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Livable Communities and Citizen Perceptions: A Report to the Las Vegas Environmental Monitoring for Public Access and Community Tracking (EMPACT) Program

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Section I
Introduction

Assessing an area's quality of life has become one of the most fundamental exercises of communities and represents where the social sciences can provide assistance to communities. Quality of life issues have become widespread because they address the fundamental need to ask the basic but vitally important question, "how can we make our community a better place to live?" This simple question belies the fact that evaluating quality of life is not an easy task. Implicit in this are fundamental complexities that underscore any human community, regardless of size. For example, while the tangible effects of such phenomenon as environmental pollution or contamination may be well understood, the effect of air pollution on quality of life is harder to define. Thus, as we have argued in other studies, an understanding of quality of life must depend largely on individual perceptions of problems affecting the community as a whole (Soden, et al, 1999).

Further complicating matters is the nature of human communities and organizations themselves. Cities form as people gather, but their maturation does not occur linearly nor are they based on a homogeneous set of preferences. Rather, they emerge from a multiple set of interests, many of which are in conflict with others, resulting in a complex and varied environment that is the modern city. The diversity of interests in the modern city and the impact of economic forces present challenges in determining the quality of life. Quality of life assessments, therefore must incorporate the fundamental notion that, the varied "interests" which form a community create differences in variables affecting community perceptions of quality of life issues. Thus one factor that may be of importance to one segment of the community, may be of limited importance to another. Thus, any evaluation of quality of life must incorporate the fundamental and distinctive interests and concerns which play a pivotal role in determining residents' roles and perceptions of the quality of life in their community.

Environmental Monitoring for Public Access and Community Tracking

This report explores one aspect of the quality of life equation, that of the environment and citizen attitudes about the environment in Las Vegas, Nevada. It is part of a larger study conducted under the Environmental Monitoring for Public Access and Community Tracking (EMPACT) program. EMPACT is

a community partnership between the University of Nevada at Las Vegas and the City of Las Vegas funded by the U.S. Environmental Protection Agency (EPA). The ultimate goal of EMPACT is to provide public access to clearly-communicated, timely, useful and accurate environmental monitoring data in an ongoing and sustainable fashion. The component of EMPACT discussed in this report focuses on the public's attitudes about the environment and how and where they obtain information about the environment that may alter there behaviors in order to enhance their quality of life.

With this in mind, when we consider the huge literature that has been developed since the modern environmental movement emerged over thirty years ago, it is clear that there are a few things about which the science, policy making and public-at-large can agree upon. One of these is that the public, by-and-large, is at a distinct disadvantage in the policy making process because they do not have the requisite knowledge necessary to understand the issues at hand. This is referred to as the technical information quandary, one of the most critical policy concerns of environmental policy (Pierce and Lovrich, 1986; Soden, 1990). EMPACT is one program designed in response to the quandary. It lends itself to the problem by looking to the general public for direction about how to make them better informed. For example, telling us on the six o'clock news that air quality was poor today is too late. Also, telling the general public that x parts per million of contaminants are in the air makes no impression. Policy makers must be made aware that the problems are scientifically defined, but their impacts on individual citizens are not understood in the lexicon of science. Put simply, what the scientific community wants to do is talk to Jane Q. Public but has typically been unable to do so. How then, EMPACT proposes, can we address this problem? While there are simple answers, such as having newscasts tell us that high pollen counts may adversely effect the elderly or young children tomorrow, this problem involves a multitude of interests and behaviors which EMPACT is exploring.

The EMPACT Survey

A critical component of the policy process today is developing a clear understanding of how the public feels about issues. While twenty years ago public opinion was primarily a concern of electoral politics, today most major policy issues are addressed in one way or another through public opinion polls. Thus, any consideration of the environment and how the public can be informed of environmental

conditions leads us to consider polling their opinions and detail their behaviors through the use of survey techniques. Surveys to address environmental issues abound (Dunlap, Gallup and Gallup, 1999) and have documented the high degree of public concern for the environment over the past three decades. Likewise, they have shown consistently, that while considered important, the environment falls among second tier public policy issues after education, crime and the economy, the perennial top three public agenda items. However, one thing has been made clear. The public has shifted away from the industrial paradigm that marked public attitudes in the first half of the twentieth century towards a paradigm or worldview that is more sensitive about the environment, and places concern about the natural world on higher social, economic and psychological plane than existed prior to the 1970s (Dunlap and VanLiere, 1978; Catton and Dunlap, 1980; Milbrath, 1984; Steel and Soden, 1989; Steel, Soden and Warner, 1990; Dunlap and Mertig, 1992).

The gathering of public opinion is often the essential starting point or baseline that directs the policy process and for making adjustments to policies. In a democratic society we can never know too much about the body politic. As the town hall meeting has fallen to the wayside, especially in large cities and the sprawling suburban based metroplexes of the west, the public opinion poll has, in many ways, become a surrogate for measuring public support and opposition to policies and for ascertaining how to best communicate with the general public. Thus, to develop a measure of where the public stands about environmental issues, and how EMPACT's goals of improving public access to environmental monitoring information might best develop based on knowledge and use of communication options, a survey was designed and undertaken.

The survey was designed by the EMPACT program team and implemented by the Cannon Center for Survey Research at the University of Nevada at Las Vegas in February, 1999. The survey and details of its implementation are included in Appendix A. The survey respondents were classified by zip code in order to separate City of Las Vegas residents from those outside the city limits, Las Vegas Metropolitan area residents, for comparative purposes. The survey samples and margin of error are;

City of Las Vegas	Sample Size = 336	Margin of Error = $\pm$ 5% at 95% Confidence Level
Las Vegas Valley	Sample Size = 228	Margin of Error = $\pm$ 5% at 95% Confidence Level
Las Vegas Metro	Sample Size = 564	Margin of Error = $\pm$ 5% at 95% Confidence Level

Organization of the Report

This report is based on the environmental aspects of the EMPACT Survey (a separate report focuses on quality of life issues) and, as such does not give full consideration to the entire EMPACT Program or the numerous issues attendant to growth and management of the environment in Las Vegas. Subsequently, it must be taken in context as part of the larger undertaking. In the next section we will look at the survey responses about environmental issues to determine the general preferences that exist among the two samples. In the third section, potential sources of variation are considered that may account for how respondents prioritize their preferences and attitudes relating to the environment. The fourth section explores these sources to determine if they, in fact, have an impact on how environmental attitudes are developed among the survey participants. The final section discusses the policy challenges that are suggested by the findings and proposes recommendations for the EMPACT Program.

Section II: Environmental Issues: The Core of Quality of Life?

Introduction

In order to address the attitude patterns concerning the environment and its relationship to quality of life, several questions in the EMPACT Survey were designed around environmental concerns prevalent in the Las Vegas valley. The public's general concern provides a glimpse of how likely they will be motivated to become informed about environmental issues, operating under the assumption that the more interested they are the more likely they will seek information. EMPACT is directed towards concerns that the public should be better informed, and is a concerted effort to avoid confusion and conflict over environmental monitoring in order to enhance the use of environmental data among the residents of Las Vegas. In this regard, it is a form of communitarianism--the energizing of communities to work out their own futures, with people coming together to express their concerns, to set the agenda and take action-- is achievable (Rivlin, 1994). While it inconceivable to include everyone in the policy process, either as a result of geographic restrictions or lack of interest on the part of many, the opinions of the community are, in many ways, the fundamental building block for bridging the gap between the technical elite, political elite, activists, and the general public. Put another way, an understanding of public policy issues requires a data base about the public, in the same way that a political candidate explores the electoral atmosphere. The position of the general public becomes the baseline for further action by citizens groups, public institutions and individuals, consistent with the idea of communitarianism.

Salience and the Environment

Issue salience is a ranking of issues and having to make choices about one issue over another. In the environmental area, there are decisions that have to be made about what environmental problems to address. The reality is that governments, nor the private sector, have enough resources to solve all the problems which confront the contemporary city. Opportunity costs are involved, meaning that if we choose to do one thing we are unable to do another. In the attempt to determine the public's level of issue salience pertaining to the Nevada Test Site, eight issues are relevant to the decision process. Consequently, how we choose to address issues tells us the salience, or the most important issues, on the multiple agenda that defines public policy. To address this issue the survey asked respondents two open-ended about environmental issues. The first

asked what they considered the most important issue in the Las Vegas valley that needs to be addressed in the next five years, while the second asked what is the most critical issue that needs to be addressed within the next year. The first allows individuals to consider what is happening n the community and project concerns about needs and services beyond the immediate period. The second places the problem into the current context and calls for a decision about what to do today. The time differences are hypothesized as forcing people to deal with the immediacy of the issue, as well as what they believe may be a problem in the future. In Table 1, responses are reported for both questions. Most notable, we see that air quality tops all three samples as an issue of considerable importance. Both city residents and metroplex residents rank air quality as their number one priority in the immediate and five-year periods. The Las Vegas valley's geographic condition makes air quality a serious environmental and health problem, a problem that has an effect on nearly all residents. Because of its salience, it is expected that we should also find that people are more likely to pay attention to environmental monitoring and subsequent reporting related to air quality.

Not surprising, water quality emerges in near similar fashion across all groups and in both time categories. Las Vegas's water problems are well-known and the spectacular growth of the past twenty years have placed strains on the delivery of water and the search for high quality water. Water quality in the Colorado River is also dramatically impacted by the Las Vegas valley, especially during rain episodes, when storm water carries the residue of surface streets to the river through the Las Vegas wash. The degree to which the public pays attention to water quality issues will be an important factor in developing the water delivery system the community will need in the next century.

Traffic and urban growth both follow and reflect the problems that all western cities must contend. Namely, the economic boom of the 1990s has brought with it urban sprawl and pressure on road systems designed for smaller populations. This presents a catch-22 of sorts, in that you need people to meet the job demands created by the recent boom, but in turn this influx of new residents pushes infrastructure to the limits. In the data you see groupings of these data as well, but overall the concerns reported are a function of growth and expansion that has fueled Las Vegas into the national limelight for reasons other than its casinos and resorts. Now a highly desirable place to live, the environment is perceived as strained by this growth, a strain which we may find impacting quality of life. There is strong evidence that both the short term (one year) and the longer term (five years) are seen as requiring equal attention, a point that may make program

development for public access about environmental conditions an easier task than it would be if there were a more diverse set of answers.

Table 1
Issue Salience Related to the Environment in the Las Vegas Valley

	County		*Las Vegas - City of LasVegas*		*Metroplex*							
	Five Years		***Next Year***		***Five Years***		***Next Year***		***Five Years***		***Next Year***	
Issue	#	%	#	%	#	%	#	%	#	%	#	%
Air Quality	87	40.1	79	40.7	130	38.7	104	34.4	217	38.5	183	36.9
Water Quality	43	18.9	28	14.4	56	16.7	61	20.2	99	17.6	89	17.9
Traffic	12	5.3	25	12.9	18	5.4	34	11.3	30	5.3	59	11.9
Growth/Urban Growth	13	5.7	19	9.8	27	8.0	22	7.3	40	7.1	41	8.3
Yucca Mountain	6	2.6	6	3.1	10	3.0	5	1.7	16	2.8	11	2.2
Air and Water Quality	10	4.4	11	5.7	18	5.4	13	4.3	28	5.0	24	4.8
Air and Traffic	5	2.2	4	2.1	7	2.1	7	2.3	12	2.1	11	2.2
Air and Growth	2	0.9			2	0.6	7	2.3	4	0.7	7	1.4
Air and Yucca Mtn.					1	0.3			1	0.2		
Air and Other Environmental Issues	3	1.3					2	0.7	3	0.5	2	0.4
Air and Quality of Life Issues	1	0.4					1	0.3	1	0.2	1	0.2
Water and Traffic	1	0.4							1	0.2		
Water and Growth					3	0.9			3	0.5		
Water and Yucca Mtn.	1	0.4							1	0.2		
Water and Other Environmental Issues			1	.5	1	0.3			1	0.2	1	0.2
Water and Quality of Life Issues					1	0.3	1	0.3	1	0.2	1	0.2
Traffic and Growth					2	0.6	1	0.3	2	0.4	1	0.2
Traffic and Other Environmental Concerns			1	.5			1	0.3			2	0.4
Traffic and Other Quality of Life Issues					1	0.3			1	0.2		
Growth and Yucca Mtn.					1	0.3	1	0.3	1	0.2		
Growth and Other Environmental Concerns							2	0.7			2	0.4
Growth and Quality of Life Issues			1	0.5	1	0.3			1	0.2	1	0.2
Yucca Mtn. and Other Environmental Issues	1	0.4							1	0.2		
Air, Water and Traffic	1	0.4	1	0.5	1	0.3			2	0.4	1	0.2
Air, Water and Growth					1	0.3			1	0.2		
Air, Water and Other Environmental Issues					3	0.9			3	0.5		
Air, Traffic and Growth					2	0.6	2	0.7	2	0.4	2	0.4
Air, Traffic and Other Quality of Life Issues	10.4				1	0.3	1	0.3	3	0.5	1	0.2
Air, Water, Growth and Other							1	0.2	1	0.2		

Quality of Life Issues												
Air, Water, Traffic, Growth and Other Quality of Life Issues	1	0.4					1	0.2	1	0.2		
Other Environmental Issues	18	7.9	9	4.6	24	7.1	21	7.0	42	7.4	30	6.0
Other Quality of Life Issues	8	3.5	9	4.6	11	3.3	17	5.6	19	3.4	26	5.2
Do Not Know	6	2.6			4	1.2			10	1.8		
No Response	8	3.5			8	2.4			16	2.8		
Total	228	100.0	194	100.0	336	100.0	302	100.0	564	100.0	302	100.0

Citizen Concerns

Critical to the public's involvement in policy process is the level of concern that citizen's have about key issues. If there is no concern among a component of the community, it is highly unlikely that they will become active in the policy process, nor will they expend energy to find out more about key issues. Put simply, the level of public concern makes it easier to transfer important information to the general public. Thousands of efforts to involve the public in the decision making process and to inform them about risks, programs, etc., have been for not. Why? Because the public, every one of us, chooses to be informed about what we believe is important. Until an issue, such as air quality, has an impact on ourselves or those we are close to, it is unlikely we will pay more than scant attention to what may be occurring. In our personal deliberations we select out news or information about issues that are low stake concerns. Until the stakes are raised because of a personal link, we go through a process of "rational ignorance." Rational ignorance is nothing but a self-selection process made because of limited resources (i.e., time) or limited interest. In an information era where we are burdened by news, infomercials, and documentation in a ceaseless barrage, we are forced to determine what we can learn, or more aptly, can absorb. By doing so we are not discounting that someone else may find a particular issue important, it simply is not on our personal radar screen and because we cannot be knowledgeable about everything it is rational to ignore certain issues. For EMPACT, as well as other programs, it is important to educate the public about issues with which it is concerned. In doing so, the rational ignorance that may exist about air, water, traffic or urban sprawl needs to be overcome by explaining how an individual is effected and how slight behavioral modifications may improve their personal quality of life.

In order to evaluate the opinions of citizens of Las Vegas about key environmental issues, factors concerned with air and water quality were explored through a scaled question recording level of concern from "not at all concerned" to "very concerned." A large number of factors were proposed to respondents

about air and water quality. By presenting survey participants with these factors, the issues are broken-down into sub-components and provide a way of pin-pointing areas within the issues, where they already see the stakes high enough, that can be used to bring the public out of the rational ignorance condition by providing the appropriate information. In time, it is hoped they will become more interested in the other factors through a domino effect.

Air Quality

In Table 2, five factors associated with air quality are presented. Citizen concerns are shown for the City, County and combined Metroplex. (Missing data and non-responses are not included due to space consideration.) Reduction in visibility due to inversions and other factors (i.e., smog) is a major concern in each area for over one-half of the respondents. Only five percent do not see this as a problem while a prepondernace (over 80 percent) report they are on the concerned end of the scale (based on responses on the scale of 4 and 5 combined).

Despite our reliance on vehicles we are aware of the environmental externalities they create and only five percent indicate they are not concerned with this factor. Well-over 80 percent report levels of concern and in each area near identical concerns exist. Construction activities in Las Vegas are at an all-time high as the urban sprawl into what was desert only a few years ago continues at a rapid pace. At the same time, the Strip skyline is being remade, now over shadowing what were the world's largest hotels less than a decade ago with mammoth resort-casinos. Construction involves a dramatic alteration of the natural environment and disturbs the ground creating dust and haze. In Las Vegas this factor is a concern among respondents but not at the same levels as air pollution from motor vehicles and reduced visibility. While it contributes to the latter, for many, especially those who fall into the neutral category, about one-fifth in all areas, this may be seen as part of the price of progress. An inevitable factor that will diminish as construction wanes in the future as growth and the economy slow down. Like all of the southwest, desert winds impact the Las Vegas valley making air quality turn from pristine to a nearly non-visibility condition in a short period of time. The level of concern about this nature-based problem is lower compared against the issues of general visibility and air pollution from cars and does not result in a majority of respondents in the concerned area of the scale for any of the samples. Little can be done about this problem. However,

those people who are made aware of the contribution of wind conditions to allergies, respiratory problems and the like can avoid this problem by being more attentive to available information, such as newscasts. When asked specifically about material in the air that may cause allergies, respondents exhibit more concern than they did in consideration of winds and construction, both which may contribute to allergies but are interpreted in a different fashion. In all three areas well over one half are concerned about this problem. Moreover, the desert southwest has been transformed into an oasis as technology allows us to water the desert. However, in doing so we have imported numerous plant species that thrive in the climate, but are huge producers of pollen and molds (i.e., mulberry trees). In many ways this is a problem of our own making, but opportunities to avoid exposure will clearly increase an individual's quality of life and the necessary monitoring can be easily undertaking. All-in-all, there is remarkable consistency in the data across all both sub-samples, suggesting that programs associated with air quality do not have to be tailored to one segment of the population over the other.

Table 2
Citizen Concerns about Factors of Air Quality
Frequency (%)*

Not at all Concerned					***Very Concerned***
Factor					
Area	**1**	**2**	**3**	**4**	**5**
Reduction in visibility					
Las Vegas- County	13 (5.7)	10 (4.4)	44 (19.3)	43 (18.9)	117 (51.3)
City of Las Vegas	18 (5.4)	18 (5.4)	57 (17.0)	63 (18.8)	177 (52.7)
Metroplex	31 (5.5)	28 (5.0)	101 (17.9)	106 (18.8)	294 (52.1)
Air pollution from motor vehicles					
Las Vegas- County	3 (1.3)	4 (1.8)	29 (12.7)	46 (20.2)	146 (64.0)
City of Las Vegas	10 (3.0)	12 (3.6)	38 (11.3)	66 (19.6)	209 (62.2)
Metroplex	13 (2.3)	16 (2.8)	67 (11.9)	112 (19.9)	355 (62.9)
Air pollution from construction					
Las Vegas- County	5 (2.2)	16 (7.0)	45 (19.7)	59 (25.9)	103 (45.2)
City of Las Vegas	15 (4.5)	19 (5.7)	74 (22.0)	80 (23.8)	147 (43.8)
Metroplex	20 (3.5)	35 (6.2)	119 (21.1)	139 (24.6)	250 (44.3)
Dust from winds					
Las Vegas- County	25 (11.0)	21 (9.2)	60 (26.3)	46 (20.2)	73 (32.0)
City of Las Vegas	40 (11.9)	35 (10.4)	91 (27.1)	68 (20.2)	95 (28.3)
Metroplex	65 (11.5)	56 (9.9)	151 (26.8)	114 (20.2)	168 (29.8)
Airborne allergens					
Las Vegas- County	21 (9.2)	18 (7.9)	48 (21.1)	37 (16.2)	100 (43.9)
City of Las Vegas	25 (7.4)	33 (9.8)	78 (23.2)	69 (20.5)	125 (37.2)
Metroplex	46 (8.2)	51 (9.0)	126 (22.3)	106 (18.8)	225 (39.9)

*****Missing data and non-responses are not reported. As a result percentages may not add-up to 100%

When asked which of the five air quality factors concerns them the most, in Table 3 we see that air pollution from motor vehicles stands out among one-half of the participants. Traffic and its by-product are huge problems and costly to address short of limiting driving. Our over-dependence on the automobile is also unlikely to reduce in the near to medium term and mass transit has made only marginal in-roads in the western U.S. However, the impacts of air pollution are not difficult to understand. Modifying behaviors however, is a difficult task. Vehicle originating pollution is often viewed with cognitive dissonance. Individuals know they contribute, but somehow can pass the blame on to someone else or another's behaviors, not their own. No other factor is close, by comparison. Reduced visibility and airborne allergens receiving highest concern with only 15 percent of the sample. Construction created dust is a high concern among approximately 13 percent, however, a close look at this may show these residents live in newer areas that experience this problem more dramatically. High winds are of lowest overall concern, linked, we suspect, to the fact that they are a natural phenomenon over which there is no control.

Table 3
Overall Concerns Among Five Air Quality Factors:
Choice of Issue About Which Respondent Has the Most Concern

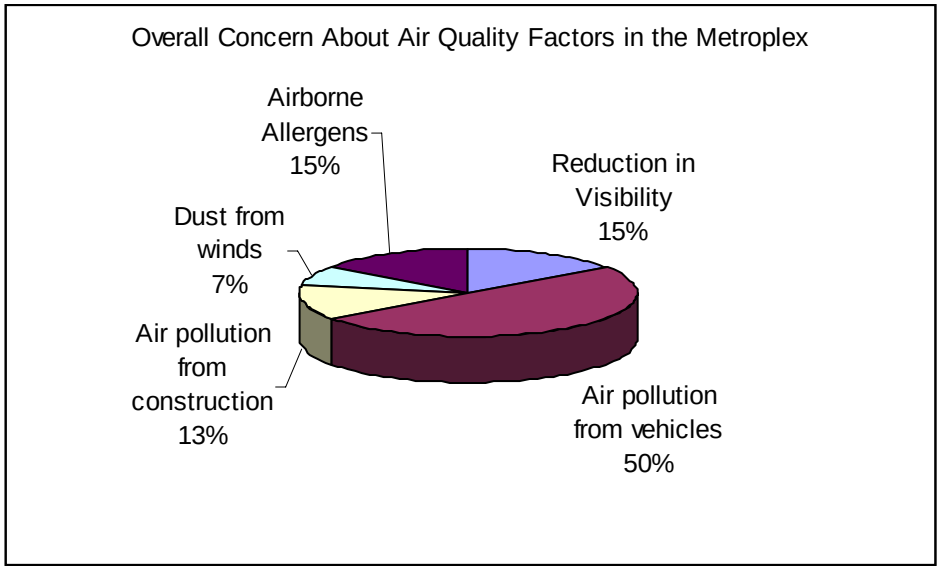
Frequency (%)

Area	***Reduction in visibility***	***Air pollution from motor vehicles***	***Air pollution from construction***	***Dust from winds***	***Airborne allergens***
Las Vegas- County	34 (14.9)	117 (51.3)	24 (10.5)	18 (7.9)	30 (13.2)
City of Las Vegas	51 (15.2)	155 (46.1)	49 (14.6)	19 (5.7)	53 (15.8)
Metroplex	85 (15.1)	272 (48.2)	73 (12.9)	37 (6.6)	83 (14.7)

Water Quality

Water issues in the western United States are the most controversial of all environmental and natural resource issues. The conflict that abounds over the use of water is also not going to go away. Instead, the next twenty years may be the most controversial and conflictual as water rights are hammered-out in the courts and through a policy process that varies dramatically by state. Las Vegas's water disputes are well-known, pitting it against the rest of Nevada and the other states in the Colorado Compact. In addition, its groundwater resources are inconsistent in quality and may be the limiting factor to growth in the not-too-distant future. In Table 4, we see the level of concern among residents of the Las Vegas valley.

When asked about concern regarding the quality of water in the public system, approximately two-thirds in each of the samples reports very high levels of concern, with three-quarters of all respondents in the two concerned response categories. Less than ten percent fall into the categories favoring unconcerned. One problem, however, is determining the publics reason for concern (i.e., taste, color) an issue that future exploration should address through additional phases of the EMPACT program. Concern for depletion of groundwater sources is high



in over half of all responses in all areas. Combined, all those on the concerned side of the scale account for over 70 percent of all responses, and we see that in the county areas over three-quarters report concerns. Lack of concern is exhibited in well less than 10 percent of the cases, reinforcing the long-term concern for water sources among residents of Las Vegas. Pollution of the Las Vegas Wash and Lake Mead has accelerated as more growth has taken the desert away and its percolating ability has been replaced with hard surfaces (streets) that accumulate pollutants and become pipelines carrying the valley's road pollutants into Lake Mead via the Las Vegas Wash. Citizen concern for this problem exceeds three-quarters across all sample areas. Few feel this is an issue of no concern, but as the city grows how the wash is maintained and Lake Mead, the ultimate receptacle, is protected is a topic that will require significant effort. Lake Mead's water is generally of exceptional quality, stemming from the snow-covered Rockies where the Colorado River begins. It has become a favorite playground for the residents of Las Vegas and has an economic impact as well as a place in the environmental system of the region (Soden,

1996?). When asked about concerns relating to recreation use of Lake Mead by the survey respondents, we see the lowest level of concern of all the water quality factors. Less than 30 percent in each of the samples reports highest levels of concern and well less than 50 percent report any concern and one-quarter are neutral in all areas. Most likely, the reality is that Lake Mead is not used by as many area residents as we might believe. While some are avid water skiers, jet ski advocates or fishermen, the majority of Las Vegans rarely, if ever, go to the lake. Consequently, they see it as less important than other factors that are more visible in their immediate surroundings and for which the stakes are higher from their personal perspective.

In Table 5, we find that when asked which of the four water quality factors an individual has the most concern about, we find that water quality from the public system is clearly the most often reported factor of concern. This clearly is of greater concern than all the other factors, but some caution may be heeded because we do not know the degree of concern by comparison to the other variables, nor what is understood in the respondent's mind when water quality is under consideration. Depletion of groundwater and pollution of Lake Mead via the Las Vegas Wash each are priority concerns among about 20 percent of those surveyed, suggesting significant segments of the population that see a problem that needs to be addressed. Lake Mead as a recreational venue is of concern to a very small percentage of the population, however, as in all instances a small portion of the population has interests that must be served. In the case of Lake Mead, the stewardship of the National Park Service allows the city and county governments to ignore the issue in many respects. However, for environmental monitoring, lake advocates can be informed and indeed are likely to shed the veil of rational ignorance quicker about this factor than the majority of the population is about the other factors.

Exposure to Environmental Health Problems

Thirty years ago with the passage of the National Environmental Protection Act, the link was made between the environment and health by incorporating the Public Health Service into the newly formed Environmental Protection Agency (EPA). Increasingly, environmental factors and health factors cannot be separated. Areas like Las Vegas must contend with health-related problems that are not transmitted from one person to another, but are carried through environmental media of air, water, food and the soil. Exposure to these factors can alter an individual's health dramatically. One programmatic

opportunity for EMPACT is to understand the level of these exposures and work towards sharing environmental monitoring based data that can be made available in order to allow those who are most severely effected to avoid, when possible, exposures that may have a negative health effect. To ascertain the level of environmental health conditions, the EMPACT survey asked about six health conditions and whether the survey respondent or someone in the household suffered from the conditions. In Table 6 results for those reporting the existence of a condition are reported. Clearly, allergies

Table 4
Citizen Concerns about Factors of Water Quality

Frequency (%)*

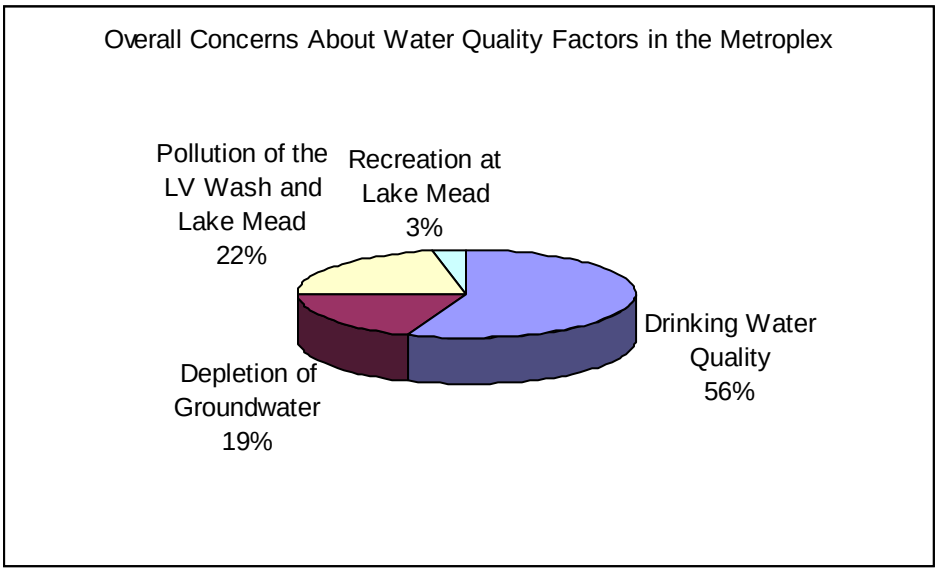
	Not at all Concerned				***Very Concerned***
Factor Area	**1**	**2**	**3**	**4**	**5**
Drinking Water Quality from Public Systems					
Las Vegas- County	10 (4.4)	7 (3.1)	35 (15.4)	25 (11.0)	151 (66.2)
City of Las Vegas	19 (5.7)	16 (4.8)	41 (12.2)	56 (16.7)	202 (60.1)
Metroplex	29 (5.1)	23 (4.1)	76 (13.5)	81(14.4)	353 (62.6)
Depletion of Groundwater					
Las Vegas- County	5 (2.2)	6 (2.6)	38 (16.7)	44 (19.3)	129 (56.6)
City of Las Vegas	14 (4.2)	11 (3.3)	47 (14.0)	74 (22.0)	171 (50.9)
Metroplex	19 (3.4)	17 (3.0)	85 (15.1)	118 (20.9)	300 (53.2)
Pollution of the Las Vegas Wash and Lake Mead					
Las Vegas- County	6 (2.6)	4 (1.8)	20 (8.8)	55 (24.1)	134 (58.8)
City of Las Vegas	7 (2.1)	12 (3.6)	42 (12.5)	78 (23.2)	186 (55.4)
Metroplex	13 (2.3)	16 (2.8)	62 (11.0)	133 (23.6)	320 (56.7)
Recreational Activities at Lake Mead					
Las Vegas- County	23 (10.1)	27 (11.8)	58 (25.4)	38 (16.7)	65 (28.5)
City of Las Vegas	31 (9.2)	46 (13.7)	85 (25.3)	68 (20.2)	78 (23.2)
Metroplex	54 (9.6)	73 (12.9)	143 (25.4)	106 (18.8)	143 (25.4)

Table 5
Overall Concerns Among Four Water Quality Factors:
Choice of Issue About Which Respondent Has the Most Concern

Frequency (%)*

Area	*Drinking Water Quality from Public Systems*	*Depletion of Groundwater*	*Pollution of the Las Vegas Wash and Lake Mead*	*Recreational Activities at Lake Mead*
Las Vegas- County	127 (55.7)	42 (18.4)	51 (22.4)	4 (1.8)
City of Las Vegas	163(52.9)	59 (19.2)	62 (20.1)	13 (4.2)
Metroplex	290 (54.1)	101 (18.8)	113 (21.1)	17 (3.2)

*****Missing data and non-responses are not reported. As a result percentages may not add-up to 100%



exist among more respondents than any other condition. The allergy season in Las Vegas can be quite devastating to those susceptible to the conditions that exist. While a host of allergy possibilities exist, for EMPACT the concern is working to keep people better informed about environmental conditions that may be harmful. Asthma exists among 20 percent of the households along with bronchitis. Heart and lung illnesses and heart disease exist among approximately 10 percent of the sample, with skin cancer being the lowest recorded incident. Overall, the rates maybe as expected throughout and there does not seem to be any significant difference between the areas of city and county. What may account for differences is the age of the individual who has the problem. For example, we would expect to see heart disease among a younger segment of the population. In Table 7, we see that age does account for occurrence. While asthma, bronchial conditions allergies are relatively widespread among all age groups, heart and lung illness and heart disease are more prevalent as age increases. Providing useful information to these sub-units involves knowing their habits and providing environmental monitoring data that they can access priori to the development of conditions that are harmful under the circumstances that adversely effects them.

Table 6
Exposure to Environmental Health Conditions within Households
Frequency (%)

Area	*Asthma*	*Bronchitis*	*Allergies*	*Heart and Lung Illnesses*	*Heart Disease*	*Skin Cancer*
Las Vegas- County	43 (18.9)	39 (17.1)	133 (58.3)	28 (12.3)	25 (11.0)	13 (5.7)
City of Las Vegas	76 (22.6)	73 (21.7)	209 (62.2)	42 (12.5)	30 (8.9)	19 (5.7)
Metroplex	119 (21.1)	112 (19.9)	342 (60.6)	70 (12.4)	55 (9.8)	32 (5.7)

Table 7
Exposure to Environmental Health Conditions in Relationship to Age
for all Metroplex Respondents
Frequency

Age Group	*Asthma*	*Bronchitis*	*Allergies*	*Heart and Lung Illnesses*	*Heart Disease*	*Skin Cancer*
2 Years old or less	8	10	2	6	3	1
3 to 5	1	2	5	0	0	0
6 to 10	10	12	7	2	0	0
11 to 20	21	22	16	2	0	0
21 to 30	19	5	31	3	1	3
31 to 40	14	19	33	4	3	2
41 to 50	5	24	28	7	2	7
51 to 60	11	12	36	7	10	2
61 to 70	15	16	26	19	15	9
71 or older	0	4	32	15	14	3
Total	94	126	216	65	48	27

Information Flows: The Crux of Policy Development

Inasmuch as the general public is no longer excluded from policy making processes, it is likewise important to place a part of the burden on the public to take the time to understand important issues. If, as Amory Lovins argues, “ordinary people are qualified and responsible...” (Lovins, 1977), they are likewise responsible for demanding that their views are regularly and routinely incorporated into program and policy development, including arenas where risk to the ecosystem or its inhabitants exists, using it as a means for promoting democracy and developing citizen acceptance (Graham, 1994: 231-236).

The public’s choice for sources of information are heightened in importance by the growth of public participation in evaluating significant public policy issues that are characterized as complex, technical and scientific (Steger, et al., 1988: 747). As such, participants in the policy process pertaining to these complex issues, issues cutting across traditional public policy boundaries, must seek available information in order to evaluate the proposals and programs presented to them. To assess where citizens

obtain information about urban environmental conditions, respondents were asked from where they usually learn or hear about conditions. In Table 8 sources of information are reported and Table 9 reports source reliance when a purposeful effort is made. There is no argument that we are in the information age and that the amount of information now at our fingertips would overwhelm our predecessors. For example, your laptop PC has more computing power than the computers used for the Manhattan Project to do the mathematics necessary to develop the atomic bomb. However, despite this plethora of sources and data, now easily accessible, we tend to focus on traditional sources that are easy to access. As Table 8 shows, two sources clearly are seen as information conduits more than any other – Local TV and Local Newspapers. No other source comes close by comparison. The ease by which we now can access the world through the mass media has shifted reliance over the last half century. The data found here is consistent with national patterns and previous research into sources in the region (Conary and Soden, 1996). Table 9 goes a step further and asks if you were looking for information where would you go. In recent studies (Soden et al, 1999) it was found that tracking down environmental information can be a very difficult and frustrating task, as 72 participants participated in an environmental information scavenger found. Because the stakes are generally not high enough, most individuals can be expected to rely on their everyday sources, TV and newspapers. Yet, Table 9 shows that libraries are still a major source for residents of Las Vegas while the internet and local government are also heavily considered. The rise of the internet, especially among youth and retirees, continues to sky rocket. With these data in mind, EMPACT may develop a website that is user-friendly and reports important environmental monitoring data and continue to supply local libraries with the necessary materials the general public is seeking.

Trust in Sources of Information

One of the more interesting topics within the field of study relating to technical issues is trust in sources of technical information and identification of those sources which the general public holds in the highest regard. In any area where complexity exists, the public is wary and will tend to look for sources of information in which they have historically found to be supportive of their opinions, attitudes and behaviors. Those sources which are highly trusted by the general public, especially those of special sub-populations such as the elderly or those with respiratory or heart conditions, are important if public information dissemination efforts are to be maximized (Pierce, et al, 1987; Berry, 1977; Greenwald, 1977; Pierce, et al, 1990; Soden and Conary, 1991).

In an era of knowledge explosion, the efficacy of developing public input is challenged, requiring an understanding of who is trusted and distrusted in a particular issue arena (Freeman, 1974; Freudenberg and Rosa, 1984), even when the issue is highly politicized like that surrounding the environment (Galbraith, 1967: 291-303).

Among the various providers of information, trust has historically been greatest for university researchers, a result that is consistent across other issue domains for well-over a decade (Soden, 1994). In addition, positive trust patterns have been obtained by citizen advisory groups, when well-organized and visible, and environmental interest groups. The citizen advisory groups provide a degree of street-level advocacy and a vehicle for public involvement that reflects real end-users of information. Environmental groups also have fared well improving their abilities and moving towards real advocacy based on scientific evidence rather than sheer zealousness that marked the earlier era of the current environmental movement. Government sources are generally suspect with the public, no doubt a reputation well deserved. However, as agencies embark on more and more programs that include citizen participation and prove through their programs that they can be advocates for varying sectors of the general public, this trend appears to slowly changing. From another perspective, government, in general, is suspect reflecting a decline that began in the 1950s and, based on all evidence continues to this day (Almond and Verba, 1963; Soden, 1994). Trusted sources may act as intermediaries and should be listened to by both sides of an issue, especially those issues which are both controversial and emotional (Stern and Aronson, 1984; National Research Council, 1989: 25).

While highly trusted sources are likely to be credible in the public's eye, they often fail in the realm of science and peer-review. The principles of science which guide university research and the on-going open debate which characterizes university research acts as a leverage for insuring high degrees of trust, while less trust is evident where the same principles are not in evidence or less-well known by the general public, as in the case of many government agencies and some environmental groups. Credibility issues are also of interest when one considers that the most relied upon sources of information are newspapers and TV, as is evidenced here, but both receive low trust assessments by the public-at-large. At the same time, some highly trusted sources, relative to others, are seldom utilized due to over-reliance or myths surrounding the

source, a.k.a., the myth of the robe in academia. If further surveys are to be conducted as part of this program, a consideration of trust is suggested.

Public Volunteerism and the Environment

One of the significant social trends of the 1990s has been the increase in volunteerism across nearly all

segments of the population. President Clinton's summit of volunteerism and the bi-partisan nature of the issue

may suggest a change in civicism as people begin to consciously give back to their communities. Volunteerism

Table 8
Sources from which Environmental Condition Information is Obtained
Frequencies

Source	Las Vegas – County	City of Las Vegas	Metroplex
General Sources			
Billboards	3	4	7
Bus Side-Ads		1	1
Posters		1	1
Personal Experience	7	3	10
Personal Observation	4	9	13
Internet	9	24	33
Children			
Leaflets	3	4	7
Library	4	9	13
Word-of-Mouth/Neighbors	10	24	34
Media			
Local TV	146	227	373
Cable TV	28	25	53
Public Access TV	23	27	50
Radio	37	39	76
Local Newspapers	129	192	321
Neighborhood Newsletters/Papers	12	19	31
Magazines	9	6	15
Hotlines/800 Numbers	1	1	2
Organizations			
Local Schools	6	6	12
UNLV/CCSN	1	2	3

Local Government	2	9	11
State Government	1	2	3
Federal Government		3	3
Environmental Groups		1	1
Church Groups	1		1
Other	8	14	22

Table 9
Source Reliance When Obtaining Environmental Condition Information
Frequencies

Source	**Las Vegas – County**	**City of Las Vegas**	**Metroplex**
General Sources			
Billboards		1	1
Bus Side-Ads		1	1
Posters		1	1
Personal Experience	3	1	4
Personal Observation	3	5	8
Internet	42	56	98
Children	1	2	3
Leaflets		2	2
Library	59	83	142
Word-of-Mouth/Neighbors	4	12	16
Media			
Local TV	65	89	142
Cable TV	8	15	23
Public Access TV	13	18	31
Radio	17	20	37
Local Newspapers	63	95	158
Neighborhood Newsletter/Paper	3	6	9
Magazines	4	6	10
Hotlines/800 Numbers	2	5	7

Organizations			
Local Schools	3	5	8
UNLV/CCSN	4	5	9
Local Government	28	52	80
State Government	9	7	16
Federal Government	14	20	34
Environmental Groups		1	1
Church Groups	1		1
Other	24	48	72

also suggests to what degree rational ignorance has been overcome and the level of community commitment to problem-solving. While public indifference is widespread about any number of issues, putting one's own time into an issue is a real measure of the salience which the general public attaches to a particular issue.

In order to assess level of volunteer activity relating to environmental issues, survey participants were asked if they had volunteered or assisted on an issue in the past year. In Table 10, we see that even though the environment may be high on individual priorities, it does not manifest itself in action through volunteering. More than 90 percent in the sub-samples and the metroplex combined report no volunteer activity. From one perspective this does not bode well for environmental and citizen participation. And, it suggests that the era of volunteerism so often discussed as part of community relations may be less vital than we have been led to believe. However, this does not mean that volunteering for other activities is not high, only that the priority given the environment may be lower when choices have to be made about using personal time. There remains, however, a small segment of the population who have volunteered in one way or another who may be the "vanguard" for a program such as EMPACT as it begins to filter into the community. In general, the argument could be made that volunteering is seen as being rational for individuals under the concept of rational ignorance (Downs, 1957). Because of the time involved and the myriad pressures on already complex lives in a fast-paced post industrial society, it is not rational to incur the costs of volunteering, and if one does, a self-selection process seems to rule out the environment in most instances. As a result, there will continue to be a broad reliance on elected officials and experts, a.k.a. elite, and activists serving in behalf of an interested but as of yet, unmotivated public.

Table 10
Self-Reported Volunteering on Environmental Issues

Level of Activity	Las Vegas – County	City of Las Vegas	Metroplex
		Frequency (%)	
Yes, have volunteered	16 (7.0)	18 (5.4)	34 (6.0)
No, have not volunteered	210 (92.1)	318 (94.6)	528 (93.5)

Summary and Conclusions

This chapter has provided a preliminary view into the pattern of perceptions and behavior that are exhibited among residents of the Las Vegas valley in the area of the environment. The data is remarkably

consistent and does not indicate that residents of the City of Las Vegas differ from those who reside in the valley, but outside of city limits. The discussion points out that several opportunities exist to target populations that register concern about specific issues, a point to which we shall return in a later section.

A few issues would seem to present concern. Foremost among these is that traditional public reliance on media sources of information may not parallel trust in those sources. While identification of the most trusted information sources may assist in efforts to educate the public, the identification of information providers and to what degree they are trusted are also important for policy and decision makers in order to enhance their ability to maximize the information dissemination processes (Soden and Conary, 1991: 364). Moreover, the advent of the internet suggest new venues for information dissemination that must be considered, while traditional sources must continue to be utilized, in some ways adding to the burden over information suppliers.

When specifically considering environmental monitoring, it appears the mass media will remain a key conduit, but specific sub-groups with extreme health risks may need to be more carefully explored for boutique or niche delivery of program data. Overall, the issues do not lend themselves to substantial controversy. Thus it follows that public opposition will be minimal, but may be vocal if costs of monitoring and information dissemination as viewed as diversion of funds from other pet projects of population sub-groups who do not feel impacted by current environmental conditions. In the next chapter we will go a step further in determining the characteristics which may lead to identification of sub-groups with systematic concerns related to environmental monitoring that can help to point the way for EMPACT in the future.

Section III
Sources of Variation in Attitudes Relating to the Environment

Introduction

This section begins the investigation into potential sources of variation which, to varying degrees, can play a role in shaping public perceptions and attitudes about quality of life issues. By doing so, we lay the groundwork for considering the degree to which individual characteristics or demographic factors and residential-related factors explain and predict perceptions and preferences associated with the environment, and in turn, quality of life in the Las Vegas metro region. Social scientists have spent decades in the study of alternative explanations of behavior and preference patterns among the general public and its numerous subsets. These endeavors provide a variety of options for framing discussion relating to environmental concerns and potential factors which, if altered, may lead to changes in behaviors. The factors defined by these studies create a political and social culture or belief systems which allow individuals and collectivities to view public policy issues (Converse, 1964). Specific factors that have also attracted the attention of the scholarly community include age, income, length of residence, region of residence and general policy orientations (Milbrath, 1984, 1989; Pilisuk, et al., 1987; Pierce et al., 1990; Steel, et al., 1990; Steel and Soden, 1991; Conary and Soden, 1996).

It has been suggested that growing support and concern for social policies over economic concerns (Inglehart, 1977, 1990), as a result of a fundamental change where "high order needs" (Maslow, 1970) have supplanted primary subsistence needs, may also be linked to evaluation of quality of life issues (Milbrath, 1984; Steel, Soden and Warner, 1990; Rosenau, 1992). Perceptions of environmental issues and quality of life may subsequently be analogous to attitudes about social order and social equity (Yankelovich, 1981; Soloman and Cameron, 1985; Fiorino, 1989***a***, 1990).

To explore these issues and determine if environmental concerns are indeed a priority among some subsets of the population, two arenas of potential variation are considered. The first includes the set of general demographic characteristics, gender, age, income, etc. The rich history of data collection and survey research that has become a major part of policy making today, has much of its analytical basis in routinely collected demographic data. The second area pertains to residential-related issues. Increasingly,

we have found that the issues of home ownership, location in a community, and the number of members in a household play a role in determining preferences, especially those related to quality of life issues (Soden, et al., 1999).

With this background we move forward making the contention that individual differences may stem from a variety of factors, but not always in an equal manner. Personality (Laswell, 1948; Pye, 1966; Brewer and deLeon, 1983), cultural socialization (Tajfel, 1968), ideology (Lane, 1962), institutional (Epstein, 1969; Allison, 1971; Berry, 1977; Lindblom, 1977) and other factors all complicate the analysis and reporting of public opinion. This is further compounded when individuals aggregate into groups (Truman, 1951; Olsen, 1965; Eulau, 1969) and into coalitions in order to insure greater success in the pursuit of their goals (March, 1962; Abrams, 1980). These sources of variation become causal factors, or independent variables, which may be explored for their ability to predict the development of policy preferences or conceptualization of an array of positions which take on a consistent meaning (Pierce and Hagner, 1980).

Demographic Characteristics

The demographic attributes collected for this study included for analysis are age, gender, education, income, marital status, ethnicity, and party affiliation. As past research studies have indicated, these personal characteristics correlate to perceptions of quality of life and environmental quality. Age may be significant in that it puts life experiences into a broader perspective can be seen as a step towards wisdom which reflects the ability to put a larger number of life's experiences into a broader perspective. Consequently, older individuals may pay closer attention to issues and support more public participation. Conversely, age may be associated with old-fashioned values which is countered with a younger generation being more likely than their elders to entertain new ideas and seek the knowledge to be active in the policy process (Soden, 1990***a***: 54: Soden, et al., 1988). Younger people may participate at greater levels in forms of political participation which require more physical energy. Additional studies, for example, have shown that the young spearheaded the environmental mass movements in the 1960s and 1970s (Pierce, et al, 1990: 42), and that Generation X is the first to receive environmental sensitizing through their entire formal education. The quality of life survey reflects the wide-range of age groups in the Las Vegas metro region. Middle aged people are more prominent in the metro area with 35-44 year olds being the mode category,

which is a reflection of the heavy growth the region has seen of working-aged people during the 1980s and 1990s (see Table 1). In contrast to the rest of the southwest, Las Vegas is similar to Tucson and Phoenix in its age distribution, but older than El Paso and Albuquerque. In part, this may be due to an increase in retirees in Arizona and Nevada, while Albuquerque and El Paso have not attracted this older cohort. It is also of interest to note, that Las Vegas has a majority of its population in the prime working years (25-55), which is also a period when financial strains are the highest. In many instances, economic and financial concerns take priority over environmental concerns. Quality of life in these years may be measured by financial success and income, leaving for a later period in life such things as concern for the environment. Thus, it is conceivable that at both ends of the spectrum we have environmental supporters, the Gen Xers and the elderly, with a financially motivated center that may challenge environmental policy proposals that could be costly or viewed as having a negative effect on incomes.

Gender may also be significant in explaining individuals' perceptions concerning quality of life and environmental issues. Gender is important in many respects because more and more, women are becoming politically active. Previously studies have shown that females registered high scores on humanistic and moralistic scales and have shown stronger proclivities to become involved in the policy process than those of the male gender (Bammel and Bammel, 1986; Pierce, et al., 1990; 42; Soden, 1990***a***: 54; Steel, et al., 1992). Females tend to be more supportive of environmental protection, especially when environmental risks may threaten the health and safety of their families (Steel, et al., 1990, Freudenburg, 1993, Mehta and Simpson-Housley, 1994). Research also has shown that men have a tendency for a stronger association with technical issues than do women (Soden, 1990***a***: 56). The survey results show that women are represented at a slightly higher level in the survey (53 to 47 percent), closely reflecting their numbers in the population at large. The role of women in quality of life and environmental issues continues to change as they become a dominant force in the political process. The traditional hearth and home issues of women in the 1950s has been replaced by active political participation, the rise of women's professional networks and activism about a number of social issues, including the environment. Overall, this impact has made women a force in policy making and broadened their concerns well-beyond those of their predecessors. The environment, however, is one more issue for women, not an issue that has replaced another. In this regard, as women add roles, while in many cases, such as the working mother, retain most

of the traditional roles, they must choose their causes. Thus, it may well be, that for many women the environment is lower on their personal agendas, not because of lack of interest, but because of lack of time, energy and a need to retain many hearth and home values.

Education has always been a major factor in explaining public perceptions and attitudes. In the Las Vegas metro region education has always been an interesting issue. At one extreme, the city was home to nuclear physicists working at the Nevada Test Site, who demanded quality education for their children and brought their education levels to bear on community issues. At the other extreme, many residents made up the working class that serviced the hotels and casinos of the strip, bringing a dramatically different perspective to many policy issues. Education is broadly recognized for its importance in matters of citizen participation and is commonly associated with heightened levels of political activity and an individual's effectiveness (Pierce, et al, 1990: 42). Education also enhances one's ability to understand a broad range of issues and place them within a larger context than one's self (Goldberg, 1969). In this regard, higher educated individuals are expected to have better jobs and higher incomes, including careers that allow them to take a greater interest in public affairs (Garson, 1978; Ciglar and Loomis, 1983). As Samuel B. Huntington notes, higher education gives rise to greater knowledge about social issues and the extent of the problem (Huntington, 1974). In the Las Vegas metropolitan region, we find that the patterns of the past still obtain, as those with some college education or less make up over one-half of the respondents (54.8%). Those with college education or advanced studies do, however, make up over one-quarter of the respondents (29.6%) marking a slight increase over the past few years and suggesting the diversification of the Las Vegas economy away from gaming and hotel services, thus drawing in additional professionals with higher education. The impact which these individuals may have on the policy process as it pertains to the environment is likely to be a function of interest and overcoming rational ignorance before taking steps towards support and activism in this arena. Those with higher education are also likely to demand more in terms of quality of life, which may indirectly play a role in improving environmental conditions. Lastly, those with higher education are best prepared to deal with the complex issues and understand environmental monitoring information. As such, they can be a backdrop against which to compare those with lower levels of education and to determine suitability of dissemination efforts. Put another way, if those with higher education levels are having a difficult time utilizing information distributed through any

variety of means, then it follows that those with lower levels of education are essentially blocked out of the process.

Income levels may bear on the role one takes in seeking new information and the sources they are most likely to draw upon in conceiving decisions about specific issues, such as environmental quality and its related activities. Those with higher levels of income have better access to a larger number of information providers that those with lower incomes. Moreover, a large number of studies report that from a Maslowian (1970) point of view, individuals who have fulfilled subsistence needs are more capable of directing their attention on social and policy issues and have the ability of take time to pursue information about these issues that are those who must focus on subsistence needs (Soden, 1990a: 54). Additionally, research has suggested that environmental protection and economic development are not generally considered inverse values in lower income communities, as they often are in regions where basic level needs have been met (Cady and Soden, 1997). Income is also a social variable that has been found to correlate with participation in public issues and with one's perception of political efficacy (Pierce, et al.1990: 43). In Las Vegas, the town of "high rollers,' we actually see a very typical income patter. The majority report family incomes of less than $50,000 (61.5%), with the remainder in the $50,00 or above range (36.6%). These categories have remained consistent over the past decade, suggesting that even with the dramatic growth in population, the wealth is not spread around on the whole, but remains with a constant percentage of the population. For EMPACT, those in higher income categories represent a latent group who has the wherewithal to become involved in environmental issues. They may be available and receptive to the receipt of environmental information in formats that may be less traditional, preferring websites and public TV over the mass media. At lower income levels, the mass media remains the primary approach, however, innovative formats should not be discounted. For example, daily environmental monitoring information could be made available on a ticker-tape type device in markets that are visited more frequently by lower income individuals over those on the higher income brackets. This is only an example, but points out that people of varying incomes frequent different places and information may be targeted to users of a locale.

Marital status is a demographic factor that has been found to have more influence over the manner in which one perceives quality of life or environmental issues than we have been led to believe. It has often

been argued that marital status is an indicator of stability and a possible predictor of one's stake and investment in a community. Married persons constitute a majority of survey respondents (53.2 percent), belying a perception among many that Las Vegas is a singles haven. The extent to which this factor plays a role will be examined in the next section as well.

Differences in policy preference across racial or ethnic lines can often be quite substantial, as seen in Chicago, New York, and Los Angeles, among others. Las Vegas, which has suffered race riots in the past decade is not immune from ethnic concerns. Many attribute differences among ethnic groups to be a product of low income or lower education. And studies have shown that when these other factors are controlled for, differences in policy preference amongst various ethnic groups often diminish, but do not disappear entirely (Soden, et al., 1999). Comparatively, Las Vegas' population is typical of most major cities. Caucasians constitute three quarters of the population (76.5%). The ethnic minority population of almost 25 percent is significant, but it is spread out among African Americans/Blacks, Hispanics and Asian Americans/Asian-Pacific Islanders. Unlike other cities in the southwest, Las Vegas does not have a minority-majority of Hispanics, as is the case in El Paso or a near-Hispanic majority as in Tucson or Albuquerque. If attitudes toward quality of life and environmental quality differ amongst various ethnic groups, the policy implications could be quite substantial, however, ethnic patterns have not always registered differences (Soden, et al., 1999).

Lastly, value orientations serve as the fundamental building blocks of the political culture of any domain under study. They assist in describing segments of society with shared values and beliefs that provide opportunities to view how positions about issues and policies are structured (Almond and Verba, 1963; Converse, 1964; Wyckoff, 1980). In research studies it has consistently been found that partisan attachment and ideology orientation are linked to perceptions and attitudes concerning issues and public roles in the policy process (Sullivan, et al., 1978; Lovrich, et al., 1979; Pierce and Lovrich, 1983; Soden, 1985; Soden, 1990a: 59). Subsequently, its is believed that individuals perceive a plethora of policy issues in a manner that supports their way of life and traditional orientation towards politics and economics (Wildavsky and Dake, 1990). To get a sense of one's overall political attitudes, a measure of preferences about social and economic issues is often employed, having become a better benchmark than party affiliation, especially as parties trend towards centrist positions, and in particular in Nevada, where political parties, until recently, were non-distinguishable. In this study, traditional party affiliation was used as a measure of values.

Political affiliation is often thought to be an indicator of policy preference. For example, social and welfare policies have been thought to be sensitive issues among republicans who are targeted as conservatives. They are also believed to anti-regulatory, preferring free-market solutions to externalities over government control. Democrats, are thought to be more supportive of government intervention, including environmental regulation and more inclined to support social and welfare alternatives. Within the

context of quality of life and the environmental quality, those with conservative or liberal preferences will view government's role in improving altering conditions radically different. If Democrats are surrogates for liberals, they may see a role in the public interest for government to address environmental concerns to improve quality of life in a community. Republicans may disapprove of this role from a conservative stance, viewing these same issues as being associated with a lasissez-faire system to which individuals must responsibly react. Among survey participants, we see that party affiliation shows a conservative leaning in the city, but a Democrat stronghold in the valley. Historically, Las Vegas was a strong labor-based democrat area, while more recently the republican trend that began in 1994 also had its imprint on the area. Liberal orientations are stronger for social issues, but overall proclivities support moderate to conservative policies, a political culture consistent with Nevada's history as well (Hulse, 1996). .

The demographic profile for the survey respondents is provided by Table 11 and documents that the survey has recorded the views of a representative cross-section of the Las Vegas metropolitan region. This cross-sample enhances the validity of the findings first, in the realm of *content* validity which refers to the representativeness of the sample. Clearly a broad spectrum of Las Vegas region residents are included, insuring that the results are not biased because of a lack of attention to one segment, or as a result of over attention placed on another segment of the population. *Concurrent* validity, assessed by comparison to other studies will emerge as we progress, as will *predictive* validity, the ability to provide significant estimates of likely events or policy preferences (Conway and Feigert, 1972: 89-92; O'Sullivan and Rassel, 1989: 90-96).

Residency Issues

While the characteristics unique to each area require deliberation, western states generally are very rural with a few urban areas that maintain and sustain the majority of the population, as well as possessing the states' economic and political clout. These urban areas are relatively new in the sense that they made their real emergence in the post- World War II era and have seen a dramatic in-migration since the 1970s that seemingly has continued unabated for 30 years. Las Vegas clearly matches this description, especially in the nineties which saw Las Vegas remain one of the world's fastest growing cities for a decade. This characteristic has also put Las Vegas at odds with the remainder of the state on more than one occasion. (DeVine and Soden, 1996; Gerlak and Soden, 1996).

With this context in mind, the Las Vegas metropolitan region is the primary urban area in an otherwise rural state. Other urban areas, such as Reno, exist in Nevada, but Las Vegas is by far the most dominant urban area in the state and has the majority of the state's political clout. The 1990 Census indicated that the Las Vegas metropolitan area had a population of 852,737, a number well exceeded by the end of the nineties. However, the city of Las Vegas itself contained a population level of 258,204, in 1990, a level that has not increased as dramatically as the non-city areas of the Las Vegas valley. Thus, most of the valley's residents reside in surrounding suburbs and communities.

Table 11

Demographics of Survey Respondents

Frequency (%)

Age	***Valley***	***City***	***Las Vegas Metro Region***
18-24	32 (14.6)	32 (9.8)	64(11.8)
25-34	36 (16.4)	55 (16.9)	91 (16.7)
35-44	50 (22.8)	81 (24.9)	131 (24.1)
45-54	40 (18.3)	62 (19.1)	102 (18.8)
55-64	33 (15.1)	47 (14.5)	80 (14.7)
65 and over	28 (12.8)	48 (14.8)	76 (14.0)
Total:	**219**	**325**	**544**
Gender			
Female	113 (49.8)	186 (55.4)	299 (53.1)
Male	114 (50.2)	150 (44.6)	264 (46.9)
Total:	**227**	**336**	**563**
Education			
Not a high school graduate	29 (12.7)	27 (8.0)	56 (9.9)
High school/ trade school graduate	54 (23.7)	88 (26.2)	142 (25.2)
Some college	47 (20.6)	64 (19.0)	111 (19.7)
Two year college degree	35 (15.4)	47 (14.0)	82 (14.5)
Four year college degree	35 (15.4)	61 (18.2)	96 (17.0)
Post-graduate/ Professional study	23 (10.1)	48 (14.3)	71 (12.6)
Total:	**223**	**335**	**558**
Income			
Less than $15,0000	15 (7.7)	21 (7.2)	36 (7.4)
$15,000 to $24,999	23 (11.9)	32 (10.9)	55 (11.3)
$25,000 to $34,999	43 (22.2)	43 (14.7)	86 (17.7)
$35,000 to $49,999	48 (24.7)	74 (25.3)	122 (25.1)
$50,000 to $74,999	43 (22.2)	66 (22.5)	109 (22.4)
$75,000 to $99,999	15 (7.7)	26 (8.9)	41 (8.4)
$100,00 or more	7 (3.6)	31 (10.6)	38 (7.8)
Total:	**194**	**293**	**487**
Marital Status			
Married	115 **(**51.6)	182 (54.3)	297 (53.2)
Single	64 (28.7)	88 (26.3)	152 (27.2)
Separated/Divorced	33 (14.8)	43 (12.8)	76 (13.6)

Widowed	11 (4.9)	22 (6.6)	33 (5.9)
Total:	**223**	**335**	**558**
Ethnicity			
Caucasian/White	168 (76.7)	252 (76.4)	420 (76.5)
Black/African American	18 (8.2)	28 (8.5)	46 (8.4)
Hispanic or Latino/a	16 (7.3)	25 (7.6)	41 (7.5)
Asian American or Pacific Islander	10 (4.6)	19 (5.8)	29 (5.3)
Indian/Native American	3 (1.4)	2 (.6)	5 (.9)
Other	4 (1.8)	4 (1.2)	8 (1.5)
Total:	**219**	**330**	**549**
Political Party Affiliation			
Republican	55 (26.4)	108 (35.4)	163 (31.8)
Democrat	84 (40.4)	98 (32.1)	182 (35.5)
Independent	20 (9.6)	41 (13.4)	61 (11.9)
Other	5 (2.4)	2 (.7)	7 (1.4)
No Affiliation	44 (21.2)	56 (18.4)	100 (19.5)
Total:	**208**	**305**	**513**

By 1997, the metro area had grown to 1.1 million, and, moreover, sixty percent of the state's population resides in

Clark County, the region in which the quality of life survey was administered.

The degree to which some differentiation may exist about issues pertaining to quality of life and the environment are measured primarily by separating the Las Vegas city data from that of the surrounding valley. Sixty percent of survey participants reside in the city proper, with the remaining living in the valley, however, this distinction, thus far, has had no impact on the findings. Another residential factor considered was the length of residence in the area, an important factor due to heavy migration and potential knowledge of issues in the region. In addition, if a person migrated to Las Vegas as an adult, the State from which the migrant had previously resided was also measured, along with the size of the community in relation to the Las Vegas metropolitan region.

Our consideration, is that there are few natives left in the western U.S., especially in an area like Las Vegas where growth has stemmed from in-migration. Length of residence in a particular political and social culture may impact public policy decisions, especially in an area under-going rapid population growth like Nevada. Individuals move into an area and are pre-disposed to expect a bundle of goods and services at least equal to those they received in their previous place of residence, especially those services provided by the public sector. The State of Nevada has seen its population expand at a rate unsurpassed in recent memory by any other state. As the number of native Nevadans continues to dramatically decline, new residents not only have a set of demands they place on services, but also are less informed about past activities. As a society increases in its mobility, long-term knowledge about local public policy issues based on substantial periods of residency gives way to peripheral or surface knowledge. In this regard, urban air particulate matter based on the inversion effect in Las Vegas is likely to be less well understood among a newcomer than the old-timer.

In addition, the status of one's home ownership, whether they own a home or rent, is seen as an indicator of commitment to a community. Home ownership is an indicator of "putting down roots" and

announcing this is home. But, do home owners feel differently about the environment and what policy responses should result. The number of people in a household also can have a dramatic effect on quality of life. Those who are urban poor with large families are often the ones faced with the worst set of environmental conditions. Regardless of income, the number of children in a household may determine a family's or individuals overall awareness of environmental-based health or weather-related conditions that have health consequences or the like.

Residential factors are reported in Table 12. Length of residence among the respondents shows thirty-seven percent have lived in Las Vegas metropolitan area for less than five years, and that over one-half (56%) have lived in the state for ten years or less. These periods represent residency from the late 1980s at best, and does not suggest a residency status that leads to a population well versed on local policy issues. This heavy in-migration has resulted in a parallel influx of new ideas about what constitutes quality of life and environmental quality. These ideas may differ substantially from those who have resided in Las Vegas for longer periods. The fact that California is by far the largest source of newcomers (22.3% of survey participants who moved to Las Vegas as an adult) could have a significant effect on environmental issues. The perception exists that many have left California because of a declining quality of life and deteriorating environment. While from one perspective they bring their problems with them, being part of a new population boom impacting another region, while from another, they may be more receptive to access to environmental monitoring data inasmuch as they have experienced problems that they would now be inclined to avoid. Other migrants either moved from states with large populations (New York, Texas) or states with close proximity to Nevada (Arizona), with a host of other states being reported by a few of the new residents. The size of cities of origins among newcomers shows a mix, with 50 percent moving from areas larger than the Las Vegas area (perhaps Los Angeles) and approximately 40 percent coming from cities smaller than Las Vegas. This mix suggests no significant findings are likely to be drawn about city of origin.

Home ownership may signify one's stake and commitment to a community and a desire to remain in a community for substantial periods of time. The survey showed that 66 percent of participants are homeowners, with another 32 percent renting. If home ownership leads to an increased concern for quality of life issues and environmental quality as a result of a major investment in the community, then particular

attention may be paid on these individuals on the anticipation that they will be more amenable to any activities that protects their investment in property and the community itself. Lastly, the number of residents in a household is found to be relatively small, with 87.2 percent of households containing four people or less. Almost fifty-three percent of respondents reported to reside in households of two or less people, perhaps turning one away from the idea that some sensitivity is obtained as a function of household size.

Table 12
Residential Characteristics of Survey Respondents

Residential Characteristic	**Frequency (%)**		
Region of Residence			
Las Vegas city	336 (54.6)		
Las Vegas valley	227 (46.6)		
Years of Residence in the Las Vegas Region Metropolitan Area	***Valley***	***City***	
Two years or less	37 (17.4)	65 (20.6)	102 (19.3)
Three to five years	40 (18.8)	52 (16.5)	92 (17.4)
Six to ten years	37 (17.4)	65 (20.6)	102 (19.3)
Eleven to fifteen years	30 (14.1)	28 (8.9)	58 (11.0)
Sixteen to twenty years	21 (9.9)	27 (8.6)	48 (9.1)
Twenty-one to thirty years	25 (11.7)	32 (10.2)	57 (10.8)
Thirty years or more	23 (10.8)	46 (14.6)	69 (13.1)
State of Origin for Adult Newcomers			
California	48 (21.1)	78 (23.2)	126 (22.3)
New York	10 (4.4)	25 (7.4)	35 (6.2)
Texas	4 (1.8)	18 (5.4)	22 (3.9)
Illinois	8 (3.5)	13 (3.9)	21 (3.7)
Arizona	3 (1.3)	15 (4.5)	18 (3.2)
Florida	9 (3.9)	7 (2.1)	16 (2.8)
Michigan	7 (3.1)	7 (2.1)	14 (2.5)
Hawaii	3 (1.3)	9 (2.7)	12 (2.1)
Foreign countries	8 (3.5)	7 (2.1)	15 (2.7)

*Only states that received two percent or more of the Las Vegas metropolitan area total are included in the table.

Size of Originating City			
Smaller than the Las Vegas Metropolitan Area	67 (39.4)	107 (39.9)	174 (39.7)
Larger than the Las Vegas Metropolitan Area	83 (48.8)	136 (50.7)	219 (50.0)
About the same size	16 (9.4)	21 (7.8)	37 (8.4)
Home Ownership			
Own or buying	140 (61.4)	232 (69.0)	372 (66.0)
Renting	81 (35.5)	99 (29.5)	180 (31.9)
Other	2 (.9)	3 (.9)	5 (.9)

Number of People in Household	***Valley***	***City***	***Metropolitan Area***
1	39 (17.1)	69 (20.6)	108 (19.2)

2	83 (36.4)	107 (31.9)	190 (33.7)
3	36 (15.8)	54 (16.1)	90 (16.0)
4	45 (19.7)	58 (17.3)	103 (18.3)
5	15 (6.6)	31 (9.3)	46 (8.2)
6	6 (2.6)	9 (2.7)	15 (2.7)
7	1 (.4)	3 (.9)	4 (.7)
8	1 (.4)	1 (.3)	2 (.4)
10	0	1 (.3)	1 (.3)

Summary and Conclusions

In this chapter we have examined those factors which the extant literature and our experience have led us to believe will help explain the set of patterns and positions that may exist when considering a wide variety of quality of life and environmental issues in the Las Vegas metropolitan issues. The results reported here suggest we have a broad representation of Las Vegas residents who record varying experiences with regards to quality of life and environmental factors. The demographic factors that have been measured have been shown to be relevant in a wide variety of political and public policy issues. With Las Vegas leading the way, Nevada is the fastest growing state in the nation. Tremendous growth rates are bound to impact perceptions of environmental quality. Since many migrants move to the Las Vegas region from California, a primary factor in the decision to move to Nevada could very well be quality of life and the condition of the natural environment, but a condition that may possibly reverse itself if Las Vegas continues to grow unabated.

Section IV
Patterns of Variation about the Environment

Introduction

After analyzing factors that the literature and previous research suggest may impact opinions on quality of life and the environment, the next step is to examine the strength of relationship between the variables. For purposes of analysis, we have used Spearman's correlation, a correlation measure for ordinal data which measures the strength of the relationship between variables. It is important to keep in mind that correlation is not causation, and the measures that we used do not measure different types of cause and effect, simply that one occurs in some degree in relationship to occurrence in another (See: "Note on Correlation," at the end of this section).

Overall, the correlation measures showed no strong relationships among the variables. No single correlation coefficient measured higher than .29 (with perfect correlation being 1), signifying that survey participants across demographic and residential factors tended to answer the questions in a similar fashion. From one perspective, this is unusual. For example, the literature suggests that attitudes about the environment should differ according to education levels of the participants. The findings indicate that in Las Vegas opinions do not differ significantly based on education levels. There are some variables where statistical significance exists but at low levels of levels of correlation, indicating a lack of strength in the overall relationship. Interpreting this data does not, however, mean that environmental issues are unimportant. Instead, it indicates considerable homogeneity among the respondents, or put another way, only with a few key variables do we see differences among the respondents.

Correlation of Demographic Factors

The demographic factors discussed previously were correlated against concerns about air and water, as well as the presence of certain health conditions among the respondents or their family. In Table 13, 14 and 15, we see that the strength of relationships is low, with no correlation coefficients measuring higher than .24. Residents of Las Vegas and the surrounding valley, therefore, tend to have similar concerns in relation to air and water issues. Likewise, health conditions do not vary significantly based on residential and demographic characteristics. There are a few notable exceptions which lend themselves to analysis that we consider for the degree to which they may have an impact on the developments of the EMPACT program.

Age

Age was one of the few demographic factors analyzed in which statistical significance was evident in a number of areas. Every question concerned with air pollution when measured against age showed some statistical significance. The strongest measures were found in concerns over reduction in visibility due to air pollution and air pollution from motor vehicles (Table 13). Almost all the factors, with the exception of reduction in visibility were found to be significant in the city, but not in the surrounding valley. In the city, older residents seem moderately more concerned with air pollution. Older residents may remember the city with less congestion, fewer vehicles, less construction, and, subsequently, less air pollution. Not surprisingly, some of the highest correlations were found in relation to age and health. Cardiovascular and cardiopulmonary diseases significantly correlated with age in the metro area with little distinction between the city and valley (Table 15), a finding consistent with an increase in these health conditions among the elderly. Skin cancer among older respondents also gained significance among the elderly than any other group. The issue of skin cancer may also bear evidence of the failure to address skin exposures to sunlight and ultraviolet rays until the past few decades, well after the damage may have been done to these individuals. The only factor to show a pattern of younger participants is their indication of more concern than older participants in relation to drinking water quality. With the young being responsible for many environmental clean-up and restoration issues in the future, it is a bit puzzling why they do not register broader concerns than what is expressed in the data.

Gender

The extant literature suggests that females are more concerned with environmental issues than males, a finding that has been consistent in a number of studies for some time. Survey results bear this out in Las Vegas as well. All concerns about air pollution were statistically significant in metropolitan Las Vegas based on gender (Table 13) and women also are more concerned with water quality issues (Table 14). Women voiced more concern about air pollution from motor vehicles in the Valley sample. Women in the metro area reported more concern about materials that cause allergies (table 13), corresponding to health measurements that showed asthma, bronchitis, and allergies to be present at greater levels among females (See Table 15). The prevalence among women with these health problems, suggest a possible group for use as an information tool by EMPACT. That their concerns rise because they have symptoms or

conditions is not surprising. The degree to which this can be turned into an access group, is however, of interest and should be pursued.

Education

In most areas of policy and politics, education level is generally among the most significant factor. The impact survey did not find many differences across education levels suggesting that concerns remain constant and are not solely an issue of one group of interests. With respect to air pollution concerns, a negative relationship exists between education level and concerns about dust pollution and materials causing allergies (Table 13), meaning that as concern increases education does not have to increase, or that regardless of education levels, concern remains high. A similar relationship exists with regard to recreational activity at Lake Mead (Table 14), where concerns do not require higher levels of education, but is constant among all groups. It is well documented that education levels are a factor in policy arenas that involve complex issues and/or technical knowledge. The EMPACT survey indicates that education plays almost no role in how concerned a person is about the environment and how it relates to quality of life. If high levels of smog block visibility, it may not require much formal education to conclude that it is not healthful or desirable in quality of life considerations. From one perspective this makes program development more difficult because the target is everyone. Yet, reaching everyone about the problem involves concerns about communication and perceptions that are addressed fuller in the final section.

Income

There seem to be slight patterns evident in relation to income differences. In Table 13, we find that four of the five air pollution concerns were statistically significant when measured against income. The pattern, however, was negative suggesting that those at lower income levels show equal concern, possibly greater concern than their higher income counterparts. The only air factor without statistical significance was air pollution from motor vehicles. The highest correlation between income and air quality was about dust pollution. Concern is also somewhat higher in the city than the valley when coefficient values are considered. Water pollution at the Las Vegas Wash and Lake Mead was the only water concern that was statistically significant when measured against income. Income and health conditions showed no significant correlation, which may go against the wisdom that poorer people are in worse health than those who are higher up the income ladder. Possibly differences in income in the Las Vegas region are not significant enough to register great differences in policy concerns. Or, like education, income may have little relevance when one is simply asked to express concern about a basic environmental issue.

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Ethnicity

A few minor patterns were evident in the data in relation to ethnicity. The ethnicity measure is actually difficult to place on an ordinal scale because it is a nominal variable. However, with recoding we can ascertain whether an ethnic group (non-caucasian) registers a different set of concerns, but the correlation in regard to specific ethnic groups may not be fully distinguished. Dust pollution and materials causing allergy concerns registered a statistical significance when measured against ethnicity in the metro region (Table 13). These results were statistically significant in the city but not the valley, suggesting ethnicity may be a more important factor in the city proper, something that leads one to question whether city residents have become more ethnic as suburban development draw people out of the city core. All water factors, except groundwater depletion concerns, were statistically significant in the metro region, however groundwater depletion concerns were only significant in the city proper (Table 14). When viewing the data in a crosstabulation, we see that caucasian measures are less concerned about these issues, such as the quality of drinking water. This raises some interesting issues about information flows among ethnic groups, exposures and perceptions of risk, that should be more deeply probed. Yet, none of the health symptom measures were statistically significant in relation to ethnicity, not an unusual but a surprising find if perpceptions of problems are higher among ethnic groups.

Party Affiliation

Although party affiliation can be the source of significant differences in opinion, the EMPACT survey shows the bipartisan nature of the issues considered and the weak relationships that are recorded across all samples. One may not expect to find significant correlations in regard to health problems and party, but environmental issues have historically followed party lines. This is not the case, however, as no air pollution concerns and only one water pollution concern were found to be significant. Concerns of recreation at Lake Mead were statistically significant in the metro region with Republicans being minimally more concerned (Table 14). Overall, this suggest that at least among the general public environmental issues are not ballot box issues and that both sides of the political spectrum see equal concerns that need attention.

Marital Status

Certain health patterns showed moderate correlations when measured against marital status. The role of one's marital status suggests an opportunity to discern if concern is heightened because of the link to another individual, regardless of how subjective that link may be. The data shows that no water issue was significant in this category, with the only air pollution concern showing significance being materials causing allergies in the city (Table 13). Similarly, when allergies as a health indicator was run against marital status the correlation coefficient proved significant. Bronchitis, cardiopulmonary and cardiovascular diseases were found to be statistically significant in relation to marital status (Table 15). These data were recoded to obtain these measures and indicate that married individuals show more concern. However, these results may be product of age as much as marital status, inasmuch as older people are more likely to be married than younger people. Overall, it can be said that marital status may not be a particularly useful predictor and that married, or single, concerns about the environment are fairly equal. Moreover, for EMPACT, it provides evidence that programs do not necessarily have to be targeted to one group over the other.

Correlation of Residential Factors

Residential factors, like those discussed pertaining to general demographic characteristics, did not seem to be strongly associated with quality of life or environmental concerns. Several factors, however, did emerge to be statistically significant at low levels of correlation, similar to the various demographic patterns, however, in general it can be stated that residential factors do not lead to significant differences among the survey respondents.

Native or Migrant to Las Vegas Metro Area

As previously discussed, Las Vegas has seen tremendous growth since 1980. Thus, the question is raised, do new residents who have migrated from outside the region view quality of life issues differently from Las Vegas natives. Surprisingly, not one of the air or water pollution factors was statistically significant, suggesting that newcomers and old-timers view the issues in generally the same fashion. The only significant health factor pertained to asthma among those residing in the valley, potentially indicating a small portion of those who have in-migrated to the region with pre-existing conditions or had them aggravated by local conditions (Table 15).

Years of Residence in the Las Vegas Region

Due to the huge migration to the region, the literature suggests length of residence could play a significant role in perceptions about quality of life and the environment. Analysis of the survey results suggest that there are more relationships when length of residence is taken into consideration, in contrast to whether a respondent is a native or non-native. Among air pollution concerns, reduction in visibility reports significant value in the metro area, suggesting that those with longer residence patterns have witnessed some of the increased pollution that has had a deleterious effect on visibility (Table 13). This result may, however, be a function of age, based on the similarity to findings discussed above. Those who have resided in the Las Vegas metro area for fewer years tend to be slightly more concerned with drinking water quality (Table 14). Cardiovascular and cardiopulmonary diseases are also slightly more prevalent among those who have resided in the region longer, statistically significant in the valley, but not in the city (Table 15). This too may be a function of age as well as residency, a combined effect that can be explored through further study.

Size of City

Where one originates from suggests that we develop a certain degree of acculturation that becomes part of our expectations about what is wanted or not wanted in terms of quality of life. Thus, the size of a migrant's city of origin is another factor that is difficult to measure and the statistically assess. The measures were recoded, so that cities of origin were scaled from smallest to largest. For concerns about air pollution we find only one significant value, reduction in visibility with a correlation in the metro area signifying that those migrating from larger cities are expressing more concern. Drinking water quality and recreation at Lake Mead were also significant measures in relation to size of originating city for valley residents (Table 14), as was the existence of a cardiovascular condition (Table 15). Overall, it appears that the size of a city in which a respondent lived prior to coming to Las Vegas has little effect on their attitudes about environmental conditions.

Home Owning Status

It is hypothesized that homeowners might be more concerned about quality of life and environmental issues. Survey results, however, do not bear this out. Home-owning status did not bear any significant results in regard to air pollution concerns. In relation to water concerns, three questions bore statistically significant results. The direction of the correlation, however, suggests that slightly higher levels of concern were evident amongst non-owners/renters, a different finding than we assumed. Drinking water quality, groundwater depletion, and pollution at the Las Vegas Wash and Lake Mead registered statistically significant results in the city and metro region, but not the valley (Table 14). Cardiovascular disease was the only health factor found to be statistically significant, however, in a negative direction, which suggests the disease is more prevalent among no-owners/renters (Table 15).

Number of People in Household

The last residential factor analyzed is the number of people living in a household. Compared to the other factors, health conditions indicate the strongest correlations. The existence of allergies, bronchitis, and asthma for the respondent of a family member, all registered as significant in both the city and valley (Table 15). All of these

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conditions are believed to be correlated with large households. Among air pollution factors, materials causing allergy was the only air measure found to be statistically significant (Table 13). The number of people in a household also showed a minimal amount of correlation to drinking water quality (Table 14). Overall, factors relating to health showed some moderate signs of being correlated to household size and a possible avenue for addressing dissemination in conditions where numerous residents can be captured in the information process at one time. This is also an area where social service providers may be of assistance in developing programs to access large families who may be prone to exposures and in need of assistance.

Health Conditions Correlated to Environmental Concerns

Another set of analyses was performed comparing health conditions to expressed concerns about air and water issues. One could logically assume that those with more fragile health conditions would be more concerned about environmental conditions. As was the case with demographic and residential factors, no large correlations of significance were found in this regard (see Tables 16 and 17). Overall, healthy and non-healthy Las Vegas residents tend to view quality of life issues fairly similarly. Where some patterns are suggested, it was in regard to air pollution and not water concerns. This is to be expected as the health conditions considered by the survey are more related to air pollution than water.

The only factor that was significant in relation to asthma was materials causing allergy (Table 16), while allergies showed significance in relation to materials causing allergy in the city Table 16). Cardiopulmonary disease showed statistically significant relationship to reduction in visibility and air pollution from construction (Table 16). Cardiovascular diseases measured some type of statistical significance to four of the five factors. Air pollution from both motor vehicles and construction were statistically significant in the valley, with materials causing allergy significant in both the metro area and the valley (Table 16). Dust pollution, on the other hand, was found to be significant in the city and metro area (Table 16). Logic suggests that those with cardiovascular diseases would be more concerned about air pollution and the EMPACT survey bears this out, however, a larger study is required to determine the total extent of this study. Medical records would perhaps be leading indicators that are generally not too difficult to access if collected on an aggregate basis. It also suggests medical groups and associations can play a role in design of environmental monitoring data delivery to the impacted public.

Bronchitis seems to be the health factor most often related to a wide variety of environmental concerns. Results show statistical significance in four of the five measures, with dust pollution being the only air measure with T15 and 16 no level of significance. Those with bronchitis seemed a degree more concerned in the valley about air pollution caused by motor vehicles and construction (Table 16). The most statistically significant reading was in regard to materials causing allergy (Table 16), and surprisingly, bronchitis was the only health condition to measure any type of significant correlation on the water concerns (Table 17). Statistically significant correlations of bronchitis to water issues were found in all the water factors except recreation at Lake Mead. The other three water factors were significant in the city and metro area but not in the valley. Overall, the health conditions in relationship to water and air pollution concerns paint a less dramatic picture than we might have expected, but do suggest special groups through which EMPACT efforts may be maximized.

Conclusion

Although many factors showed statistical significance, no demographic or residential factor seems to present an area by which a major EMPACT effort can operate. While some subsets with conditions linked to concerns are in evidence, the metroplex as a whole remains homogeneous, but health conditions do point to an area for further examination. Thus, at one level efforts must be tailored to those who are most effected by adverse environmental conditions. At another level, the entire Las Vegas valley has concerns that can serve as the backbone for program development. It remains, however, that information dissemination is a difficult task for public agencies to undertake. In this regard, every effort to partner with the private sector, including the medical field, such as centers with frequent visitations by those suffering from environmentally-borne health effects, and media outlets should be explored.

Note on Correlation as a Statistical Measure

Correlation measurements are often used to explore relationships between variables. A correlation tells the strength of relationship between variables. Variables can be seen as dependent or independent, but more often correlation is used a preliminary step to a more comprehensive analysis in which causation is

the primary concern. A correlation is the first step in examining how close each observation is to another observation.

A correlation coefficient is a measurement ranging from positive 1.0, perfect correlation to negative 1.0, a perfect inverse correlation, meaning the variables have no association. Because most of the EMPACT Survey was ordinal in nature, we used Spearman's Correlation, designed specifically for ordinal level data. Ordinal level data suggests order and that the order used is indicative of preferences or intensities. Finishing order in a race is a prime example of ordinal level data, such as the position a participant finishes is important, but the distance between the participants is of secondary importance. Data in the EMPACT survey was either coded or re-coded to portend an order that is significant.

Statistical significance is another important measure to consider when analyzing correlation. Statistical significance indicates the probability that results emerged merely be chance, and the probability that the null hypothesis (no action hypothesis) is true (Johnson and Joslyn, 1995: 363). The most common level a correlation is said to be significant in the social sciences in at $p < .05$. At this level, there is a five percent chance that the results could have emerged from pure chance. A social scientist is taking a five-percent chance that his/her results are meaningless. Our analysis also includes measures of statistical significance at the .01 and .001 levels. It is important to remember that statistical significance should not be mistaken for substantive importance, as many weak relationships show statistical significance (Johnson and Joslyn, 1995: 363).

Section V
Policy Discussion

The results of this study suggest several opportunities for providing environmental monitoring data to the public at large. Recalling the discussion in the first section of this report, we considered that quality of life was a function of the natural world within which we live. While outside critics could argue that Las Vegas has grown into something far from a natural setting, it remains that outside the glitter and gambling of the strip that a community exists that is not unlike any other. Thus, residents are searching for opportunities to improve their quality of life, and may be able to do so through greater access to data that helps them determine behaviors that will reduce the personal, family and community impacts of negative environmental events. Earlier we also brought up the idea of rational ignorance and the conscious decisions we have to make about what we can become interested in and take time to pursue. While we all are victims of time pressures and complexity, EMPACT may have the opportunity to close the gap between those who are highly knowledgeable, such as experts, and the general public. However, this may not be an easy task.

Problems, Opportunities and the Information Gap

One of the first steps in assisting the public in obtaining and using environmental monitoring data is defining the smaller segments of the population that are in need of environmental monitoring data because of health sensitivities and those who are prone towards environmental activism. These subsets are likely to be those where the stakes are already viewed as high and subsequently waiting for the right opportunity. Yet, delivering environmental data to such subsets may require some specialized programming. In this regard, focus groups may prove to be a valuable tool through which the most beneficial method of disseminating data can be defined. It is important to note that getting environmental monitoring data to a subset may not be cost efficient, but the fundamental issue is to reduce personal or family anguish caused by environmentally-induced problems. Thus, the “bottom-line” may not be the issue, and the cost savings may be further along in time when treatments are reduced for chronic sufferers. One difficulty based on the data collected was that it was not put together to allow for an aggressive set of data manipulations to define some of these subsets and would require some significant recoding and cleaning up to undertake a data dredging exercise. Even if this is done, the sample size is too small to

really statistically discriminate particular groups. However, if another survey were to be done under this program, early input to set up the data collection to allow for exploration of small subsets is recommended.

Las Vegas is a pilot program for EMPACT, but numerous other communities have experimented with a variety of health and environmental health-related issues in the formation of delivery systems. The degree to which these can be identified and successes and failures shared may be key to accelerating the EMPACT efforts in Las Vegas. In El Paso, for example, significant efforts have led to considerable improvement in health conditions in the colonias (unincorporated and un-served areas of the county). In Boston, outreach through the Cheers program has also provided information to under-served populations. The proposed quality of life conference in 2000 may be an important venue for sharing these ideas in a national forum. The significance of the issue demands that all efforts to share successes, as well as failures, be undertaken and it would seem that Las Vegas may be poised to lead such an effort.

Can Behavior Be Changed?

One of key concerns is the degree to which patterns of behavior can be altered. Unless we are in crisis, or at the least, have had some catalyst to motivate us to do things differently, we tend to change behaviors incrementally. For EMPACT part of the issue is risk awareness among the general public. Las Vegas is no stranger to risk analysis, having been the subject of risk studies related to Yucca Mountain and the Nevada Test Site, smoking and second-hand smoke in casinos and air quality associated with the inversion layer. It has been proven on more than one occasion that good science can lead to multiple interpretations. Thus, from a risk perspective EMPACT is faced with the need to assist in reducing risks to the valley's population.

Risk analysis involves four aspects, which for EMPACT are:

1. Risk Assessment: the degree to which the science community has defined the problem and the effects of exposure to the problem.
2. Risk Communication: the efforts to inform the public of potential risks with the intention of having those most effected changing behaviors and reducing their exposures.

3. Risk Perception: the extent to which the general public sees a problem, which may or may not parallel risk assessments by the science community (Tennert and Soden, 1999).

4. Risk Management: the activities by the public and/or private sector to reduce risks by insuring reduced exposure and mandating behavioral changes.

In many ways a set of scenarios can be drawn that are based on good science or risk assessments, erroneous perceptions and bad communication or management. The matrix of options among these four risk analysis components has, in all likelihood, been played out on more than one occasion. For EMPACT, the issue is not good science, but would seem to fall on communication and perceptions. The issue of management would seem to fall naturally to existing regulatory agencies, who by all accounts are doing as they are mandated, but do not seem to be getting the message to the general public. Risk communication requires the public be clear on the issue and understand its effects on their own well-being. This is a major task and the public's ability to grasp complex issues and manifest them into behavioral changes is limited. But two things are critical. First, the public message must be simple and to the point. Remember, *Time* magazine is written at the eighth grade level. Even the most highly educated, who may have all the cognitive skills to actually understand what the science community is telling them, will not put in the time and effort unless things are clear and to the point. The public, in this regard almost must be treated like a CEO, to the extent that the 180 page report gets put into a one page executive summary. In dealing with state legislatures we have found that a pie chart is worth a thousand words, and the same applies in communicating with the general public --- K.I.S.S. --- keep it simple stupid. Focus groups and multiple revisions will assist in moving this effort forward. Training scientists to talk to non-scientists is almost an art, but when done can be effective. In our Center we have a brilliant economist, who can forecast in the bi-national region. However, he cannot talk to normal people and thinks everyone understands simultaneous equations. We prepare him a script and overheads that put it in layman's terms – "housing starts will fall," "the peso devaluation will hurt retail sales." Its hard for him to swallow it sometimes, but people do not care nor understand that per capita income is statistically significant at .0001 at the 99.99% confidence level with a factor score of .29876.

The EMPACT survey points out that people use mass media. The message here is quick and simple, nothing surpasses a message that lingers, i.e., diamonds are forever. The media and advertising specialists should, perhaps must, be part of a program development designed to communicate the problems that exist in the Las Vegas valley to the public.

The second issue is access. The public is not going to watch a public television special on how they should respond to environmental scenarios that may have a negative impact on their health or activities. Clearly, the mass media is one access point. People see if it is going to rain before they go on a picnic. If it can be made accessible that air quality is likely to be poor for the next week and outdoor activities, such as the softball game at the picnic should be curtailed, in-roads can be made in changing behavior and overall awareness. However, environmental concerns, that are related to subsets with particular problems, may have special networks that can be accessed on a smaller scale than the mass media. While the mass media can service the majority of the population through good forecasting techniques of the science community, subsets with particular health or health-related problems may also be reached through the provider networks which service them. As an example, the elderly trusts and is provided a vast amount of data by AARP. Senior Centers, gyms with special programs and other such networks can provide access to special populations and have experience in doing so. Including them in a communication program may be more useful than may be imagined.

Good risk communication will heighten risk perceptions and individual beliefs in the need to alter behavior. The need to change behavior to enhance quality of life cannot be done through administrative reform. No matter how many times you move programs around on the organizational chart, unless the public perceives an issue as problematic you cannot make much progress.

Quality of Life and the Environment

There are multiple ways to get people to react, but one issue links all segments of the population. The environment is linked to quality of life. People move to the southwest because of the weather and boasts to their friends “up north” that they played golf in January and wore shorts while they played. No one wants to live in pollution and people will change behavior to increase their quality of life. Thus, a community that undertakes a program, such as EMPACT, must also assess its intellectual and physical

capital. The Las Vegas valley is a beautiful area that has been physically altered, and that alteration is unlikely to diminish in the near future. Urban sprawl has pulled infrastructure out of downtown areas into Henderson, north and west of the City of Las Vegas. On the positive side, the casino and resort industry has filled the void, leaving downtown Las Vegas in better shape than most cities which have seen similar migration to the suburbs. Phoenix, Tucson, El Paso and Albuquerque have aggressive revitalization programs to save their downtowns. In contrast, Las Vegas's problem may be to save its resources from a continued expansion into the desert. While other cities have seen their downtown areas become the host of the urban poor, Las Vegas has shifted problems behind the glitter of the strip. It still has all the real problems of most urban cities, but its investment strategy, at least at this point in time, provides many opportunites to invest in quality of life. And, the environment is a quality of life investment. Just like schools and libraries, roads and police stations, the environment needs to be viewed as a community investment.

EMPACT can be a forum for building consensus about how to enhance quality of life through environmental monitoring. The boundaries of the Las Vegas valley also provide a natural control of the program's range and limits for getting critical information out to the general public and special subsets. In this instance, Las Vegas's isolation works to its benefit. Unlike Los Angeles, which includes a host of jurisdictions, Las Vegas is fortunate to have only a few governmental bodies to work through and an involved private sector. Thus, it is in a position to build regional consensus and move forward, setting an example for environmental monitoring programs nationwide.