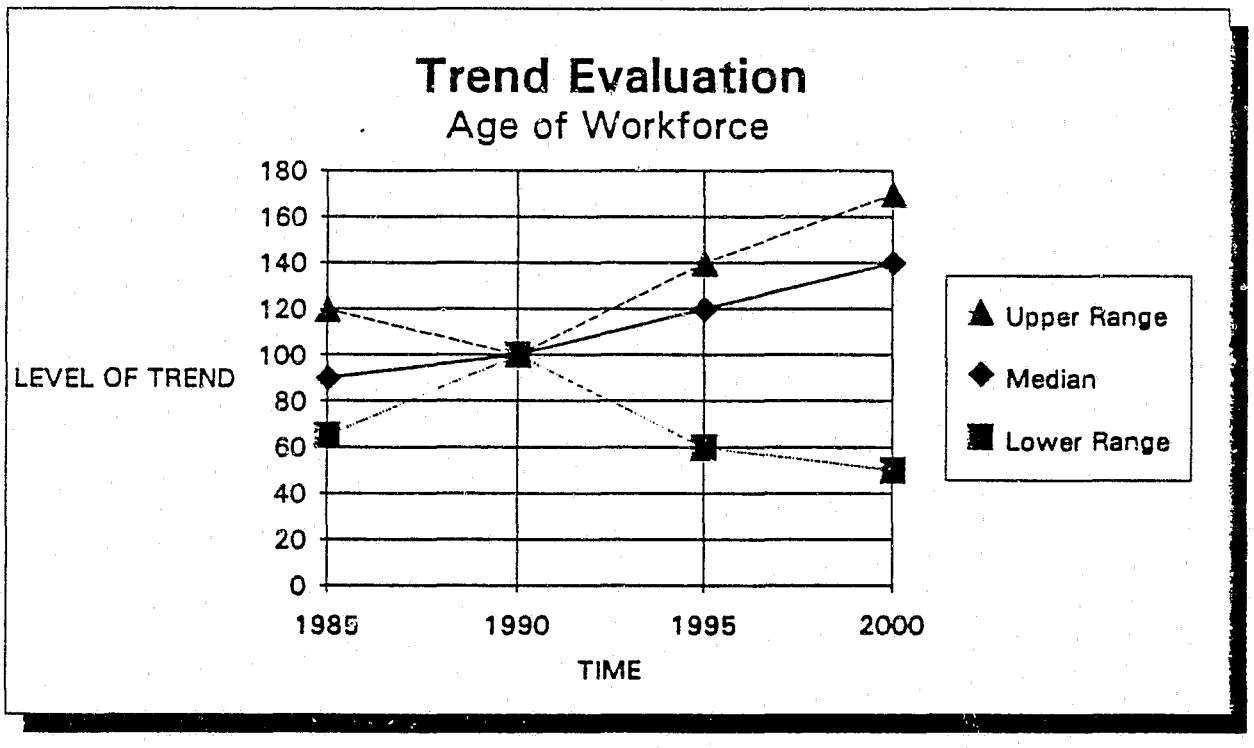


Figure 6a ("Will Be")

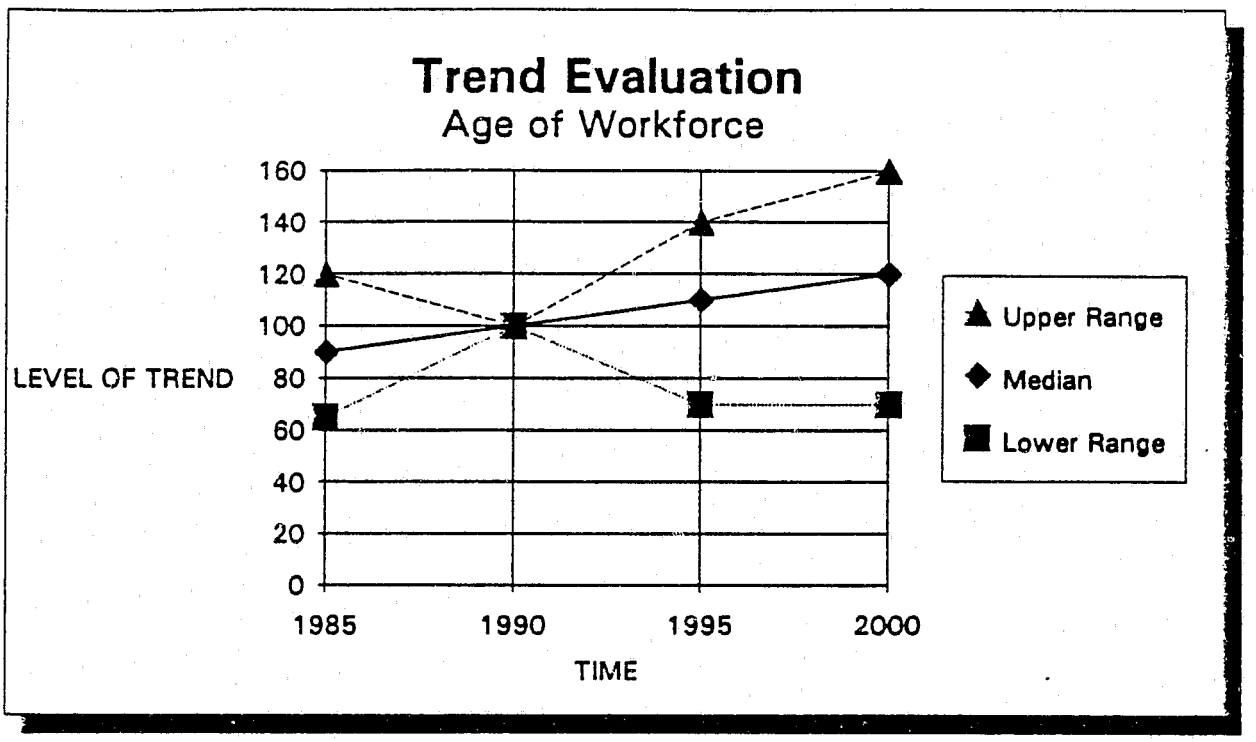


Figure 6b ("Should Be")

The forecasting group next completed event evaluation forms to estimate probabilities for each selected event. They initially estimated the year in which each event's probability of occurring first exceeded zero and then forecasted cumulative probabilities of occurrence by the years 1995 and 2000.

Finally, they recorded the positive or negative impact of each event's occurrence upon the issue question. Table 2 depicts the results of the groups' ratings.

Each event was graphed according to the information developed in this analysis.

Table 2

Event Evaluation

Event Statement		Probability			Impact on the Issue If Event Occurred	
		First Exceeds Zero	5 Yrs From Now	10 Yrs From Now	Positive 0-10	Negative 0-10
E-1	Speed Limit Raised to 65 mph	1991	80	90	0	7
E-2	Gasoline $3.00 per Gallon	1993	60	80	6	2
E-3	Amount of Social Security Payments Reduced by 50%	1994	40	75	2	8
E-4	Driver's License Restrictions	1995	60	70	4	6
E-5	Physical Standards for Driver's Licenses Increased	1993	70	95	8	4

FIGURE 7: EVENT EVALUATION

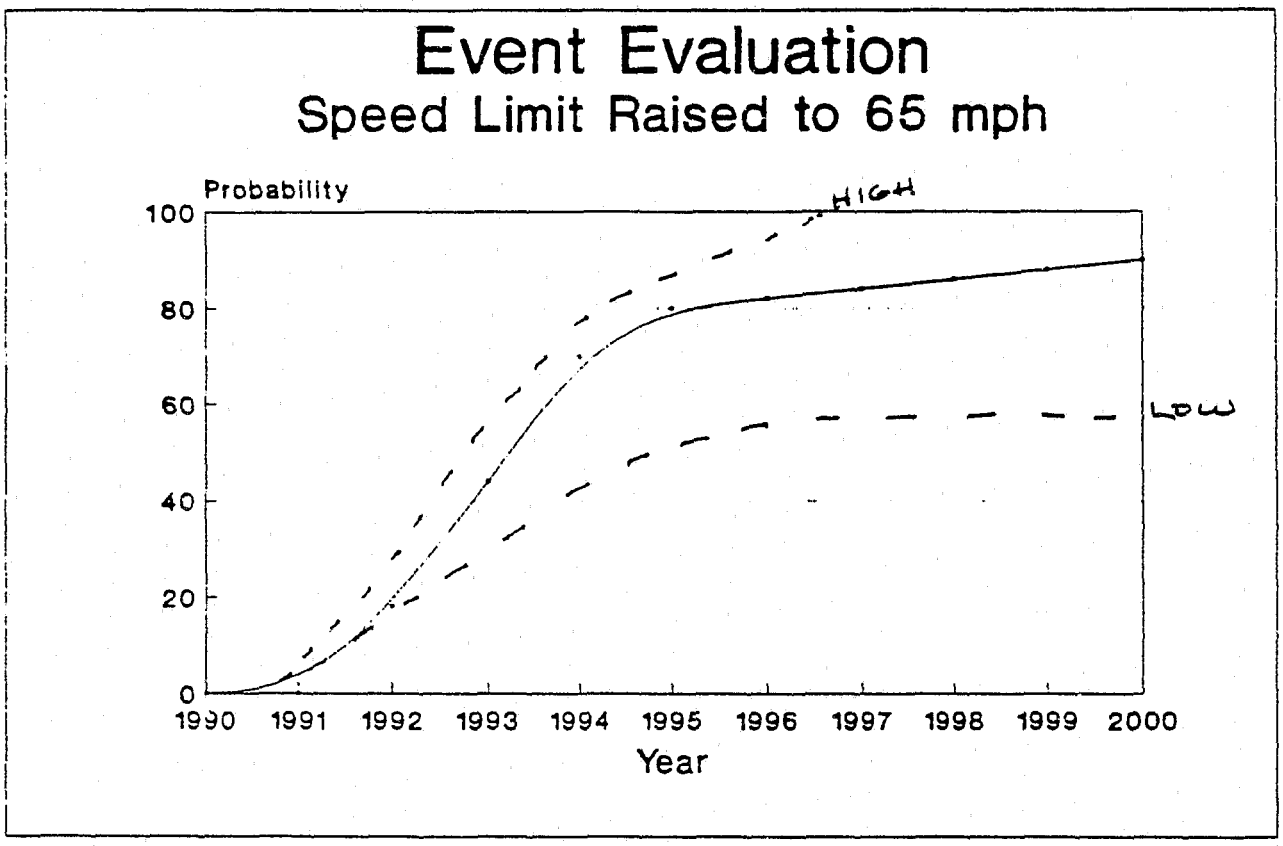


FIGURE 8: E-1 SPEED LIMIT RAISED TO 65 MPH

There was a consensus that this event could first occur in 1991. Most agreed that customary speeds coupled with new technology would make this event very probable to occur by the year 2000. The lowest score suggested this event had only a 50 percent chance of occurring by 2000, and was based upon fuel costs and traffic congestion. The highest probabilities were 95 and 100 percent.

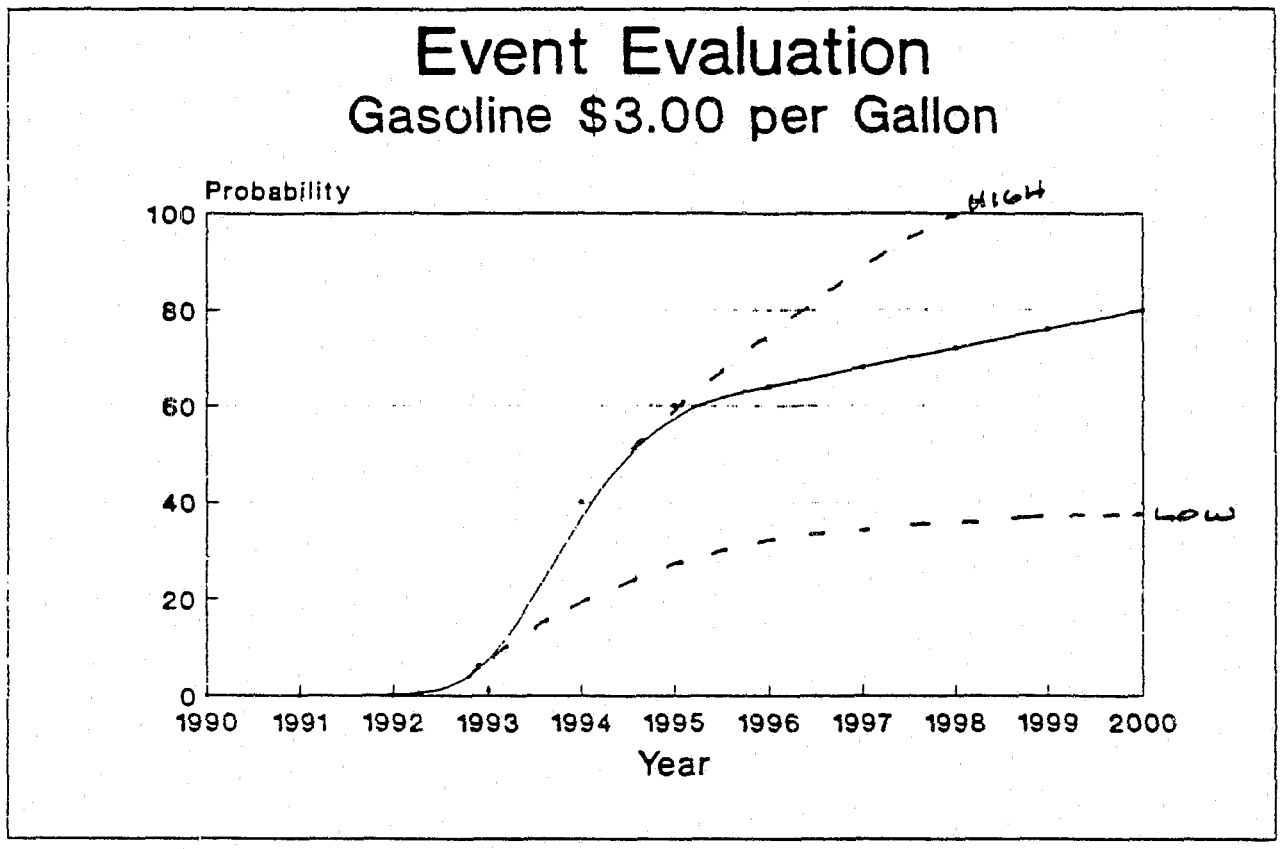


FIGURE 9: E-2 GASOLINE $3.00 PER GALLON

The median year for the probability of this event to first occur was 1993. Given the environmental pressure against domestic oil exploration, the group believed our dependency on foreign oil would increase over the next ten years. The high scores suggested there would be a breakout of war in the Middle East, and the low scores reflected a belief we would reach a peaceful agreement by which the price of oil will be stabilized.

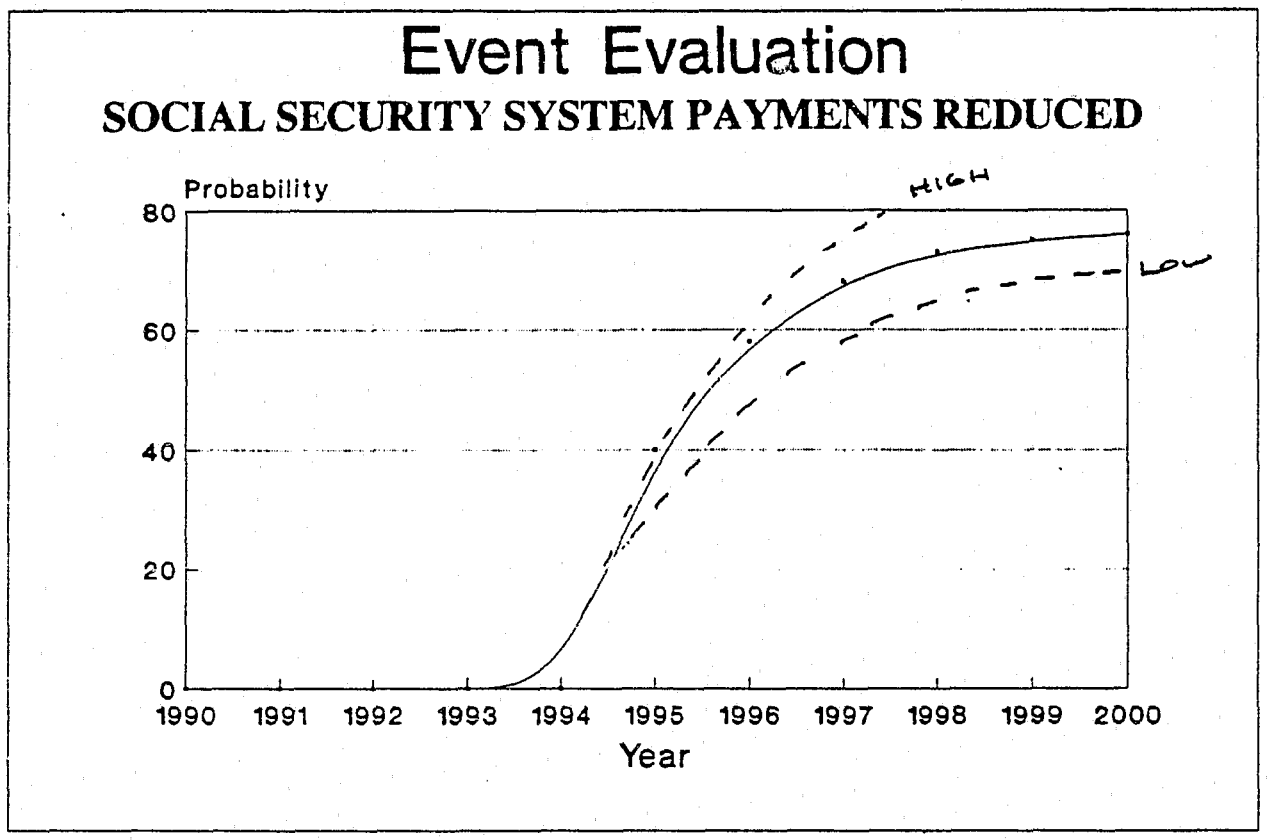


FIGURE 10: E-3 SOCIAL SECURITY SYSTEM PAYMENTS REDUCED

Using 1994 as the first year of probability, most felt the system would probably remain solvent until 1995. However, as depicted, most predicted a sharp increase in probability from that point out to the year 2000. There was little deviation from the median in forecasting this event.

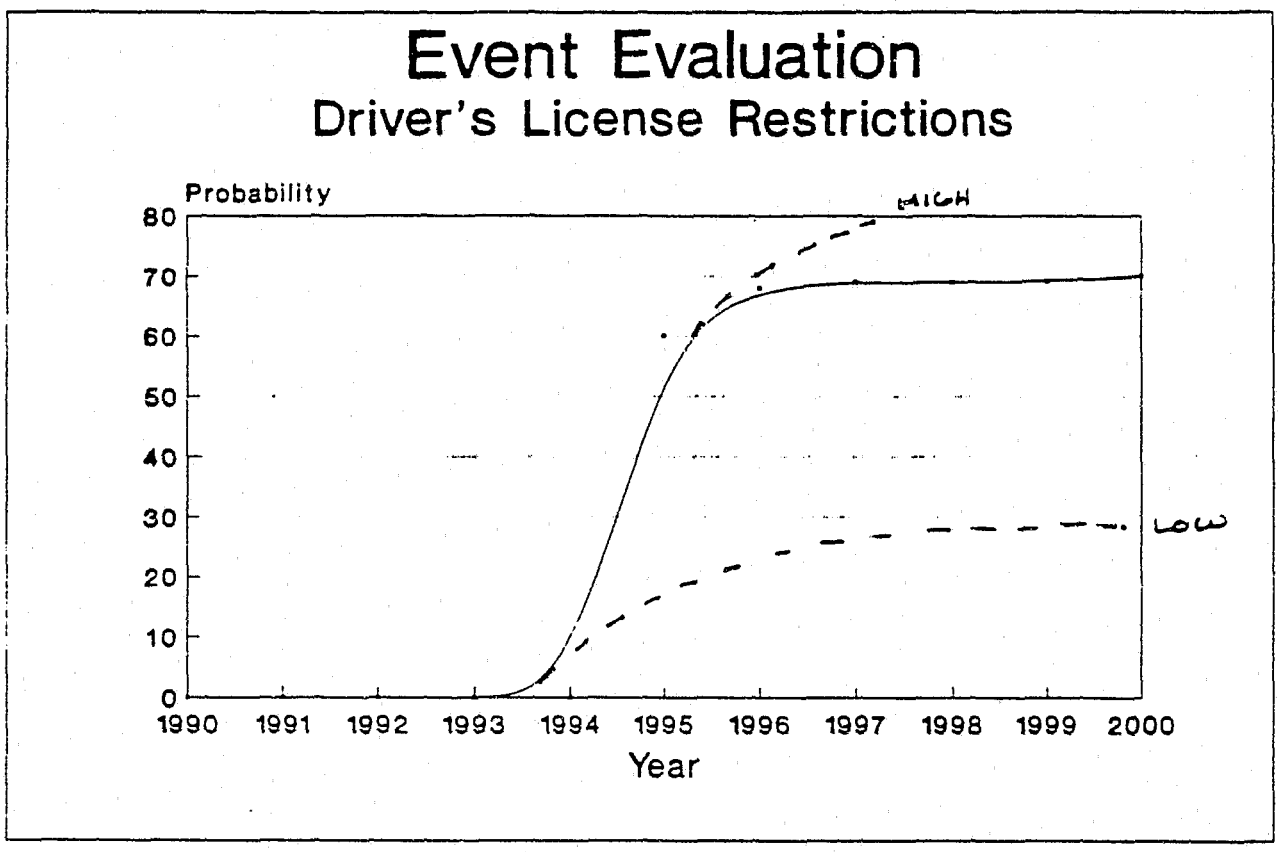


FIGURE 11: E-4 DRIVER'S LICENSE RESTRICTIONS

Given the rapid increases in traffic congestion, most felt that in the shorter term (2-5 years) this event had a high probability of occurring. The group believed, however, that if this event did not occur in the next five years, it was probable that other improvements in the traffic management system would lessen the necessity for restrictions. The high scores reflected the belief that restrictions were inevitable, while the low scoring individuals felt political pressure from retired groups would prohibit further restrictions.

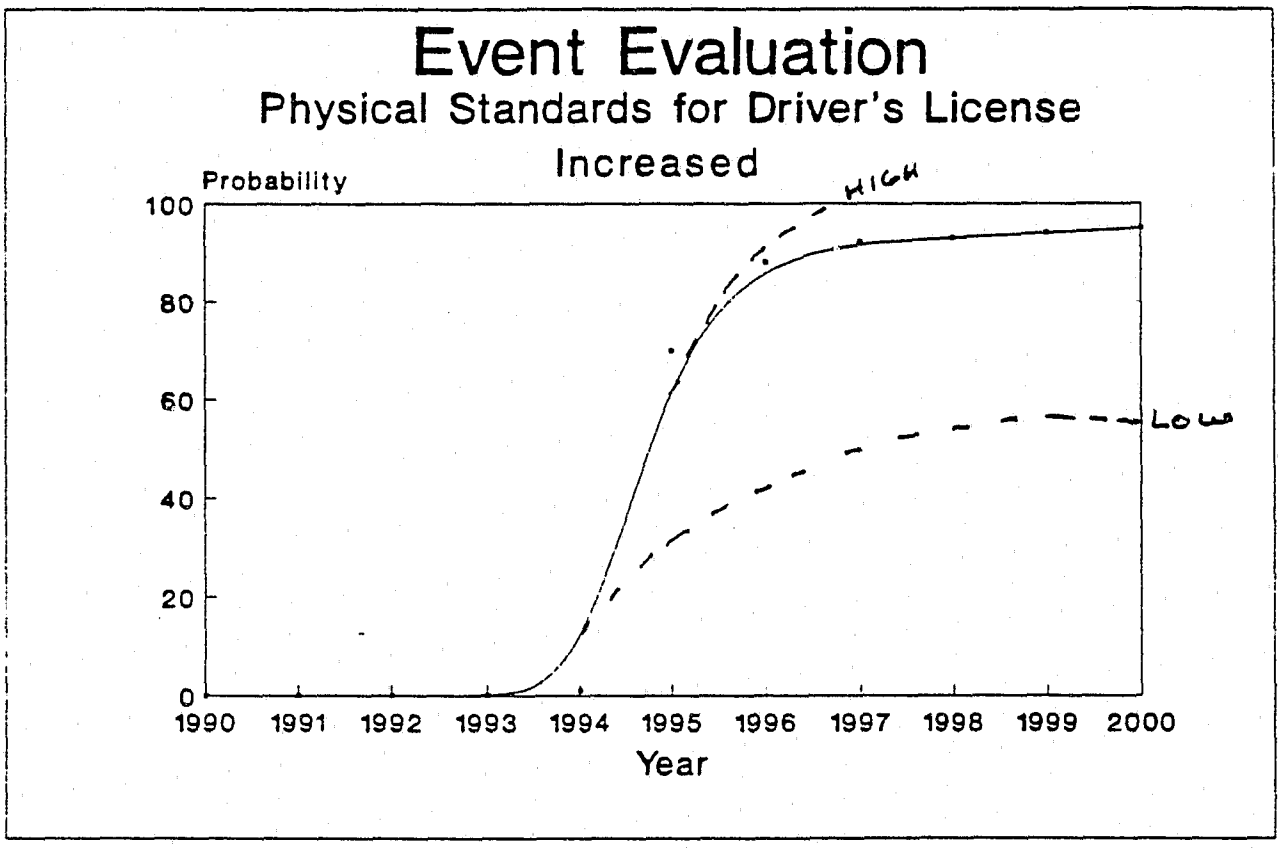


FIGURE 12: E-5 PHYSICAL STANDARDS

The median year for probability of this event first occurring was 1993. Because of existing traffic problems, the group believed there was a high probability for this event to occur in the short term. The low score was based upon the belief that political pressure from groups representing older people would prohibit further restrictions. The single high score believed the probability would reach 100 percent in 1996.

CROSS-IMPACT ANALYSIS

Further forecasting took place in the form of cross-impact analysis. In short, this technique involved a group of four command college colleagues and four law enforcement professionals providing assessments of how specific events positively or negatively influenced trends and the probability of other events occurring by the year 2000. Individual values in the following chart represent median group scores. These assessments also impacted the year in which events might be forecasted to take place (assuming that each event occurred at a specific, forecasted probability below 100%). Additionally, the analysis graphically demonstrated how the level of each trend could be changed by the occurrence of specific events. Of equal importance, "cross-impacting" revealed which events were "actors" (influencing many other events and trends) and which trends and events were "reactors" (most influenced by other events), thus helping to begin the process of targeting policy considerations on those events that are most influential.

Table 3

Cross-Impact Matrix

Probability (%) By Year 2000				90	80	75	70	95				
	Speed Limit Raised to 65	Gasoline $3.00 per Gallon	Social Security Payments Reduced	Restrictions Driver's License	Physical Standards for Driver's Licenses Increased	Highway Speeds	Life Expectancy	High Tech Systems	Highway Congestion	Age of Workforce	
If Below Event Occurred First, Effect On >>>>	E-1	E-2	E-3	E-4	E-5	T-1	T-2	T-3	T-4	T-5	Actors
E-1 Speed Limit Raised to 65		+5		+30	+60	+5	-10	+15	+10		7
E-2 Gasoline $3.00 per Gallon	-40			-10	-20	-35	+10	-10	-20		7
E-3 Amount of Social Security Payments Reduced by 50%		-10		+10	+20		-20		+25	+40	6
E-4 Driver's License Restrictions	+15				+20	+10	+15		-20	-10	6
E-5 Physical Standards for Driver's Licenses Increased	+30			-20		+20	+5		-20	-15	6
# of Hits *** = Reactors**	3	2	0	* 4	* 4	* 4	* 5	2	* 5	3	

FIGURE 13: CROSS-IMPACT MATRIX

ACTOR_EVENTS

Actor events were identified by tabulating the rows that had the most number of impacts on other events or trends. Events with higher totals are called "actor" events. They should be the primary targets of policy action. In descending order, the actor events in this study were as follows:

E-1: Speed Limit Raised to 65 MPH.

E-2: Gasoline Reaches $3.00 Per Gallon.

E-4: Driver's License Restriction.

E-3: Social Security Payments Reduced by 50%.

E-5: Physical Standards for Driver's Licenses Increased.

REACTOR_TRENDS_AND_EVENTS

The reactor trends and events were identified by tabulating the columns of the cross-impact matrix. Those with the highest totals were identified as reactors since they most frequently reacted with or would be affected by an actor event. The following were identified as reactor events or trends. They are listed in descending order:

T-4: Highway Congestion.

T-2: Life Expectancy.

T-1: Highway Speeds.

E-5: Physical Standards for Driver's Licenses Increased.

E-4: Restriction on Driver's Licenses.

T-5: Age of Work force.

E-1: Speed Limit Raised to 65 MPH.

E-2: Gasoline Raised to $3.00 Per Gallon.

T-3: High-Tech Systems.

From input provided by the analysis of the cross-impact matrix, different scenarios can be constructed with the same impact percentages by manipulating the occurrence of events. For example, if driver's license restrictions were put into effect, we would see a lessening of the upward trend of traffic congestion and quite possibly it would reduce by some measurable amount the older segment of the work force. This event could also have a positive impact upon the American life expectancy.

SCENARIOS

The three scenarios that follow were based upon the primary and/or critical trends and events identified, taking into consideration the forecasts, probability factors, and cross impact relationships. In essence, the scenarios serve as pictorial representations of alternative futures. Creating these scenarios provides a vehicle for making forecasts occur and allowing an examination of what may occur, and in so doing, being able to ask questions

like "What if?" It goes without saying there are no absolutes in this type of exercise; however, the key is identifying futures we wish to avoid and those we wish to see occur. To this end, they illustrate the need to design broad strategies based upon specific policies intended to take us to the future of our choosing.

Scenario No. 1 - Nominal

The nominal scenario describes the future evolution of present forces in motion. It describes what is most likely in the year 2000 based upon the forecasting group's "will be" projection without interventions. It is basically "surprise free".

January 2, 2000

While the $3.00 per gallon average price of gasoline has served to reduce traffic congestion to some degree, analysts point out that the new high-tech advances have played the key role in reducing congestion. In spite of the changes, there are more people than ever competing for "space" on the highway. According to the latest census, the population of California is over 35 million, 18 percent of which is made up of persons over 60 years of age. Analysts point to the recent breakthroughs in cardiac care for the significant increase in life expectancy. It has also been pointed out in a recent study that many older Californians are staying on the job longer and a sizeable

number of retirees have actually re-entered the job market. Analysts believe that among other economic hardships of fixed incomes, the reduction of Social Security payments, coupled with the overall healthier condition of seniors, have resulted in this phenomenon.

The raising of the speed limit to 65 mph on all California highways has had a negative effect in that the average speed traveled has gone from 58 to 68.5 mph.

A serious concern amongst Legislators and traffic system managers is the large increase in the number of automobile accidents involving older drivers. Along with this concern is the equally alarming fact that the older drivers and vehicle occupants are sustaining much more severe injuries than those of younger drivers and vehicle occupants in crashes of equal severity.

At the insistence of a coalition representing the American Association of Retired Persons, the State Agency on Aging, and the Grey Panthers, a special session of the State Legislative Committee on Transportation has been scheduled for early next week. Assemblywoman Margret Smith, Chairperson of the committee, has asked that representatives from the Department of Transportation and the California Highway Patrol be prepared to testify before the committee. It is her belief that the State has failed to adequately plan for the future by not recognizing the steady increase in older drivers over the past several years. Assemblywoman Smith had recommended studies be

conducted in the past four legislative sessions; however, due to budgetary concerns, the issue was placed on the "back burner".

Mr. Jerry Barber, who is recognized as the senior spokesperson for the coalition, has said that most seniors feel their needs have been omitted from transportation planning. Mr. Barber points to the fact that automobiles and highways are still designed to meet the needs of much younger drivers. His group has made pleas at both the State and Federal level to compel the manufacturers to include such things as larger mirrors, better instrumentation, and increased crash protection as options for seniors. His group has also met with representatives from Caltrans in and effort to have that agency make improvements in signing on the higher speed roadways. Finally, Mr. Barber stated he is disappointed that the CHP has not acted upon his recommendation to include courses in their Academy curriculum whereby the officers are trained to better understand the needs and problems of the older drivers. Assemblywoman Smith states she is totally committed to the issue and will ensure action is taken. However, she was quick to point out that we are at least 10 years behind and the situation will not improve "overnight".

Scenario No. 2 - Normative (Desirable and Attainable)

The normative future scenario concentrates on and expands the "should be" trend forecasts. The scenario takes us to the year 2000 when a new Traffic Operations Center has just opened in the San Francisco Bay Area.

January 3, 2000

Yesterday marked the opening of the new CHP-Caltrans Traffic Operations Center (TOC) which will service the greater San Francisco Bay Area. This TOC is the most sophisticated of the State's five centers. Incorporated within the system are several new technologies, all of which should help Bay Area traffic flow smoother than ever. Among the dignitaries present at the opening were David Donaldson, Commissioner of the CHP, and Maryann Andrews, Director of Caltrans. Mr. Jerry Barber, representing a coalition of elder California drivers, took advantage of the ceremony to make a presentation to both Donaldson and Andrews. Mr. Barber presented a plaque of appreciation for the work the two agencies have done in regards to older California motorists. Mr. Barber cited the work of the task force, established in 1991 by the CHP and Caltrans, wherein they recognized the need to address the issues of the aging California drivers and ensured their needs were considered in all planning phases for traffic systems development. Mr. Barber pointed out that it was through the work of that task force that the vehicle manufacturing industry significantly improved automotive design as it pertains to older drivers. He also noted the effectiveness of Caltrans re-signing. While it was intended to meet the need of aging drivers, Director Andrews related her agency has had nothing but positive feedback from all segments of society.

Finally, Mr. Barber commented on the success of the State's driver training program for seniors. It has been extremely well received and many feel it will serve to extend their driving years.

Editorial Note: Donaldson and Andrews have been committed to the issue of the older driving population of the state and through their efforts, California has received nationwide recognition for its safety record of drivers over the age of 60.

Scenario No. 3 - Hypothetical (What If?)

The hypothetical future scenario integrates a set of previously forecasted trends and events by first assuming that each forecasted event actually occurs at a level of probability below 100%; in this case, at a 30% probability to reflect a "turbulent" future. The scenario explores the future inter-relationships of the trends and events resulting from the occurrence and interaction of these events.

January 2, 2000 - Sacramento, California

California Highway Patrol Commissioner Alexis Andrews sat at her desk poring over her notes in preparation for her afternoon meeting. In less than two hours she would be meeting with Governor Bradford and two representatives from

the state's major senior citizens' coalition. Over the past several months the Governor had been bombarded with complaints from various senior citizen groups who were extremely upset with the status of the state's highway system. Their major complaint was that they felt they had been neglected and left out of any planning. It was becoming much more difficult for them to meet their transportation needs and, basically, they were demanding some input.

As she looked over her notes, she realized that several factors had led up to the current mess. When the speed limit was raised to 65 mph on all California highways, the actual average speed driven went up from 58 to 69 mph. The net result was an increase in serious injury and fatal accidents. The older population suffered a disproportionate number of injuries and fatalities, as had been projected. To compound the problem, Social Security payments were reduced by 50% back in 1994, and of course this forced more older citizens to remain in the work force and continue driving in commute traffic. The huge increase in the price of gasoline reduced some of the traffic, but overall, there were too many cars on the road "competing for space". She thought about her father who, like many senior citizens, was enjoying better health and a more active life-style, but at the same time she recognized this equated to an increased demand and expectation for him to be mobile.

She thought back to a Top Management meeting held in August of 1995 where the group discussed the issue of the aging population's impact on California's

traffic management. In that meeting, Chief Dave Donnely presented demographic material which clearly showed the population was aging and had suggested the CHP should begin serious planning to deal with the inevitable future. While the entire group agreed with him, there was no meaningful follow-up. As always seems to be the case, there were a number of "priorities" that took precedence. She couldn't help but wonder how things would have changed had they began planning at that time. Would it have been necessary for the Legislature to restrict the driving hours of older drivers or would the Department of Motor Vehicles have raised the physical standards for obtaining a driver's license had other steps been taken earlier on?

She knew the California Highway Patrol was an outstanding organization with a great reputation, but as she completed her final preparation for the meeting, she knew she would have to admit to the group this afternoon that her Department had "dropped the ball".

As she was leaving her office, she told her secretary, "Please schedule a conference call with all Top Management for tomorrow morning at 0900 hours." Her secretary wrote the note and looked up at her saying, "What is the subject to be discussed Commissioner?" Andrews replied, "Planning for the impact of California's aging population on traffic systems management, a little late."

POLICY CONSIDERATIONS

The scenarios described above are based on the events and trends as forecasted by the nominal group. While there are many scenarios available for policy considerations, for the purpose of this study the normative scenario will be utilized as it represents a desirable and attainable future state. Following is a discussion of policy alternatives, selection criteria, and policy impacts on the normative scenario provided by the author. The objective of this discussion is to identify targets for strategic planning.

POLICY ALTERNATIVES

1. CHP should take a lead role in the establishment of a task force to study the issue of the aging driver.

2. CHP should provide comprehensive training to its personnel both at the recruit and in-service level.

3. The CHP should recommend legislation relative to the issue.

4. An organizational value statement should be developed.

5. Awareness of the issue as it relates to general law enforcement is underdeveloped. POST should develop a training program for all California law enforcement agencies.

SELECTION CRITERIA

Not all policies will necessarily prove to have sufficient value to warrant further consideration in later portions of this study. To identify those that have potential, the following questions should be asked as a screening criteria to determine the viability of policy alternatives:

1. Are the costs affordable?

2. Is the policy politically feasible?

3. Is support available from other stakeholders?

4. Would the impact be timely?

5. Is there a specific benefit to the citizens of California?

POLICY IMPACTS

The identified policy alternatives all meet the specified selection criteria. Their impacts are examined in the following discussion.

1. CHP taking the lead role in establishing a task force.

Although many agencies and groups will be impacted by the issue of the aging population, the CHP, given its responsibility for traffic management on all California freeways and rural highways, surfaces as the lead agency. Because of their statewide influence, this organization would be best suited to bring together the pertinent agencies and individuals to deal with the issue on the proper scale.

2. Comprehensive Training

The CHP has a well structured training program for its recruits as well as in-service personnel. With the infrastructure already in place, it should be a relatively easy task to design a course or courses which will meet their need. There have been many studies conducted in the area of geriatrics and a wealth of expertise is available to assist in the development of comprehensive training programs.

3. Recommendation of Legislation

Once the issues are clearly defined through the work of the statewide task force, recommendations for appropriate legislation would be developed. The CHP, through its Office of the Special Representative, has an outstanding working relationship with the California Legislature. By working through this office, proposed legislation could be written and tracked through all phases of the process.

4. Value Statement

The CHP has identified its values through an organizational values statement. While service to the motoring public is a key component of that statement, the specific need to be sensitive to the particular needs of older drivers is not specified. If the CHP is going to make an in-depth commitment to this issue, there should be a reflection of that commitment in their organizational values statement.

5. Commission on Peace Officer Standards and Training (POST) Program

Many police departments do not possess resources sufficient to create this type of training program. Except for POST, no other entity is in a

position to make available to all California agencies a consistent, comprehensive, quality training program for dealing with aging drivers. The CHP should work with POST to develop this training and expand it beyond the impacts of driving and move it into other relevant issues of general law enforcement.

Section III

Strategic Management Plan

STRATEGIC MANAGEMENT

The purpose of this portion of the study is to develop and implement a strategic management process which will include decision making, planning, and policy considerations. The objectives of the strategic plan are to isolate critical elements of the future scenario, to cause some of those elements to happen, and to prevent others from occurring. The policies selected for implementation must be capable of impacting the issue, addressing the environment, and be strategic in terms of time and focus.

The strategic plan developed will be designed to enable the CHP to initiate policy changes designed to address the current and projected needs affecting the impact of an aging population as it relates to traffic systems management.

CURRENT SITUATION

The CHP is a Department within the Business, Transportation and Housing Agency. The Department has over 8,500 employees with approximately 5,770 uniformed members and an operating budget close to 600 million dollars. The CHP is responsible for providing patrol and traffic enforcement services for more than 97,000 miles of roadway, including 7,788 miles of freeways and expressways.

The Highway Patrol has established the management and regulation of traffic to achieve safe, lawful, and efficient use of the highway transportation system as its primary mission.

The objectives of the Highway Patrol are as follows:

- Accident Prevention - To minimize the loss of life, personal injury, and property damage resulting from traffic accidents.

- Emergency Incident/Traffic Management - To minimize exposure of the public to unsafe conditions resulting from emergency incidents, impediments, and congestion.

- Law Enforcement - To minimize crime.

- Assistance - To assist other public agencies.

- Services - To maximize service to the public in need of aid or information.

Demographics in California are changing rapidly. Along with a wide diversity among the ethnic composition, the overall population of the state is aging. Current estimates from the Transportation Research Board of the National Research Council are 12-13% of the population is 60 years of age and older,

and that by the year 2000 approximately 15-17% of California's population will fall within that age range. While the state's population is aging, those individuals are healthier and more active than their predecessors.

As the overall population of California has risen, so have the problems of traffic management increased. There is a strong call for new, innovative measures to be taken to improve the flow of traffic, and to that end, traffic systems managers are looking to new technology to play a key role in the solution. The new technologies will require additional and faster information processing on the part of the drivers.

The future appears to hold significant challenges for traffic planners and perhaps equal challenges for the motoring public. It is critical that planning include strategies to assist the older population transition comfortably into the roadways of the future.

WOTS-UP ANALYSIS

Fundamental to the situational audit is an analysis of Weaknesses, Opportunities, Threats and Strengths that Underlie Planning (WOTS-UP). This begins the strategic planning process and relates the organization to its environment. Basically, it assists us in determining whether the organization is capable of dealing with its environment by ten years from now.

Opportunities and threats are external to the California Highway Patrol and may include previously identified trends and events that influence the organization's ability to respond to the issue. Strengths and weaknesses are internal facts that represent resources or limitations for the California Highway Patrol in achieving its objectives as they relate to the issue.

OPPORTUNITIES

1. High-Tech Systems

   As high-tech systems play an increased role in the overall management of California's traffic, there will be an opportunity to greatly enhance the older driver's ability to function effectively on the highway. Design assumptions must include the physical realities of the older population to allow an effective transition.

2. Statewide Responsibility of the California Highway Patrol for Traffic Management

   The statewide responsibility of the California Highway Patrol will allow the organization the opportunity to take the lead role in planning and facilitate bringing other statewide groups together in a concerted effort.

3. Political Strength of Older Californians

Few groups have more political strength than this group. As their numbers increase, so does their political influence. Obtaining their support in the early stages of planning will greatly enhance the overall effectiveness of any action taken.

4. Communities Needs

As the life expectancy rises and older Californians enjoy a healthier more active life-style, their needs will include greater mobility. Traffic planners will enjoy a tremendous amount of support in their efforts toward meeting these needs.

5. Traffic Congestion

Public demand for improvement of the overall highway system will increase in direct correlation to the traffic congestion which is a source of economic loss and frustration for many Californians.

Surveys have shown this to be the most important issue to residents of the Los Angeles, San Francisco, and San Diego areas. This presents tremendous opportunities for those responsible for California's traffic systems

management. A multitude of resources will be made available and success will be measured in terms of the public's perception of how much their personal transportation improves.

THREATS

1. California's Budget Problems

California has been likened to a small nation in terms of its size, economic base, and diversity. Like a national budget, at times demand for services outstrips the supply of resources. California has reached that point, and every year public agencies are asked to do much more with much less. Implementation of the stated strategy will involve a sizeable commitment of resources, and if not properly articulated and championed, could encounter significant problems due to budgetary limitations.

2. Strict Emphasis on Profit Amongst Manufacturers

The automobile industry is highly competitive and has historically been resistant to legislative impositions from the government. The mandated increases in average miles per gallon has been but one issue subject to ongoing debate. Recommendations suggested by the proposed task force could be strongly opposed.

3. Inherent Jealousies Amongst Large Organizations

Many large organizations asked to participate in a statewide task force may allow "turf" oriented jealousies to interfere with their objectivity when working in concert with other groups.

4. Preemptive Legislation

The California Legislature could react to the problems encountered with older drivers by enacting preemptive legislation restricting the driving of older citizens as a means to address the issue prior to the implementation of the strategy. It is important the Legislature be apprised of the intended strategy and that they support the concept.

STRENGTHS

1. CHP officers are well educated and highly trained. These two strengths could prove particularly beneficial when implementing change.

2. Supervisors and managers are generally competent and dedicated to the mission of the organization.

3. The CHP as an organization has historically had a strong commitment to public service.

4. Strong citizen support is evidenced by continued funding of Departmental programs.

WEAKNESSES

1. Some members of the Department's management are viewed as conservative and resistant to change.

2. Due to the statewide nature of the organization, some members may not perceive the issues as worth addressing on a Departmental level because it is not a problem in their respective area.

3. Many older officers are resistant to any change.

ORGANIZATIONAL_CAPABILITY_ANALYSIS

This capability analysis focuses on the adaptability of the organization to make the changes necessary to deal with the issue of the aging driver. Assessments of those capabilities were made at several levels within the organization and group medians are illustrated in Figure 14. This analysis was completed by a group of five California Highway Patrol employees ranging from rank and file to upper management.

1. Top managers are generally seen to have suitable capabilities for change. They possess positive attitudes and are highly skilled.

2. The overall organizational climate supports change.

3. Organizational competence should support changing policies. Line personnel should be closely monitored for their reactions and acceptance of change.

Organizational Capability

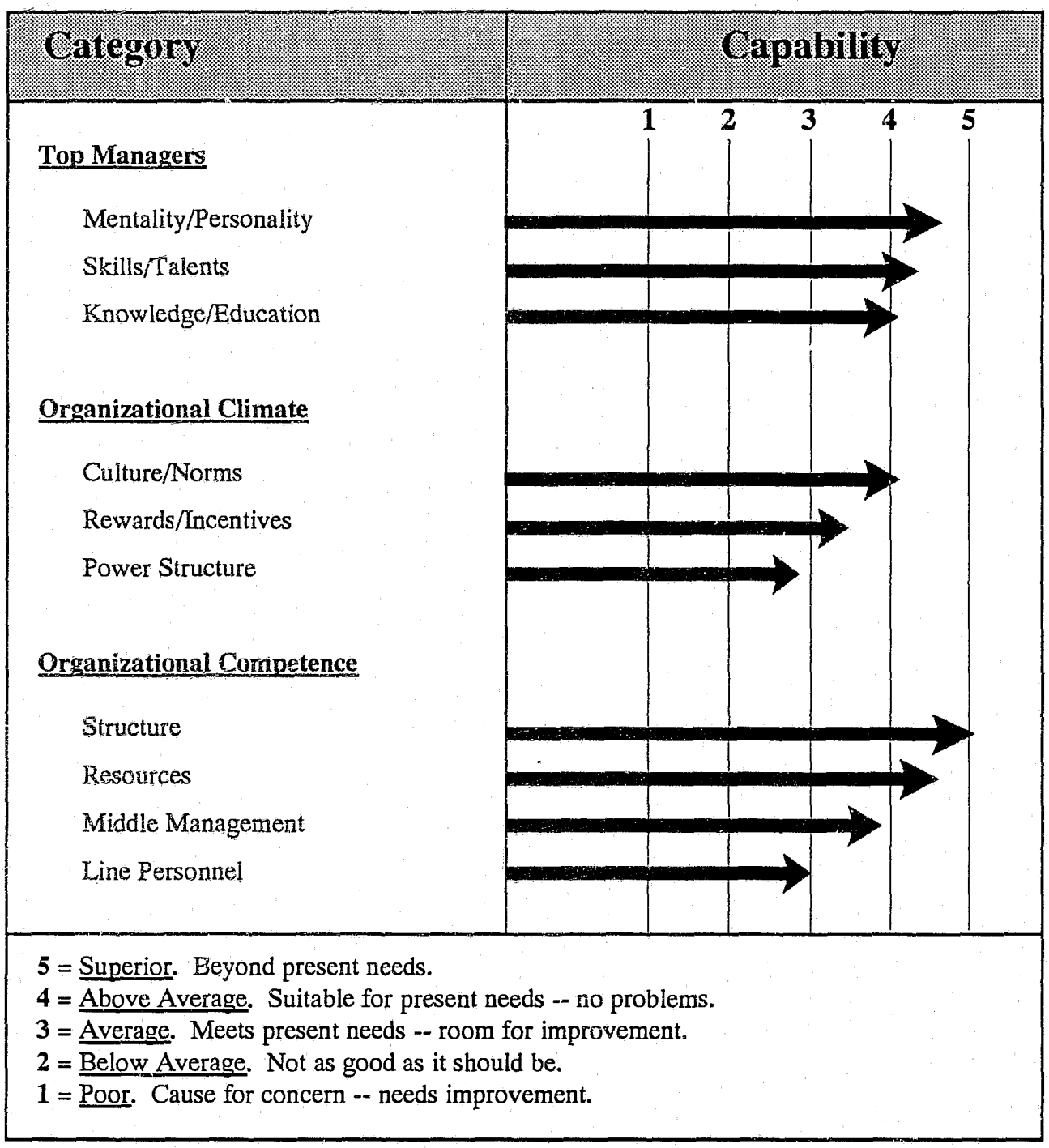


FIGURE 14: ORGANIZATIONAL CAPABILITY

STRATEGIC ASSUMPTION SURFACING TECHNIQUE (S.A.S.T.)

The Strategic Assumption Surfacing Technique (S.A.S.T.) contributes to the situation audit and identifies stakeholders and assumptions they hold that are related to the issue being studied. "Stakeholders" are those individuals, groups, or organizations that may be affected by what the organization does with regard to the issue, be able to affect the issue themselves, or have an interest in or concern about the issue. The notion of stakeholder also contains the concept of unanticipated or less than obvious stakeholders who can radically impact your strategy. These stakeholders are called "snaildarters."

It is critical to the development and implementation of the strategic plan that the stakeholders be identified. Once identified, their positions may be analyzed and a course of action to bring about the desired result can be formulated.

A list of stakeholder candidates was generated by two Command College graduates and two CHP managers. Their goal was to identify those stakeholders most likely to influence the issue or be influenced by it. The list includes three possible snaildarters (SD).

1. Department of Motor Vehicles

2. California Department of Transportation

3. Insurance Industry (SD)

4. California Association of Professional Driving Instructors (SD)

5. Medical Profession

6. American Association of Retired Persons

7. Peace Officers Research Association of California

8. State Legislature (SD)

9. Automotive Manufacturers

10. CHP Executive and Top Management

11. Academy Staff

12. Field Commanders

13. Commission on Peace Officer Standards and Training

For each stakeholder, the group discussed and agreed upon certain issue-related assumptions.

1. Department of Motor Vehicles

   Would support legislative changes regarding driver's license standards if they are provided the personnel necessary to handle the increased work load. They may wish to take the lead role in recommending legislation.

2. California Department of Transportation

   Would be very supportive of the changes as they relate to highway design, but would also predicate the support upon the receipt of additional resources. Politically they would wish to co-chair any task force established rather than serve in a subordinate role.

3. Insurance Industry

   The insurance industry has the potential for being a snaildarter because of the potential for mandated cuts in the insurance premiums of older drivers who have completed approved training courses. The Insurance Code currently recommends they offer a reduced premium to individuals who have completed the Mature Driver Improvement Course. They would be concerned with any legislation that is more binding.

4. Association of Professional Driving Instructors

Would be supportive of legislation mandating additional training. However, they were identified as a snaildarter in that they would want assurance that they would be able to charge fees which would be profitable.

5. Medical Profession

They will likely be supportive as they should provide significant input into the development of physical standards.

6. American Association of Retired Persons

Would be most supportive of the overall concept. They have long pushed for action in this area. They would be very concerned that the changes would not exclude older persons from driving, but rather make their driving safer and more enjoyable.

7. Peace Officers Research Association of California

Would be supportive and offer their services as a research organization.

8. Legislators

Older Californians have become a significant political force, and for that reason this group was identified as a possible snaildarter. They

will be very responsive to their older constituency if that group perceives the changes will result in less mobility due to restrictions.

9. Automotive Manufacturers

Will support efforts to change that will allow them the time necessary for the research and development necessary. They will be very concerned with the impact on their profits.

10. California Highway Patrol Executive and Top Management

The management of the Highway Patrol will be supportive of the changes and view the opportunity to take a lead role as very positive.

11. Academy Staff

Would support the training requirements, but will want to ensure they will be provided the necessary resources.

12. Field Commanders

Will be moderately supportive of the changes. They will first view the changes as an additional work load. They will see themselves as being in the position of having to "sell" the changes to line personnel.

13. Commission on Peace Officer Standards and Training

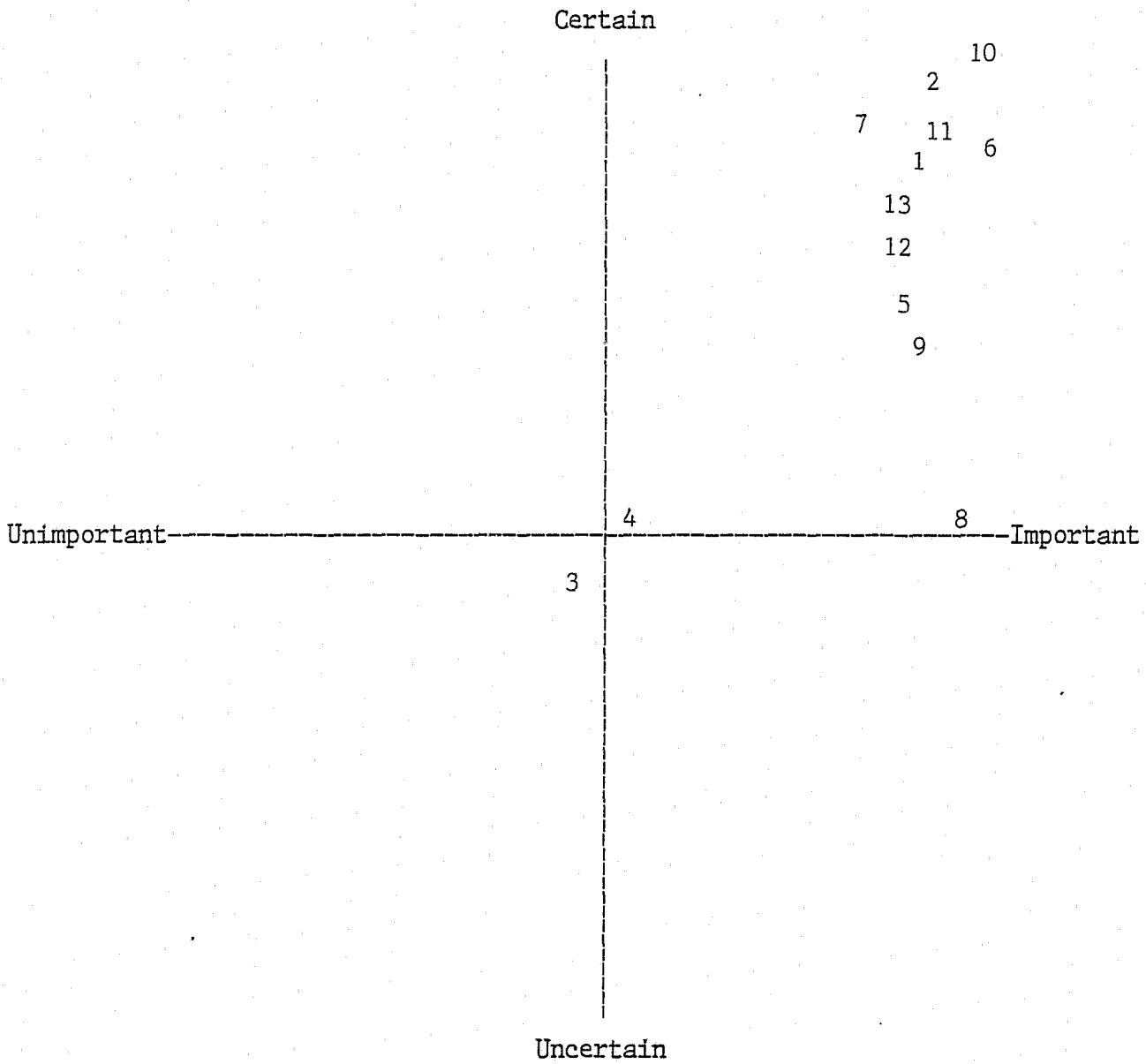
Feels responsible for providing training to law enforcement personnel. They will support the change and take an active role in its development and implementation.

STRATEGIC_ASSUMPTION_SURFACING_TECHNIQUE_MAP

The S.A.S.T. map, Figure 15, serves as a visual tool to aid in determining the status of stakeholders. Two criteria were applied to plotting stakeholders on the map:

1. How important is the stakeholder to the issue and the organization?

2. What is the level of certainty that the assigned assumptions are actually correct?



Stakeholders

1 - DMV	6 - AARP	11 - Academy Staff
2 - Caltrans	7 - PORAC	12 - Field Commanders
3 - Insurance Ind.	8 - Legislature	13 - POST
4 - Driving Instr.	9 - Auto Manufacturers	
5 - Medical Prof.	10 - CHP Management	

FIGURE 15: S.A.S.T. MAP

The S.A.S.T. map clearly demonstrates that certain stakeholders are both very important to policy considerations and assigned highly certain assumptions. These stakeholders are most critical and should be the objects of specific policies to construct broader strategies. Those whose position on the map represents importance, but relative uncertainty, must be monitored for their responses to policies.

MISSION

The primary mission of the California Highway Patrol is the management and regulation of traffic to achieve safe, lawful, and efficient use of the highway transportation system.

Following is the mission statement for this activity:

To ensure the success of both the Department and its members by recognizing the on-highway transportation needs of California's older citizens and thereby ensuring a safe, effective transportation system.

POLICY_STATEMENTS_AND_STRATEGY_DEVELOPMENT

The execution of the stated mission will require a number of policies. Some have already been suggested in the futures forecasting section. A policy

planning group consisting of the same five members used for stakeholder analysis was used again for this purpose. The group was used to supplement those policies already suggested. After being informed of the data generated in earlier sections of this study, the group identified the following policy alternatives. Once evaluated, these alternatives will lead to a broad strategy.

Policy Alternatives

1. The California Highway Patrol should work closely with the California Legislature on the issue of the aging driver.

2. The California Highway Patrol should better define its organizational values relating to serving this segment of the population.

3. The organizational values should be communicated within the Department and to the citizens.

4. The California Highway Patrol should establish a comprehensive training program dealing with needs and special considerations of the older drivers.

5. The California Highway Patrol should take a lead role in establishing a statewide task force to study the issue.

6. More detailed and frequent citizen feedback on the overall traffic system should be sought.

7. The California Highway Patrol should work with POST in preparing California law enforcement to deal with the aging population.

8. The California Highway Patrol should establish a process for meeting regularly with representatives from senior citizen groups.

MODIFIED_POLICY_DELPHI

The policy planning group was asked to evaluate the listed alternatives in a modified policy delphi. Through successive rounds of voting, they scored each policy for both its feasibility and desirability. The scale ranged from not feasible (0) to definitely feasible (3) and very undesirable (0) to very desirable (3). With five members voting, the maximum score for either category was 15. Combined totals for feasibility and desirability suggest the relative value of each policy for inclusion in a broad strategy. Specific results are indicated in Figure 15.

POLICY	RANK	FEASIBILITY	DESIRABILITY	TOTAL
1. California Highway Patrol Work With Legislature	7	9	10	19
2. Define Organizational Values	5	11	12	23
3. Communicate Values	4	13	11	24
4. Establish Training Program	1	14	15	29
5. Lead Role in Task Force	2	13	14	27
6. Citizen Feedback	6	9	12	21
7. California Highway Patrol Work with POST	3	12	14	26
8. Meet Representatives	8	8	9	17

FIGURE 16: POLICY FEASIBILITY/DESIRABILITY

The following three policies received the highest desirability and feasibility ratings:

Policy 1 - Comprehensive Training

Assure comprehensive training for recruit, in-service, and nonuniformed field personnel. This would include all aspects of the needs and special considerations of older motorists. The courses would treat the on-highway needs as well as those which would be encountered in the field office environment. The courses would be developed utilizing the expertise of the medical profession along with experienced law enforcement personnel.

Policy 2 - CHP take the lead role in establishing a task force

The CHP would take the lead role in establishing and chairing a Task Force to study the issue of the impact of the aging driver on California traffic systems management. This Task Force would initially be charged with completing a comprehensive study of the issue, and subsequently making recommendations for legislation, training, and highway improvements. There are several groups and agencies that have an interest as well as a responsibility in this matter, but the CHP, because of its statewide scope along with the primary traffic law enforcement responsibility on all freeways, should assume the lead role.

Policy 3 - The CHP should work with POST in preparing California law enforcement to deal with the aging population as it will affect their agencies.

Many police departments do not possess the resources sufficient to create this type of training program. The CHP should encourage POST's efforts be directed toward this objective and work directly with them in the preparation and delivery of the training.

A combination of the three policy alternatives were selected for implementation. This combination ensures a comprehensive yet structured approach to addressing the issue. First, a comprehensive training program will be established to address the needs of older drivers. Second, the Department will work toward establishing a statewide task force to study the issue and implement necessary changes in direction. Third, the California Highway Patrol will begin work with POST in developing training programs in California law enforcement agencies.

This approach was selected because it appears to provide for a three-pronged, well coordinated effort to impact the issue.

STRATEGY_IMPLEMENTATION

Once a policy course is established, in order for it to be successful, an implementation plan must be formulated. This implementation plan contains the following action steps:

1. Design a process to identify organizational values as they relate to the issue. Consider a task force and small work groups.

2. Use the data to determine a base line from which direction to move toward full acceptance.

3. Create a micro mission statement based upon the intended future state.

4. Design training for middle manager and first line supervisors to facilitate their acceptance and ability to sell the change to rank and file personnel. This training should precede training for line employees.

5. Communicate the intended changes to all employees.

6. Contact agencies which will be members of the task force and communicate the importance of the issue as well as the Department's commitment. Set up meeting dates.

7. Begin the work of the task force.

8. Make the public aware of the intended actions through a statewide public affairs program. This will serve to validate the changes and afford all personnel an opportunity to get positive feedback from their respective communities.

9. Establish a process to monitor the effectiveness of the changes and provide continual feedback to all personnel. This monitoring system would include a mechanism for adjusting or modifying the policies on an ongoing basis.

10. Repeat training on a periodic basis.

11. Communicate policy changes and other aspects of the program to allied law enforcement agencies.

12. Begin work with POST on training programs for other law enforcement agencies.

Time Line

The action steps listed are not necessarily in priority order. Some of the action steps can and should be completed immediately, while others may not be initiated until a foundation has been established and the cooperation of other stakeholders has been secured.

Resources Required

1. Support from Departmental managers, supervisors, and trainees is essential to implementation.

2. Support from the major agencies and groups participating in the task force is equally important.

3. It may be necessary to contract with outside trainers with a particular expertise at least at the beginning of the program.

4. Financial support from the Legislature will be required. Some of the training can be absorbed in the existing budget, but there will be other significant costs which will require additional funding.

5. For evaluation purposes, there will be a necessity to obtain feedback from individuals and groups external to the organization. Outside consultants should be considered for that task.

Section IV

Transition Management Plan

Transition management consists of the movement of an organization from its present state to its desired future state. The period between the present and the desired state is referred to as the transition state.

The goal of this part is to present a "road map" for change to reach the desired objective of dealing with the impact of the aging population on traffic systems management by the year 2000. The steps that will be involved include commitment, planning, and a recommended management structure.

COMMITMENT PLANNING

Critical Mass Analysis

"Critical mass" is defined as those individuals or groups whose support is absolutely necessary in order to successfully implement the strategic plan. If any of them oppose the change, the effort will fail. It is this minimum number of actors upon whom the transition managers must focus action plans to influence commitment levels.

The current level of commitment to the plan will be identified along with the minimum level required to assure successful implementation.

Finally, a recommended approach for obtaining the required level of commitment will be offered for each individual or group identified.

The following stakeholders comprise the critical mass involved in this topic:

1. Highway Patrol management

2. California Department of Transportation

3. Insurance industry

4. Medical profession

5. American Association of Retired Persons

6. Legislature

7. Automotive manufacturers

8. First line supervisors

9. Rank and file personnel

10. Academy staff

11. Public

The next step is to assign assumptions to the players in terms of their current disposition toward the proposed change. Figure 16, Commitment Analysis Chart, indicates the present position (X) of each critical stakeholder. The chart also depicts the minimum commitment (O) that is necessary for the change to occur, with the arrow designating the direction of the movement required to get the necessary commitment. Four levels of commitment are used to describe an individual or group's position: "Will block it," "Let it happen," "Help it happen," and "Make it happen."

COMMITTMENT ANALYSIS

- ☐ WHAT DO YOU NEED FROM THE 'CRITICAL MASS'?
- ☐ WHERE DOES 'CRITICAL MASS' (INDIVIDUALLY) STAND NOW REGARDING THE CHANGE?

KEY PLAYERS	TYPE OF COMMITTMENT			
	Block Change	Let Change Happen	Help Change Happen	Make Change Happen
CHP Management			X → O	
Cal Trans			X → O	
DMV	X → O			
Insurance Industry	X → O			
Medical Profession		X-O		
AARP			X-O	
Legislature		X → O		
Automotive Manufacturers		X → O		
First Line Supervisors			X → O	
Rank & File Personnel		X → O		
Academy Staff			X-O	
Public		X-O		

Legend
X = Where They Are Now
O = Where They Need/Should Be

FIGURE 17: COMMITMENT ANALYSIS

California Highway Patrol Management

As an actor in the critical mass, California Highway Patrol management exercises major influence over other stakeholders. They are presently willing to help the change occur, but due to their key position, they must be moved to "make it happen" in order to ensure the desired change takes place.

Caltrans

If meaningful change in highway design is to occur, Caltrans must not only support the change, but also work to make it happen. They will play a major role in efforts to obtain the support of both the public and the Legislature. They must also be moved from a "let it happen" to "make it happen" position.

Department of Motor Vehicles

This agency is responsible for the implementation of any changes that occur in the area of licensing requirements. They currently have an extensive work load and may not welcome a change that will serve to add to a currently overburdened system. The assumption was made that they presently hold a position between "block change" and "let it happen." To gain the base of support required to implement the change, they will have to be moved at least into the "let it happen" position.

They must be made to understand their fundamental role as it relates to the issue and be given assurance they will enjoy the benefits of enhanced public support.

Insurance Industry

The insurance industry may be in a "block change" position due to the uncertainty of how the change will affect their premiums. They have proven to exercise considerable influence over the Legislature and as such they must be moved to the "let it happen" position. The industry must be sold on the long term benefits of the change as it should relate to an overall reduction in claims.

Legislature

This is one of the most critical members of the "critical mass" because of its public policy and control of funds. The Legislature may offer philosophical support to the change, but will be extremely sensitive to its constituency of older voters. The changes can occur if the Legislature remains in the "let it happen" position, however, ideally they can be moved to "help change happen." It is crucial they do not move into the "block change" position as this would certainly devastate the overall change.

Automotive Manufacturers

Manufacturers, while eager to gain public support through improving safety, are profit motivated and certainly cautious when it comes to change. They will resist mandated engineering changes unless they are convinced the public will be willing to pay for them. This group also enjoys a great deal of political clout and as such they must be moved from the "block change" to "let it happen" position. As the changes are "sold" to the public in terms of the overall benefits to all motorists, they should enjoy the public support necessary to market the changes and retain their current profit margins.

First Line Supervisors

This group is critical to the implementation of the plan. Presently, they are only viewed as being positioned to "let it happen." They definitely need to be moved to the "help it happen" category. Once the policies are implemented, this group will carry out the provisions of the plan at the supervisory level. They will play a pivotal role in ensuring the plan is functioning effectively at the operational level. It must be reaffirmed to them that as a public service organization, the long term success of the Highway Patrol is predicated on this type of response to the needs of the motoring public.

Rank and File Personnel

This is where any policies are made or broken. The overall success of the change hinges on the support of this group. They are presently seen only barely inside the "let it happen" position. This is not acceptable and, if the efforts of the plan are to be worthwhile, this group must be moved beyond the "let it happen" category and into the "help it happen" position. This group has a low readiness, but certainly a high capability for change and much effort will have to be built into the transition plan to not only move this group into the desired level, but keep them there.

With the identification of commitment obtained and commitment needed for successful implementation of the plan, it is then vitally important to spend the necessary time and energy to achieve the desired levels.

MANAGEMENT STRUCTURE

The transition from the present to the planned future will require a management structure well suited to the task. Its precise nature will be temporary and will focus precisely on the change process. This structure will allow for the concentration necessary without the distractions of other operational concerns.

The transition required for implementation of the previously described policies will call for a project manager. The project manager will be given the required authority to ensure the changes are occurring on the predetermined time line. This person will have to possess outstanding management and interpersonal skills. He or she will be the focal point of the change and will have to "champion" its movement through the organization.

The project manager will most likely utilize a task force comprised of members from varying levels of the organization. Each member of the task force will be given specific roles and responsibilities and be held directly accountable to the project manager.

PLAN_TECHNOLOGIES

There are a wide range of technologies available to support implementation and assist in managing the transition period. Following are several intervention technologies which appear to be appropriate for the circumstances presented.

1. Educational Interventions

   This can be accomplished in a series of meetings and classroom situations involving various stakeholders.

2. Responsibility Charting

The decisions or actions necessary to carry out the transition are noted and responsibility for action is assigned to each participant. The assigned actions include: Responsibility, approval, support, and information. Responsibility charting clarifies the function that is required to implement the desired change, reduces ambiguity, and limits wasted energy.

3. Creation of a "Doom Scenario"

A scenario based on the identified trends and events, which portrays what could occur without planning (worst case). This clarifies the need for planning and stakeholder involvement.

4. Team Building

When individuals are working in a transition state, there is a considerable amount of uncertainty regarding roles and expectations. Team building is a process that may be employed to assist with the appropriate management of communication and the resolution of conflict.

5. Surveys

Surveys and personal dialogue with the public provide the data necessary to gauge the compatibility between organizational values and public needs. This tool should be used periodically throughout the transition.

6. Confrontation Meetings

Meetings of individuals involved in change which enhance awareness, clarify present values and roles, and result in further input.

7. Staying Visible and Communicating

Visibility and communication are critical elements of the project manager's role. Being highly visible will encourage the type of positive communication necessary for the project manager to successfully move the change through the organization.

8. Checkpoints

The project manager must periodically evaluate progress at various points on the time line. This will assist in keeping all actors focused and allow for incremental successes.

Section V

Conclusions and Future Implications

California is undergoing a demographic transformation that will have a significant impact on its traffic systems over the next several years. During the past century, extraordinary breakthroughs in health care have all but eliminated many of the diseases that used to keep us dying young. The Census Bureau projects that there will be more than 35 million Americans over 65 by the turn of the century, accounting for nearly one-seventh of the population. By 2040, the National Institute on Aging projects that 87 million Americans will be over 65. With continuing improvements in life-style and medical technology, the over-65 population in the year 2000 may even reach 40 to 45 million, representing as much as one-fifth of the total population. Because of its favorable climate, abundant recreational resources, and current population increases, California's share of this group will continue to increase at a faster rate than that of other states.

The study found that we should anticipate this older population will be healthier and much more mobile than their predecessors, and on the whole they will have much higher expectations to retain a level of mobility which will meet the needs of their life-style.

The central issue is one of the impact of this aging population on the management of California's traffic systems by the year 2000 and is best discussed in terms of the sub-issues that give it shape.

The transportation needs of older Californians will increase year by year. Large numbers of these individuals are living outside central cities, and with few exceptions, the automobile is the primary, and in many cases the only, mode of transportation for meeting the needs of older people. The study found that while there have been numerous advances in both automobile and highway design, the older drivers were not considered in most design assumptions. Many new features in automobiles do not take into account the physical declination which begins to occur as a part of the aging process. The requisite visual and cognitive abilities to manipulate much of the new gadgetry is just not there in many older drivers. Highway improvements, including roadway telemetry and the new Traffic Operation Center concept, have also all but excluded this group in the planning component.

Today's older drivers are more vociferous concerning the current conditions they face and many feel the driving environment is "hostile" and difficult for them to manage.

The challenge for those individuals and agencies charged with the responsibility for planning, constructing, and maintaining California's traffic systems, will be to create a partnership wherein the needs of this group are fully considered in all phases. Planners must recognize the fact that most of these older people, whose entire lives have in some respect revolved around the use of the automobile as an individual method of

transportation, will continue to operate motor vehicles, and they will continue to operate those motor vehicles at a time when their physical and mental conditions are subject to a loss of acuity. It is apparent that the time has arrived for traffic systems managers to recognize this and undertake a thorough analysis, studying the current conditions coupled with the forecast of the future. This analysis will reveal a need to pursue the strategy outlined in this report.

The California Highway Patrol was identified as best suited to serve as the catalyst due to their statewide traffic management responsibilities. The stated mission of that Department in this study was to ensure the success of both the Department and its members by recognizing the on-highway transportation needs of California's older citizens and thereby ensuring a safe, effective transportation system.

The recommended strategy of establishing a comprehensive training program, coupled with the establishment of a multi-agency task force to study the issue and recommend necessary changes, can accomplish that mission and result in a better, more effective traffic system for all Californians.

Implementation of the strategy will necessarily involve a major commitment and a significant expenditure of valuable resources in a time when governmental agencies are being asked to do more with less. However, as the research

concluded, there not only exists a demonstrable need, but equally important, a concomitant broad-based support for its implementation.

IMPLICATIONS

The California Highway Patrol is a very large, highly specialized organization. Over the years the Patrol has taken on a number of programs that are related to its primary mission, but in some cases the relationship is not clearly defined for its membership. The result has at times been confusion and a fragmentation amongst management, supervisors, and the rank and file. In certain instances these personnel have lacked commitment and have done little to ensure success due to this ambivalence.

An obvious implication of this study is the need to train and instill in managers and supervisors the importance of this strategy and, most critical, its direct relationship to the primary mission of the organization. Competent management and supervision with a strong commitment is a prerequisite to the success of the recommended policy strategy. The study pointed out the difficulty encountered in implementing new programs with people who are by nature resistant to change. However, successful organizations of the future will be able to acknowledge and adapt to the diverse nature of their environments. It is hoped that traffic systems managers will view this project as a mechanism to work in concert toward a better future, one that includes all segments of our society.

Appendixes

APPENDIX A

LETTERS TO PARTICIPANTS IN NOMINAL GROUP

Dear :

As I explained in our original conversation, I am taking part in a two-year program established by the Police Officer Standards and Training (P.O.S.T.). The concerns of this program focus on future issues affecting law enforcement. Presently I am gathering information for a project I am preparing for that program. Part of that information gathering process is called a "nominal group" technique.

I am requesting your participation in the nominal group exercise scheduled for Wednesday, February 15, 1990. We will begin at 9:00 a.m. in the Border Division Headquarters (map enclosed).

My project requires a group session to identify trends and events over the next 11 years which relate to the impact of the aging population on traffic systems management in San Diego County.

I am anticipating our meeting will last no more than three hours.

Please advise if you are able to participate. As soon as I receive a confirmation of your attendance, I will forward additional information.

I thank you in advance for your participation.

Sincerely,

D. J. WATKINS
Assistant Chief
California Highway Patrol

Enclosure

Dear :

I appreciate your agreement to participate in the nominal group exercise scheduled for February 15, 1990. As I indicated in my letter, we will begin at 9:00 a.m. in the Border Division Headquarters. I have also enclosed an additional map.

We will be working to identify future trends and events that may impact the issue of the aging population and traffic systems management in San Diego County by the year 2000. Below are two definitions that should prove helpful.

Trends - Prevailing patterns or inclinations over a period of time which show a movement in a certain direction. As an example, "The speeds on our local highway appear to be increasing."

Events - Occurrences which happen at a particular place and time. An example would be, "The first human heart transplant was performed."

We will utilize the nominal group technique to identify as many trends and events we feel could impact our issue. We will use this process to then distill our list down to the few we feel are the most significant.

The information we develop will be the basis for the report I prepare, therefore, you can appreciate the critical role you will be playing in the process.

I would appreciate your taking a few moments sometime prior to our meeting to try and identify those trends and events you feel are relevant. If you would then bring that list with you to our meeting, it would be very helpful.

Again, I wish to thank you for your participation, and I am looking forward to seeing you on the 15th. If you do have any questions prior to that date, please feel free to call me.

Sincerely,

D. J. WATKINS
Assistant Chief
California Highway Patrol

APPENDIX_B

LIST_OF_TRENDS_AND_EVENTS

CANDIDATE_TRENDS_IDENTIFIED_BY_NOMINAL_GROUPS

1. Roadway design
2. Highway speeds
3. Distribution of wealth
4. Mobility of older persons
5. Health/Longevity
6. Work force composition, specifically the percentage of older persons
7. Demographics of suburban areas
8. Cost of motor vehicle operation
9. Availability of alternative means of transportation
10. Freeway congestion
11. East urban corridor
12. Fuel costs
13. Number of retirees in California
14. Cost of housing
15. High tech traffic management systems
16. Highway speed differential
17. Seasonal population shift
18. Service as a financial industry
19. Highway speeds, both legal and customary
20. Emergency medical responses
21. Political power of older citizens
22. Drug activity in California's major cities
23. Availability of elderly care centers
24. Perception of California as an undesirable state to live
25. Public sentiment toward aging population
26. High technology systems in the work place
27. Advancements in geriatric care
28. Financial resources devoted to traffic systems management
29. Research in the field of automotive technology
30. Law enforcement training requirements

CANDIDATE_EVENTS_IDENTIFIED_BY_NOMINAL_GROUP

1. Major recession in state.
2. Speed limit raised to 65 mph on all California freeways and rural highways.
3. Change in policy in Baja drives retirees north into California.
4. Mid East crisis results in fuel costs reaching $3.00 per gallon.
5. Social Security System collapses.
6. Retirees' driver's licenses are restricted to certain hours to relieve traffic congestion.
7. No growth policy is enacted.
8. California experiences a major earthquake (>7.5)
9. Significant military operation involving the United States.
10. Trolley system is expanded and offers service to several cities.
11. Medical breakthrough finds cures for cancer and heart disease.
12. Rationing of gasoline is imposed.
13. Inflation reached 20 percent.
14. Drug usage is decriminalized.
15. Cost of housing in California becomes highest in the nation.
16. Legislation is passed which increases the physical standards for driver's licenses.
17. Alternative motor vehicle fuel is developed.
18. Stock market crash sends country into depression.
19. Radar guidance systems are made mandatory in all vehicles operating on California highways.
20. Major earthquake in Los Angeles area destroys 75 percent of area freeways.
21. Budget crisis halts all California highway construction.

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