RISK PERCEPTION AND PARTICIPATORY EQUITY:

A CASE STUDY OF THE LONGHORN PIPELINE

TRAVIS COUNTY, TEXAS – MAY 2002

THESIS

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By

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I would like to thank my mama Betty Jo, my dad Jim, and my sister Kimberly for their unwavering support, love, and acceptance. Throughout my life they have allowed me to explore and grow and discover who I am and what I believe in. Through all of my successes and failures, they have offered me guidance, encouragement, and strength. They are my inspiration. I offer my sincere gratitude and appreciation to the members of my advising committee Dr. Deborah Bryan, Dr. Fred Shelley, and Dr. John Tiefenbacher. Throughout this process they have each afforded me their personal wisdom, invaluable advice and critique, direction, and positive reinforcement. I could not have achieved this goal without their time and help. This work is dedicated to the pursuit of balance, truth, and love.

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ABSTRACT

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The Longhorn Pipeline is a 51-year-old crude oil pipeline that is to be converted to carry refined fuels from the Port of Houston to El Paso, Texas and markets beyond. The fate of the pipeline remains in litigation to date. If a federal judge grants final permission to reopen the pipeline, it could transport up to 225,000 barrels (9,450,000 gallons) of petroleum products a day, transecting residential neighborhoods, school grounds, highly sensitive environmental areas, and precious water resources.

Past research documents the significant threat of risk to human health and safety and the environment that is inherently imposed by the use of pipelines. Yet, neither public notification nor consent is required by law in the pipeline permitting process. Therefore, it is imperative to assess perceived risk and encourage participatory equity in pipeline permitting for the improvement of pipeline safety protocols and monitoring.

The research methodology of this thesis is based upon a technique called Risk Perception Mapping (RPM), originally developed by John Stone. The goal of RPM is to identify and map the geographical extent and socio-cultural characteristics of a locally affected population, and document impact and mitigation issues raised by constituents.

The primary data collection tool utilized in the project was a self-administered mail survey questionnaire. The survey population of this study encompassed the citizens of Travis County, Texas, that reside within a 5-mile buffer zone centered by the pipeline transect. A mail survey questionnaire was distributed to the 500 subjects to assess levels of participation and perception of the Longhorn Pipeline. Public opinions and socio-cultural attributes gathered from the survey respondents were then analyzed for statistical correlations and spatial relationships.

The study found that in this context, perception and participation are not directly correlated with geographic location, or proximity to the risk imposed. The results of this study indicated statistically significant correlations among perception and education, occupation, environmental advocacy, daily Internet access, and voter behavior. Participation tended to correlate with age, voter behavior, education, perception of risk, and prior participation in the assessment phase or environmental advocacy.

CHAPTER I

INTRODUCTION TO THE STUDY

Precise Statement of the Research Problem

This thesis seeks to document and gain a better understanding of local perception of the Longhorn Pipeline as a potential health and environmental hazard and evaluate various advocacy planning measures within this context. In this thesis I utilize Geographic Information Systems (GIS) as a tool to visualize the spatial distribution and socio-cultural dynamics of perceived risk and stakeholder participation with respect to the reopening and operation of the Longhorn Pipeline, through the implementation of Risk Perception Mapping techniques. In this study I focus specifically upon the potentially affected population of Travis County, Texas that is located within 5 miles of the pipeline (Figure 1). I conduct a self-administered mail survey to collect perceptual and socio-cultural data of the survey population. Through subsequent statistical analyses and cartographic visualization, I then attempt to identify statistical correlations and spatial relationships among the variables to better under the extent and implications of perceived risk and stakeholder participation as relative to the operation of the Longhorn Pipeline.

Background of the Problem

The proposed reopening and operation of the Longhorn Pipeline is surrounded in controversy fueled by the potential threat of risk it would impose upon not only the natural environment, but also on human life. Longhorn Pipeline Partners (LPP) plans to convert the 51-year-old crude oil pipeline to carry refined fuels from the Port of Houston

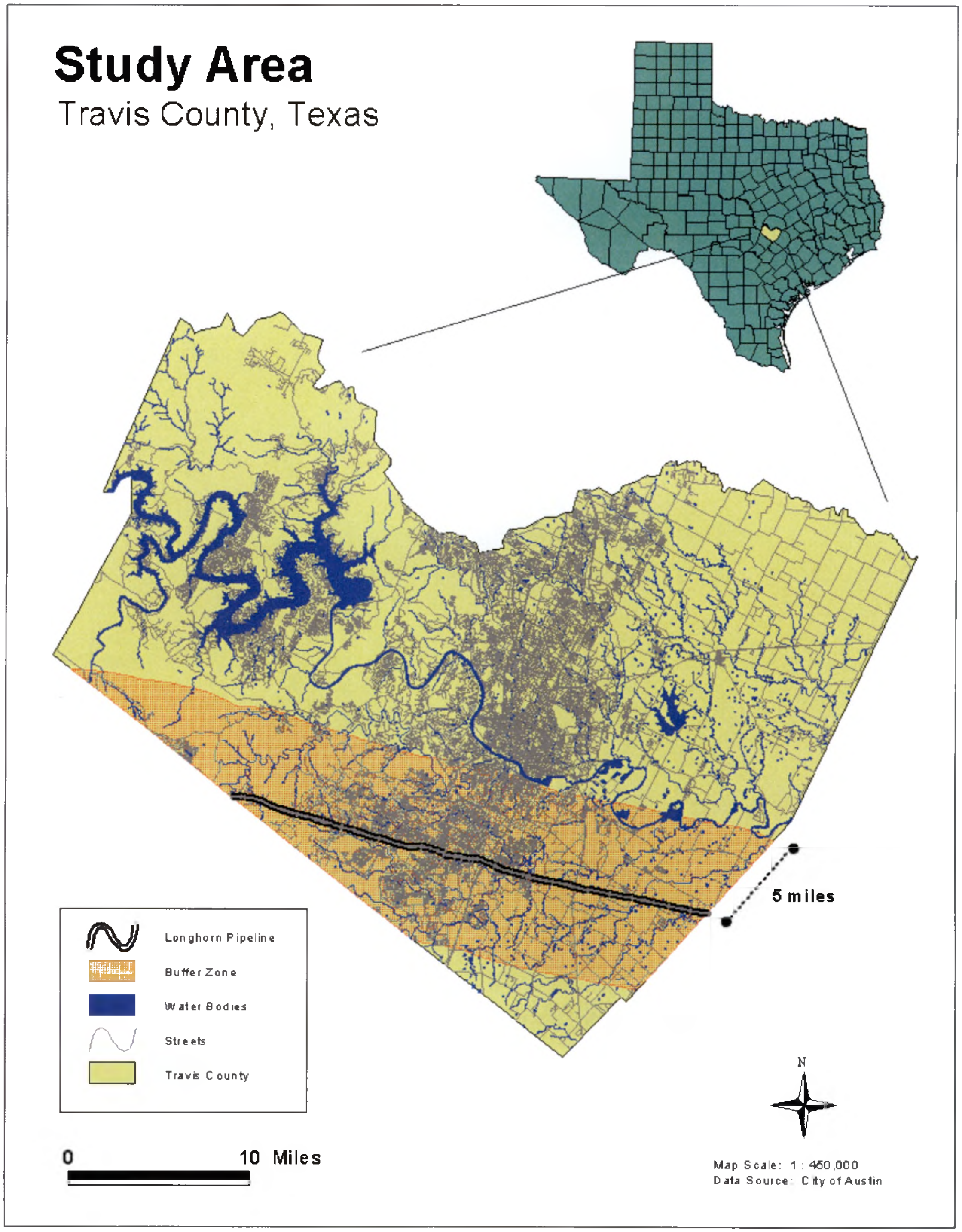


Fig. 1. Map: Study Area. This map depicts the study area of this research project, Travis County, Texas.

to El Paso, Texas and markets beyond. The pipeline, which has been dormant since 1995, extends some 700 miles across the state. As of this writing, LPP's proposal to convert the pipeline remains in litigation. If a federal judge grants final permission to reopen and utilize the pipeline, it could transport up to 225,000 barrels (9,450,000 gallons) of petroleum products a day, transecting residential neighborhoods, school grounds, highly sensitive environmental areas, and precious water resources.

LPP originally applied for permission to convert the pipeline in 1997, and a federally mandated study offered a preliminary judgment of "Finding of No Significant Impact" (FONSI). In response, in the spring of 1998, the City of Austin, the Lower Colorado River Authority (LCRA), the Barton Springs Edwards Aquifer Conservation District (BSEACD), and several West Texas property owners filed suit against LPP, Region 6 of the U.S. Environmental Protection Agency (EPA), and the U.S. Department of Transportation's Office of Pipeline Safety of Research and Special Programs Administration (OPS). In February 1999, the plaintiffs agreed to settle the case with the formal enactment and completion of an environmental impact assessment (EIA) of the proposed Longhorn Pipeline project. Upon completion and review of the EIA, the EPA and OPS concurred with the preliminary opinion, and in November 2000 issued a joint FONSI, thus legally completing review of the pipeline proposal as mandated by the National Environmental Policy Act (NEPA) of 1969.

The City of Austin, BSEACD, and two private landowners, unsatisfied with the EIA criteria and results, appealed the ruling and remain in litigation to this date. In May 2001, however, LCRA withdrew from the suit, stating that their original concerns and issues regarding the operation of the Longhorn Pipeline had been resolved by recent LPP mitigation efforts. The remaining plaintiffs now await the final ruling of Federal District Judge Sam Sparks, which is to be announced by July of this year. He will determine whether or not a formal environmental study is warranted prior to the reopening of the pipeline. In the interim, Judge Sparks has barred LPP from operating the pipeline while he reviews the case, granting the company permission to complete improvements during the interim review period in preparation for future use.

The context of debated issues cradling the Longhorn Pipeline encompasses alleged statewide and national economic benefits, negative local and regional environmental impacts, potential human and safety risks, and suggested inadequacies in federal EIA methodologies. LPP proposes that once fuels are transported from Gulf Coast refineries to the El Paso gateway market, their distribution will greatly benefit consumers and the economy in West Texas and other areas of the Southwest, including Arizona, New Mexico, and California. Several organizations, however, have reservations regarding the mitigation and safety measures associated with the pipeline. These scientific-based concerns have been formally documented in recent reports, describing implications of risk such as potential surface and ground water contamination from likely spills and leaks that could affect the drinking water of close to 1,000,000 people and degrade the natural habitat of threatened species, including the Blue Sucker Fish (Cycleptus enlongatus), the Guadalupe Bass (Micropterus treculi), and the Houston Toad (Bufo houstenensis) (LCRA, Lesso 2000).

Opponents of the validity of the EIA express concerns regarding the potential risks imposed upon human health and safety. Issues regarding the location of hazardous materials response facilities, inadequate leak detection methods, response times and training of rural county fire departments for dealing with inherent periodic explosions and leaks, location of local and regional hospitals, and proximity of schools and residential neighborhoods have been highlighted as viable risks that need to be addressed and resolved prior to reopening the Longhorn Pipeline (Lesso 2000). It is estimated at least 60,000 residents live within 1 mile of the pipeline and 15 Austin area schools are located within 1.5 miles of the transect (City of Austin 2000). Furthermore, if federal permission is granted, LPP plans to transport petroleum products through the pipeline "in reverse." The pipeline, in its original construction, transported crude oil from West Texas to the Gulf of Mexico. This adaptation to the flow of chemicals will apply significant stress to the 51 year-old, corroding pipeline (City of Austin 2000).

Associates of Bastrop County Environmental Network (BCEN) strongly oppose the findings of the federal government, arguing that certain variables were simply not accounted for or were inaccurately assessed by URS Corporation, a local environmental consulting firm that was selected to complete the EIA. Modeling methodologies analyzed the expanse of the pipeline uniformly to establish a critical corridor of risk to be defined as a buffer of 1250 feet. BCEN asserts that variations in vegetation, topography, and climate throughout the regions transected by the pipeline suggest the need for a wider corridor of risk and alterations in the model equations, relative to the natural environment at given points along the transect. BCEN also noted that variables such as areas of geologic faulting were not adequately evaluated and considered in the EIA, arguing that such oversights raise serious concerns relevant to the preservation of water resources and protection of public health and safety (Lesso 2000).

Equitable levels of stakeholder participation in the pipeline assessment process, or the lack thereof in this case, presents yet another important issue that needs to be addressed. As it stands, state law does not require public participation in the pipeline permitting process (Kitchen 2001). Pipeline operators are mandated by law to obtain operation permits from the Texas Railroad Commission prior to beginning use of the pipeline. However, the permitting process does not require notifying the public or obtaining any form of public consent (Kitchen 2001). In recent months, legislators, led by Texas State Representative Ann Kitchen, have attempted to pass measures that would restructure the permitting process, requiring public notification and improving pipeline safety; however, these bills have not yet been adopted into law and their efforts continue.

Research suggests public environmental perception is a viable component in community decision-making and environmental management. Stone (2001) suggests applying an "ecosystem" approach, incorporating environmental and socio-cultural attributes, which are fundamentally interdependent, in the total impact assessment equation. Loo (2001) proposes that culture shapes awareness, and it is ultimately awareness or knowledge that underlies any perception or behavioral response. Furthermore, perception remains the key component inspiring action among communities and its citizens, thereby facilitating participatory equity in social access to environmental management (Stone 2001).

In his work, Stone (2001) discusses the principle of participatory equity, which encourages planners to identify socially isolated or unaware and typically excluded populations from the decision-making process. Risk Perception Mapping (RPM) is a technique that he developed to identify and map the geographical extent and socio-cultural characteristics of a locally affected population and document impact and mitigation issues raised by constituents. By focusing upon the cultural, geographical, and socio-economic factors that influence the nature and distribution of perceived risk among populations, RPM can distinguish inadequacies that may be present in social access to environmental management and identify environmental inequities or discrimination (Stone 2001).

CHAPTER II

LITERATURE REVIEW

Trends in Research

Analysis of participatory equity requires knowledge of environmental perception. A significant body of research validates the significance of surveying environmental perceptions and advocates stakeholder participation in the environmental impact assessment process. Tuan (1973) suggests a person is a composite of "a biological organism, a social being, and a unique individual." He goes on to assert that "perception, attitude, and value reflect all three levels of being" and therefore, these three levels must accounted for or addressed in perceptual analyses. Loo (2001) suggests that personal characteristics including education, occupation, and income level strongly affect people's perception about their living environment, more specifically their perception of risk. Researchers point out that awareness leads to the development of perception, and perception instills a behavioral response in the form of public participation (Saunders and Stephens 1999, Loo 2001, Stone 2001). This evolution of knowledge to action, results in a channeling of pertinent indigenous knowledge into the decision-making body, which is sometimes lacking or biased.

Researchers at the Stockholm Environment Institute assert "this genuine involvement of citizens, leading to perceptions of public ownership of policy options, is seen as critical in ensuring sustainability, legitimacy, and democracy" (Cinderby 1999, 2). Steinemann (2001) supports this argument, suggesting that despite the brief public comment period that is afforded by law in the formal EIA process, public involvement suffers severely from bureaucratic limitations and public values are rarely even considered in design alternatives.

Jankowski and Stasik (1997) echo the validity and utility of public participation in local decision-making, but warn that the effectiveness of this component in the process is relative to the vehicle of communication. The typical venue of public participation in the past has been the "town meeting"; however, "the widening use of information networks creates opportunities for making GIS a widely accessible decision-making tool, bypassing the constraints of location and time" and emotion, imposed by the inherent characteristics and dynamics of the "town meeting" context (Jankowski and Stasik 1997, 73). Cinderby et al. (1999) promote the incorporation of a "perceptual" or "value" data layer in public participation GIS models, with the intent of mapping intangible perceptions of a region's citizens to help resolve potentially contentious environmental issues.

Critical Analysis of Relevant Work

Various researchers, institutions, and local government entities have employed traditional survey methods and more technologically sophisticated techniques incorporating GIS to transform the vision, or incorporating environmental perceptions in the decision-making process, into a reality. Byrd et al. (2001) conducted a recent study to assess the variations among risk perception found within three socially diverse communities located in El Paso, Texas, a metropolitan center on the Texas-Mexico border. Researchers conducted personal interviews among 147 randomly selected households within the three communities, which were distinguished by varying levels of household income, education level attained by residents, and their occupation.

Discussion during the interviews centered on the participant's actual definition of risk and risk perception, their familiarity with various environmental and health risks, and their use of and familiarity with various health and environmental information sources in the community (Byrd et al. 2001).

Loo (2001) examined the potential impacts of developing a new transportation route on the local community of Yuen Long new town in Hong Kong. Loo selected the constituents to be included in the sample by a multi-stage random process and distributed a self-administered survey questionnaire. The results of the study indicated that public perceptions about transportation improvements were associated with the personal attributes of sex, age, occupation, and household income levels. The more specific the level of knowledge, the clearer the perceptual difference among subgroups with respect to the route's impact upon transportation links and flow versus its impact upon the local economy.

Stone (2001) developed the concept of RPM and applied its principles in assessment of community perception relative to the presence of a nuclear power plant in southeastern Michigan. The study focused on a 25-mile radial area surrounding the facility and encompassing a five-county area adjacent to Lake Erie. The study utilized a survey questionnaire as its primary data collection instrument and measured citizen perception of the facility. Findings from the study indicated that awareness and thus, participation were lowest among minority, geographically isolated communities, implying differential social access to public participation in those areas of the affected population.

Saunders and Stephens (1999) present an example in which a government entity used the EIA process to find the best solution to a public policy issue with the successful integration of total stakeholder opinion. This case came to light in response to extreme controversy that arose from a proposal for the development of Mount Stirling in Victoria, Australia as an integrated ski resort. A consultative committee was established, including interest groups and community representatives. This committee played a significant role in planning the scope of the EIA, composing the study brief, selecting a consultant, and guiding the preparation of the EIA. In this instance, government and community converged with the intention of compromise, which in turn resulted in the satisfaction of all stakeholders and preservation of community.

Specific Connections with Problem Statement

The inevitable truth lies in the fact that in today's society, pipelines are a reality, and it would unrealistic to believe otherwise. The hope for a global philosophical shift and a unified dependence upon renewable sources of energy is decades on the horizon. Thus, in the meantime, my primary intention with respect to the existence and use of pipelines, is to make them as safe as possible, accommodating the energy needs of the present, while minimizing the pipeline's impact upon the natural environment and human health, and preserving water resources and threatened species for future generations. Over 50 years have passed since the pipeline's original construction. At that time, the pipeline transect was a sufficient distance from residential communities and schools. After decades of development and population growth throughout Travis County, this is no longer the case. Upon inspection of the communities exposed to the greatest risk imposed by the presence of the pipeline, one must ask, if the pipeline passed directly through more affluent neighborhoods, such as the Westlake or Lakeway communities, would the outcome be different in this permitting process be different, or not? Indeed, recent media attention and the litigation process itself have fostered the enactment of needed safety measures, maintenance, and regulation of toxic chemicals such as methyl tertiary-butyl ether (MTBE) being moved through the pipeline thus far. Public awareness of the potential health risks has increased and vulnerable water resources and sensitive environmental areas have been protected in theory. But without the involvement and participation of community stakeholders, these imperative changes would likely not have occurred.

Researchers of the Global Environmental Change Program of the Economic and Social Research Council (2001, 2) suggest "neither scientific expertise nor local knowledge can claim to be uniquely true or objective. We have to accept that different people and institutions adopt different perceptions, values, interests, and knowledge. There are many ways of defining environmental issues. The challenge is to bring together competing sources of expertise in a constructive way, while taking account of the interests of those who possess different kinds of knowledge."

To date, research has not been conducted documenting risk perception and stakeholder participation in Travis County with regard to the operation of the Longhorn Pipeline. Past accounts and research initiatives document the significant and potential threat of risk to human health and safety and the environment that is inherently imposed by the use of pipelines. Scientists confirm we have exceeded the carrying capacity of this planet, and it is intuitive that project increases in population will ultimately lead to increases in energy demands and depletion of non-renewable resources of energy (Brown et al. 2000). I believe it is important to acknowledge and question what role pipelines and the associated risks will play in the future energy supply/demand matrix. Our nation's reliance on foreign energy reserves and the looming threat of terrorism that is now associated with pipelines, cause additional raise for concern. A unified philosophical shift to a self-sustaining reliance on domestic renewable energy resources is decades on the horizon. Therefore, in the interim I believe it is imperative to assess perceived risk of pipelines and encourage participatory equity in pipeline permitting for the improvement of pipeline safety protocols and monitoring. In this study, it was my intent to apply Stone's methodologies and employ RPM as a tool to better understand risk perception and participatory equity within the context of the Longhorn Pipeline equation.

CHAPTER III

RESEARCH METHODOLOGY

Hypotheses and Research Questions

This research was built on the primary hypothesis that Travis County citizens who were aware of the Longhorn Pipeline would hold negative perceptions toward the development initiative. Furthermore, based on the principles of distance decay theory, it was my belief that a core of intensity would exist closest to the pipeline transect, gradually decreasing with distance from the pipeline. My hypotheses also suggested that levels of awareness and participation would reveal a similar pattern of spatial distribution. I hypothesized that within these spatial contexts, significant correlations would be evident based upon the independent socio-cultural variables addressed in the research. Awareness, and therefore, perception and participation would be lowest among minority and socially isolated communities, which typify decreases in media exposure, education levels attained, household income, and social access. Through my work I had hoped to discover and distinguish environmental inequities or discrimination that may or not exist within this context.

In my research I addressed questions concerned with the following. Are citizens aware of the Longhorn Pipeline? Do they perceive risks that would be imposed upon their health and safety and surrounding natural environment? Do, and if so, what socio-cultural characteristics or variables affect this awareness and/or perception of risk? What sort of spatial patterns are visible in this context with regard to perception of risk and stakeholder participation? If notified, would citizens participate in the pipeline permitting/EIA review process? Would citizens volunteer to participate in a pipeline monitoring effort to report on general operations, safety implementations, or accidents that may occur if the pipeline is reopened and fully operational? What sort of medium affects awareness and facilitates participation?

Research Variables

In this study, awareness of the Longhorn Pipeline, perception of risk imposed by its presence, and levels of stakeholder participation served as the primary dependent variables in my analyses. It is my opinion that these levels of participation vary with characteristics of the affected population and the influence of media. Therefore, independent variables assessed during the course of my research encompassed various socio-cultural characteristics, more specifically, geographic location, age, gender, race, income, family status, occupation, education level attained, political affiliation, social or environmental activism, and degree and type of media exposure.

Definition of Measurements

The survey population of the study encompassed the citizens of Travis County, Texas that reside within a 5-mile buffer zone centered by the Longhorn Pipeline transect. After a thorough review of probability-based survey design, I determined Stratified Systematic Sampling to be the most appropriate sampling technique to employ. Through the application of this sampling method, the sampling frame of the study was extracted from the Travis County Appraisal District (TCAD) GIS data coverage that I obtained from the City of Austin GIS Division. This spatial dataset was originally designed with the intent of creating a land use GIS that would be accurate at the parcel, or individual property, level. The entire coverage consists of 175,555 polygons, of which 171,597 have been documented by identification numbers. The TCAD land parcel dataset consists of a shape file of multiple polygons and an associated address point theme. The data are available on the Internet for retrieval and download. The parcel data are maintained by the Travis County Appraisal District and forwarded to the City of Austin on an annual basis. At this scale, this spatial coverage serves to be the best source for individual household information, containing not only the necessary spatial component, but also the respective parcel owner or resident and postal address that is essential for distribution of the survey questionnaire. I explored various resources to acquire the actual transect of the pipeline, eventually acquiring the data from Jon Meade, an employee at the City of Austin, through direct correspondence. It is important to note that the acquisition of this data transpired prior to September 11, 2001. Datasets are not as readily available following the terrorist attacks of last year and specific agencies and organizations are using greater caution in providing access to "sensitive" information, such as pipelines.

Upon acquisition of the data, the population elements were then grouped into discrete segments based on geographic location, with the application of 5 one-mile buffer zones radiating out from the pipeline transect. This application is an adaptation of the methods previously noted and used in perceptual studies by Stone (2001). Associated research suggests that at this spatial scale, this type of geographic stratification insures proper representation of the stratification variable itself and tends to enhance representation of other variables related to them, such as social class or ethnic group

(Babbi 1973). The process of buffer creation was completed within ArcView version 3.2. First, five individual buffers were each created at a specified distance of one mile and added the view as separate themes for future manipulation. The 5-mile buffer zone was then applied to clip the TCAD address point theme, to reduce the TCAD coverage to the actual extent of the study area. The Geoprocessing extension utility was used within the ArcView session to complete this task. The next step involved attributing the table associated with the address point theme with the appropriate buffer zone representing its proximity to the pipeline. I accessed the appropriate table for the theme and added a field, labeled as "Buffer", to the table. Next, I selected all address points within the theme as a factor of distance, in this case 5 miles. The previously added data field was then calculated with a value of 5 for each of the selected address points. I then repeated this process for each of the 4 remaining buffer zones, resulting in a coverage of 65,536 address points, each respectively associated with its specific proximity to the pipeline.

I then generated a systematic selection of 100 subjects within each buffer from the address point theme. I completed this step of the process with the use of a statistical analysis software program, SPSS. The database file associated with the address point theme was first brought into MS Excel and subdivided into 5 separate tables based upon the buffer values previously applied. After review of these records, several inconsistencies in the data were discovered. Quite a few records, 8987 in total, lacked zip code information and had to be removed from the list of potential respondents due this omission of relevant data for survey distribution. The five tables were then individually imported into SPSS for systematic random sampling within each buffer zone. The sampling fraction applied within each buffer varied slightly respective to the total number of land parcels address points that were delineated within each zone in the coverage. For example, buffer 5 contained 7,872 parcels points, and to achieve the goal of selecting 100 subjects, a sampling fraction of 1/78 was applied. Therefore, the statistical analysis program generated a random number between 1 and 78 to serve as the value for a random beginning, and the parcel having that identification number and every 78^{th} after that number was selected for inclusion in the final survey sample. This process resulted in a sample of 500 subjects that will serve to statistically represent the survey population of the study, citizens of Travis County residing within 5 miles of the Longhorn Pipeline.

Data Sources and Collection Procedures

The primary data collection instrument utilized in this study was a self-administered mail survey questionnaire. I composed a preliminary draft of the survey questionnaire that incorporated questions encompassing general demographic information and a balanced array of questions related to perception of risk and public participation in the EIA process. Personal degrees of media access and preference were incorporated in the questionnaire as well. Given the percentage of Hispanic or Latino population in Travis County, 28.2% of the total population, I translated the survey questionnaire into Spanish and planned to distribute the document as a bilingual form to accommodate and encourage the participation and representation of the Spanish-speaking population in the study.

I then conducted a pilot test of the survey questionnaire on a select group of 47 individuals within the Geography department, including professors and graduate colleagues. I then completed a thorough review of the pilot test results and implemented all valid suggested changes into the content and design of the survey questionnaire.

The next task involved the actual distribution of the survey. I first compiled the distribution list of 500 potential respondents, based upon the results obtained from the geographic sampling method as previously discussed. I printed 500 copies of the final draft of the survey questionnaire. The surveys were then stapled, folded, and placed in envelopes to mail. After a mail merge was created for the distribution list, the respective address labels were affixed to the individual envelopes and a self-addressed, stamped return envelope was enclosed prior to sealing. The envelopes then had to be sorted in compliance with postal service bulk mail requirements and delivered for distribution. Following the initial allotment of time for the mail transaction to process, I allowed a two-week response time. In an attempt to minimize the amount of error imposed by the non-response factor, I then distributed a follow-up reminder postcard two weeks after the initial distribution of the survey questionnaire. The notice was distributed to all potential respondents, thanking those that had already participated in the study and encouraging a response from the subjects of the study sample that had not responded at that time. Dillman (2000) suggests a response rate of 60-75% for mail surveys. With the incorporation of the Tailored Design Method within the context of my study, as documented in Dillman's work, I hoped this would be a feasible goal for the rate of survey response.

Data Analysis and Display

An identification number (ID) was printed on each of the individual survey questionnaires, ranging from 20000 to 20500. These ID numbers served in my review and compilation of the responses gathered from the survey. The returned surveys were reviewed for overall content and personal observation. I then consolidated the survey responses in the TCAD land parcel address point theme table, according to the previously established ID number that was assigned to each survey. To simplify the process of entering and summarizing the response data, I generated a survey response code key prior to data entry (refer to the Appendix). This involved assigning a numeric code to each of the response choices for each question in the survey questionnaire. For example, question 1 in the sample survey simply asks for a bivariate "yes" or "no" response. Such questions were coded with a "1" for "yes" and a "2" for "no". However, for inquires similar to those in question 2 and 3b, where a written response is requested, I established a scale of 1 to 5 or more if necessary, to document the range of varied responses. Questions similar to 3a in the sample survey questionnaire that list a continuum of opinions, i.e. "Strongly Disapprove" to "Strongly Approve", were coded based on a ordinal scale of 1 to 5. If the respondent opted to omit answering a specific question, it was determined that an asterisk would be entered to represent the fact that an answer was simply not provided, and the lack of data was not an error in data entry.

Utilizing SPSS, I then processed basic descriptive statistics on the response data to better familiarize myself with the data and identify any preliminary correlations that may exist between the socio-cultural characteristics, risk perception, and stakeholder participation. Next, I composed various graphs and tables to quantify and summarize the survey response data and better visualize the results of the study. I then completed a series of inferential statistics on the data to verify statistically significant correlations among the variables, applying a critical value of .05 in analyses of corrleation. The results and implications of these statistical analyses will be summarized and discussed in further detail later in the thesis.

For cartographic display of the survey response data, I acquired several datasets from the City of Austin that would eventually serve as base map layers in the final generation of maps to illustrate risk perception and stakeholder participation. The City of Austin has consolidated various spatial datasets on a CD ROM for public distribution that are relevant to study of the Austin area and Travis County. Therefore, the search for additional spatial data was minimal in this case, and the issue of data projection was basically nonexistent. Each of the data themes used during my preparation of thematic maps were projected to the Texas State Plane NAD 83 survey feet coordinate system. I later developed data themes or layers from the compiled demographic and perceptual data that were gathered during administration of the survey questionnaire. ArcView 3.2 was utilized to query the data and generate thematic maps to spatially visualize relationships and patterns among the socio-cultural variables, risk perception, stakeholder participation, and media exposure. I then attempted to discern which socio-cultural variables are most significantly related to or indicative of risk perception and levels of public participation.

CHAPTER IV

RESULTS OF THE STUDY

Survey Results

As previously noted, the study sample consisted of 500 respondents. The initial survey questionnaire was distributed to the potential survey respondents on March 25, 2001. In the two weeks following, 67 responses were collected and logged. The follow-up reminder postcard was then delivered on April 10, 2001. A total of 23 responses and one apology for not being able to respond were collected since that date. Therefore, a total of 90 survey responses were collected from the original sample population of 500 elements. Disappointingly, this number translates into a mail survey response rate of approximately 18%. Research suggests incorporating a variable of "non-eligible or non-reachable" into the calculation of response rates (Dillman 1978). However, due to the financial constraints associated with this personally funded study, it had been decided to distribute the survey at a significantly less expensive non-profit bulk postage rate. Thus, the number of "non-eligible or non-reachable" is unknown in this case because the undelivered surveys were never returned to the original sender, as is the case in bulk rate mailings. Therefore, for the purposes of this research, the survey response rate was calculated to be 18%. It is important to note, that no Spanish versions of the survey questionnaire were completed and returned in this study. The actual survey responses collected from the returned survey questionnaires have been summarized and illustrated in the following charts.

Review of the actual number of respondents within each buffer zone, revealed apparent concentrations of greater response within the 4th and 5th 1-mile buffers, totaling 23 and 19 respectively (Figure 2). Awareness of the Longhorn Pipeline was relatively high within the study sample at 88%. Only 11 of the 90 respondents were unaware of the pipeline's existence and proposed reopening (Figure 3). Television rated as the most predominant choice of media that exposed the citizens to the issue, with the newspaper rating a close second (Figure 4).

Public disapproval pervades the consensus of the sample. Survey results indicated that a sample majority at 69% disapproved the reopening and operation of the Longhorn Pipeline, and among the dissenting opinion 51% "strongly" disapprove. Only 9% of the respondents actually approved the reactivation of the pipeline, and the remaining 10% were indifferent to the initiative and had not formed an opinion at the time of the survey (Figure 5). Longhorn Pipeline proponents supported their advocacy of the initiative with the argument of potential economic benefits, a safer method of transport than trucks, and a feasible solution for present energy needs.

The survey results indicated that 52 of the 90 respondents perceive the Longhorn Pipeline imposes a potential threat of risk upon the human health and safety of themselves or their families (Figure 6). Furthermore, 72 of the 90 survey respondents indicated that they perceive the pipeline to impose a potential threat of risk upon the natural environment (Figure 7). Of those who were aware of the Longhorn Pipeline, 86% felt that the pipeline should be rerouted away from homes, school grounds, and hospitals (Figure 8).

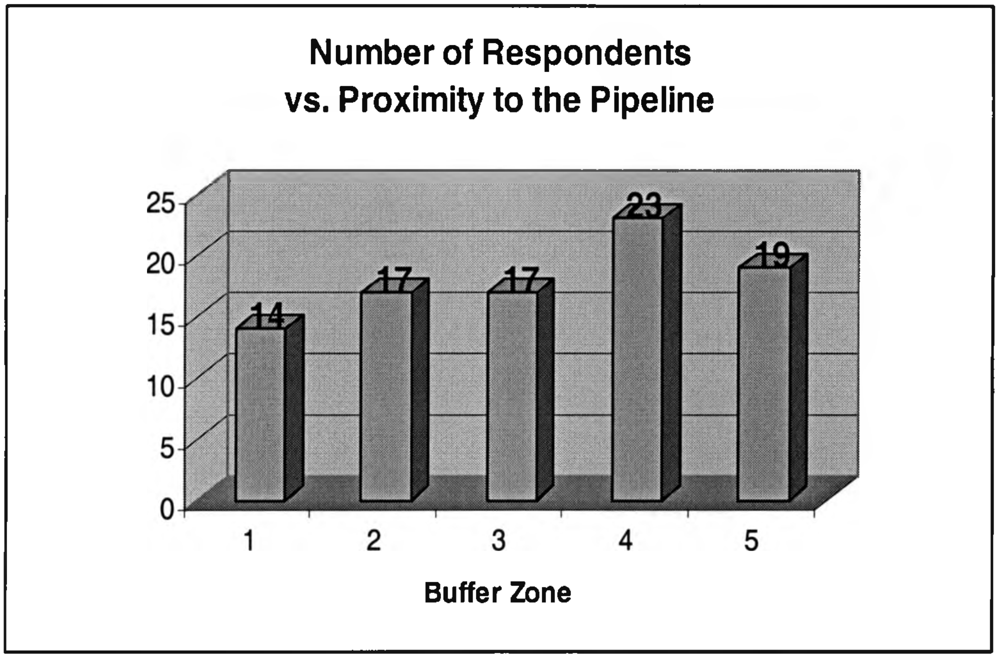


Fig. 2. Chart: Number of Respondents vs. Proximity to the Longhorn Pipeline. This chart depicts the inverse relationship between the number of survey respondents and geographic proximity to the Longhorn Pipeline.

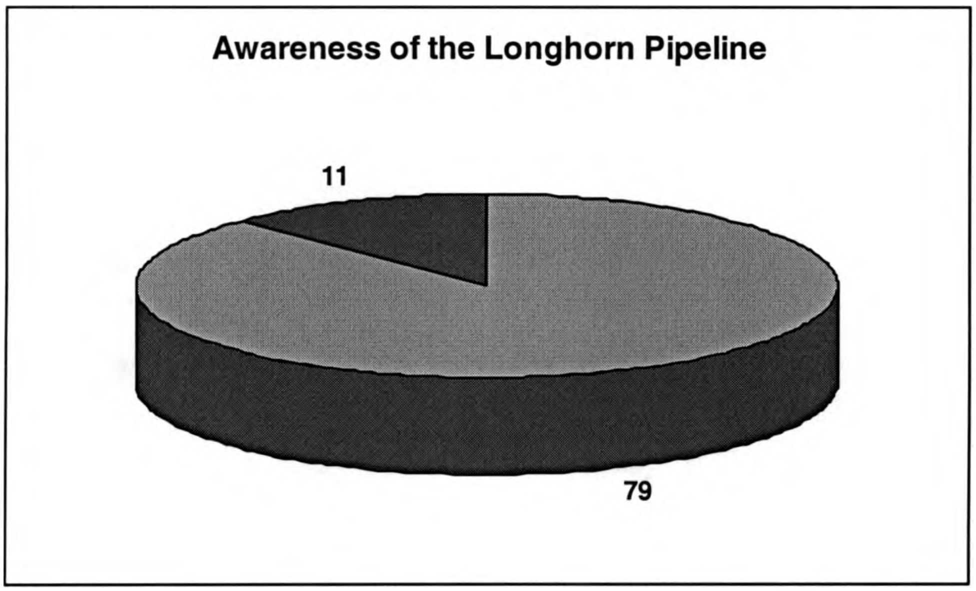


Fig. 3. Chart: Awareness of the Longhorn Pipeline. This chart illustrates levels of awareness of the Longhorn Pipeline as surveyed in this study.

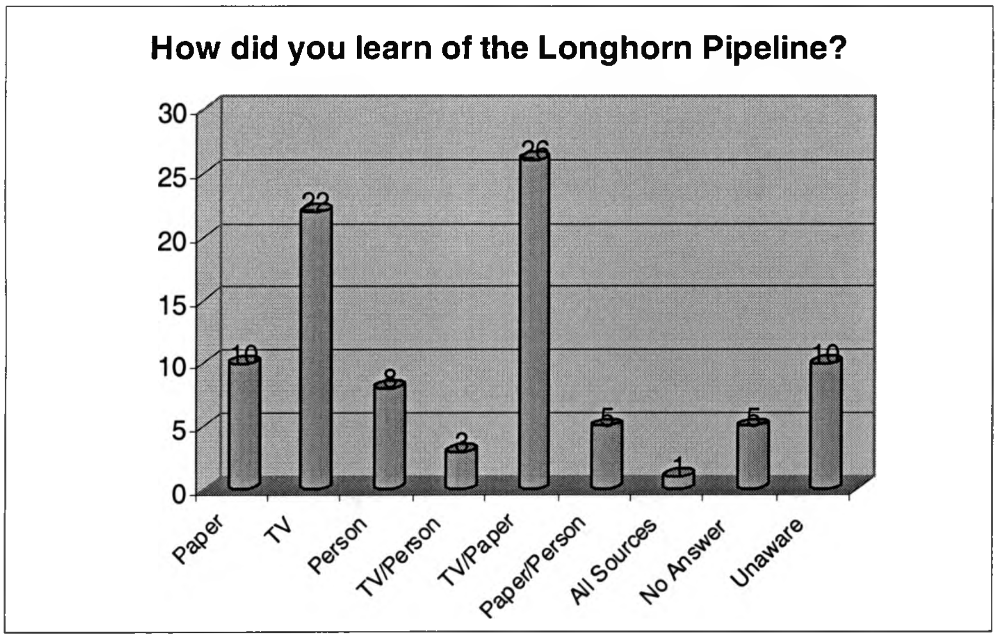


Fig. 4. Chart: How did you learn of the Longhorn Pipeline? The chart above displays the various media from which the survey respondents first learned of the Longhorn Pipeline.

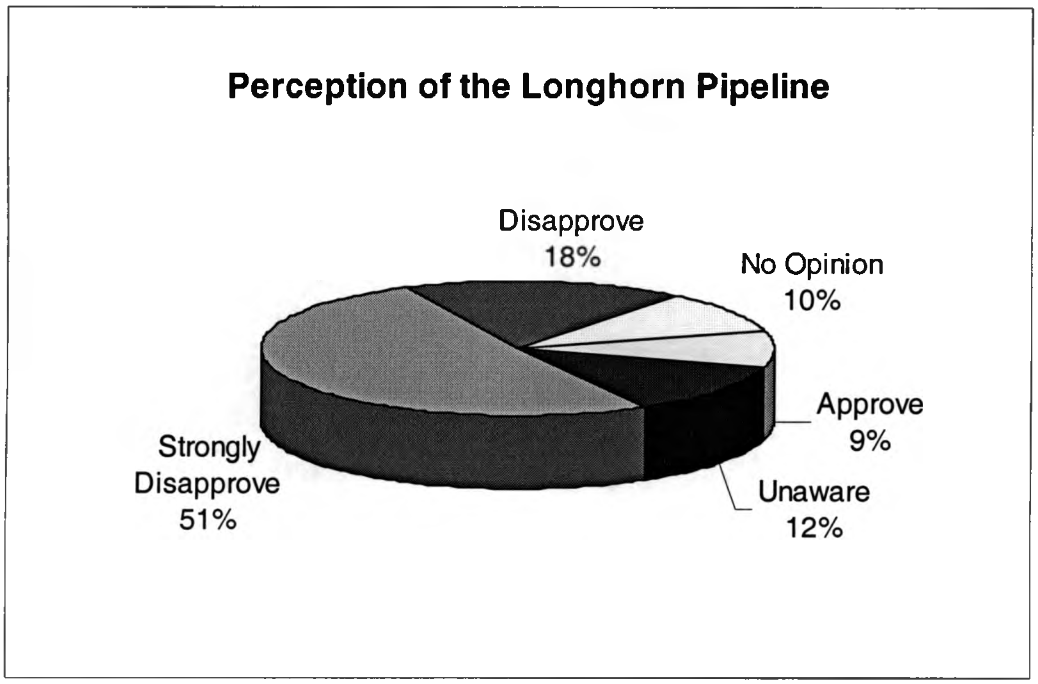


Fig. 5. Chart: Perception of the Longhorn Pipeline. This chart depicts public opinion of the survey population regarding the reopening and operation of the Longhorn Pipeline in Travis County, Texas.

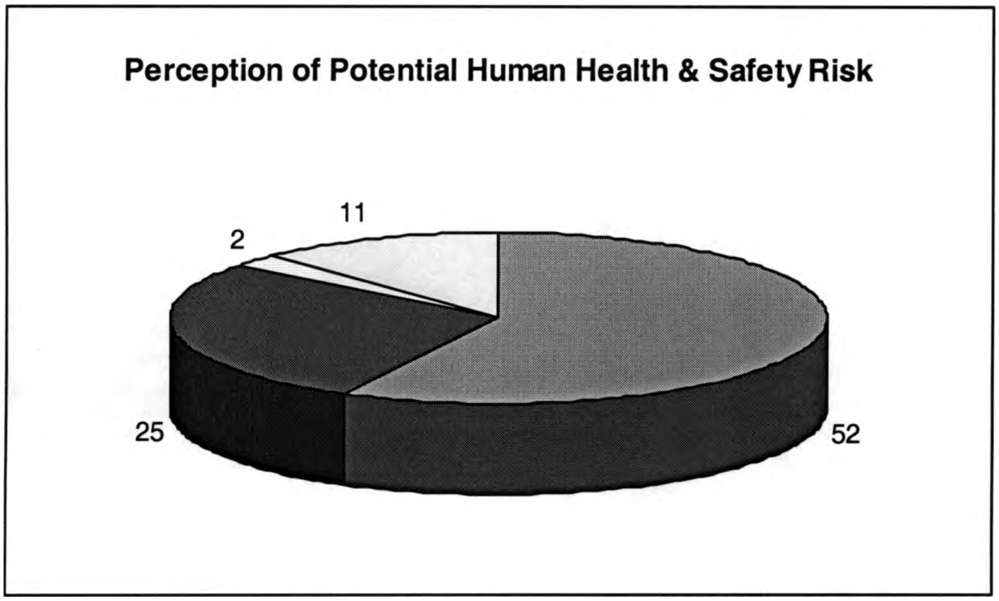


Fig. 6. Chart: Perception of Potential Human Health and Safety Risk. The chart above represents the survey respondents' perception of the Longhorn Pipeline as a potential risk to human health and safety.

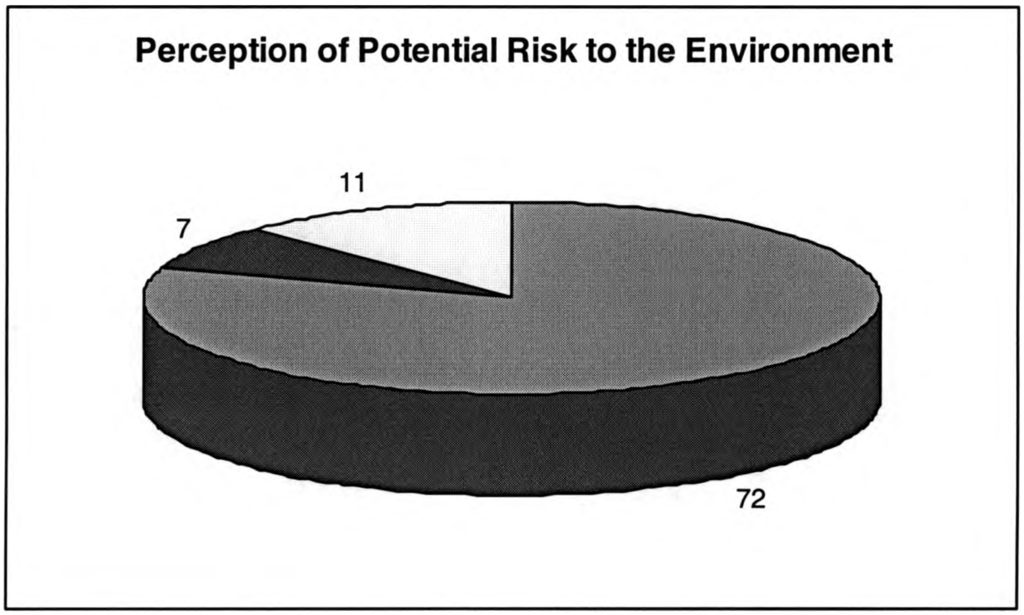


Fig. 7. Chart: Perception of the Potential Risk to the Environment. This chart depicts the survey respondents' perception of the Longhorn Pipeline as a potential risk to the environment.

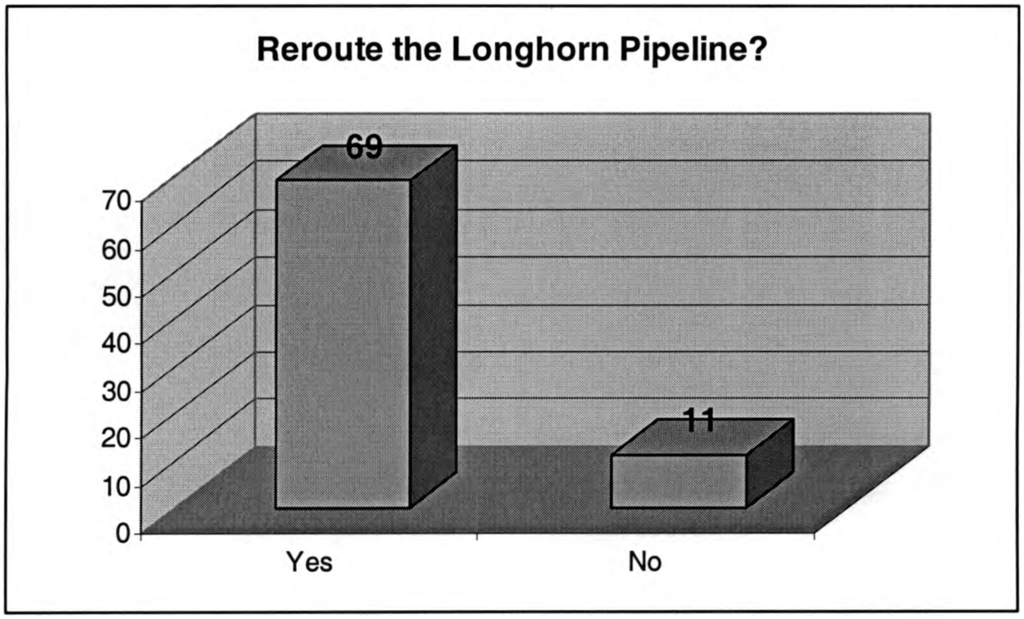


Fig. 8. Chart: Reroute the Longhorn Pipeline? This chart reveals the number of survey respondents that believe the Longhorn Pipeline should be rerouted away from homes, schools, and hospitals.

Inquiries regarding participation in the environmental impact assessment of the Longhorn Pipeline indicated that citizens for the most part were not consulted for their opinion regarding the initiative. Furthermore, 82% of the study respondents who were aware of the Longhorn Pipeline felt that they, as potentially affected citizens, should be included in the impact assessment phase of the proposal. More importantly, 89% stated that they would participate in the impact assessment process if they were personally consulted or allowed to, as in a public vote for approval or disapproval of the pipeline initiative (Figure 9). Fourteen survey respondents have actually participated in the Longhorn Pipeline public opinion review forums that have occurred during the last three years since the reactivation of the pipeline was first proposed. These individuals either attended a community meeting, participated in a public rally or protest, distributed flyers or brochures to the public, or wrote letters to their legislators in protest of the pipeline.

The survey sample represents a politically active population. Of the 90 respondents, 85 (94%) claim to be registered voters, and 79 (88%) survey respondents head to the polls regularly to vote (Figure 10). These results are higher than percentages typically noted for the general public, illustrating the conclusion that people who responded are more likely than average to be politically aware and active. Voters of the survey sample were also asked to rank their concern for specific public issues. Thirty-six percent of the respondents indicated that education was their greatest issue of concern, 29% selected the environment as their ultimate concern, 24% chose taxes, 7% chose water, and 4% selected roads as their most important issue of concern at the polls (Figure 11). Thirteen of the survey respondents maintain a membership with an environmental advocacy group (Figure 12).

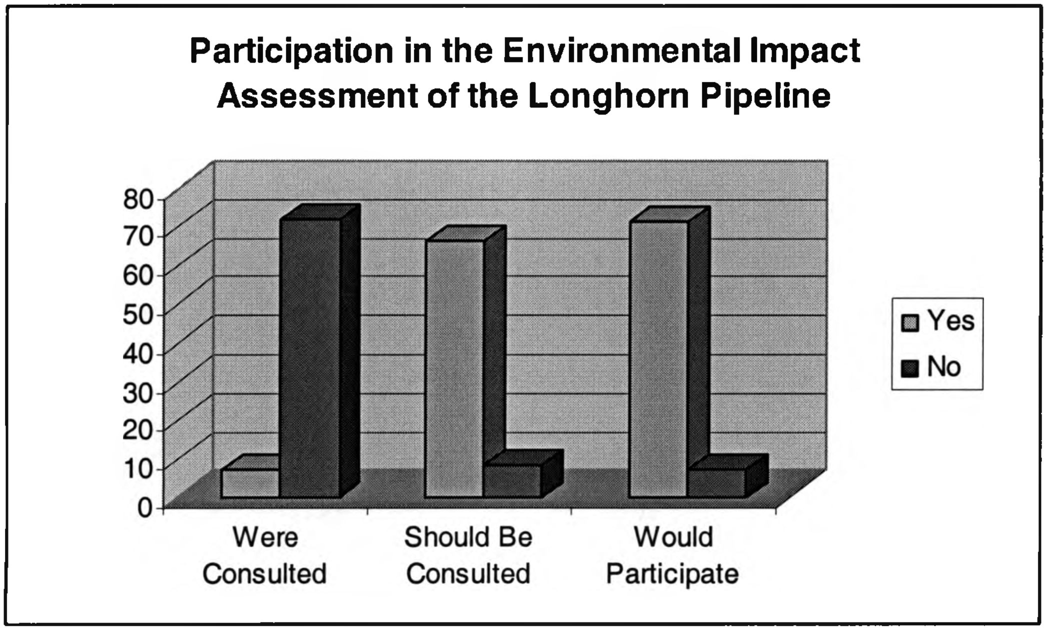


Fig. 9. Chart: Participation in the Environmental Impact Assessment of the Longhorn Pipeline. This chart illustrates several aspects of participation as surveyed in the questionnaire. Inquiries were made regarding whether or not the survey respondents were consulted for their opinion of the Longhorn Pipeline, whether or not they felt they should be consulted, and would they agree to participate in the environmental impact assessment process if they were indeed allowed to.

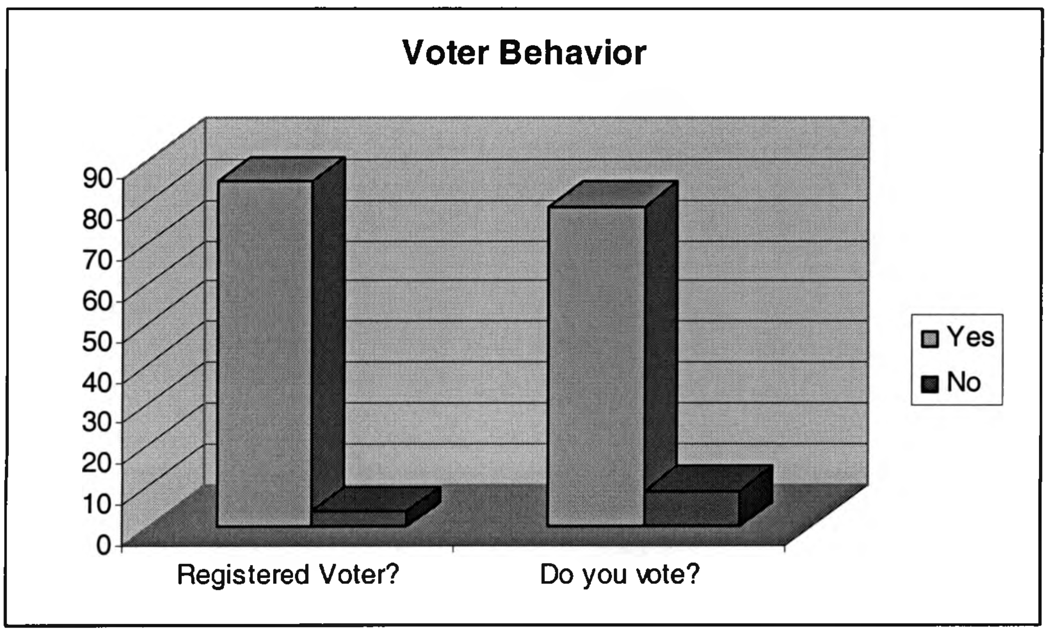


Fig. 10. Chart: Voter Behavior. This chart depicts voter behavior. The survey respondents noted whether or not they were registered voters and if they voted on a regular basis.

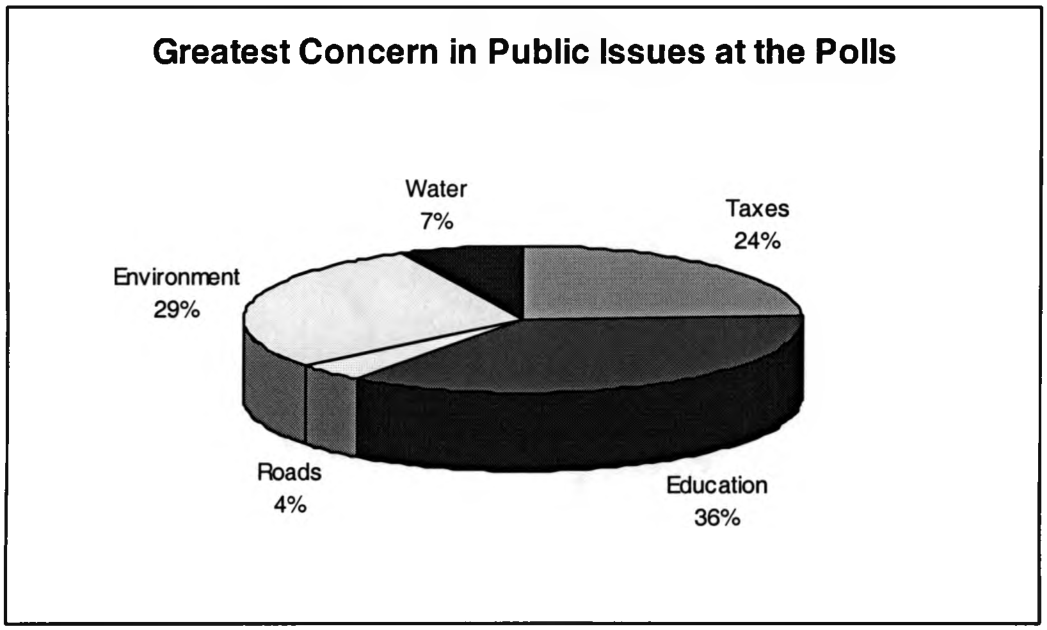


Fig. 11. Chart: Greatest Concern in Public Issues at the Polls. This chart illustrates survey respondents' greatest concern in public issues when they go to the polls to vote.

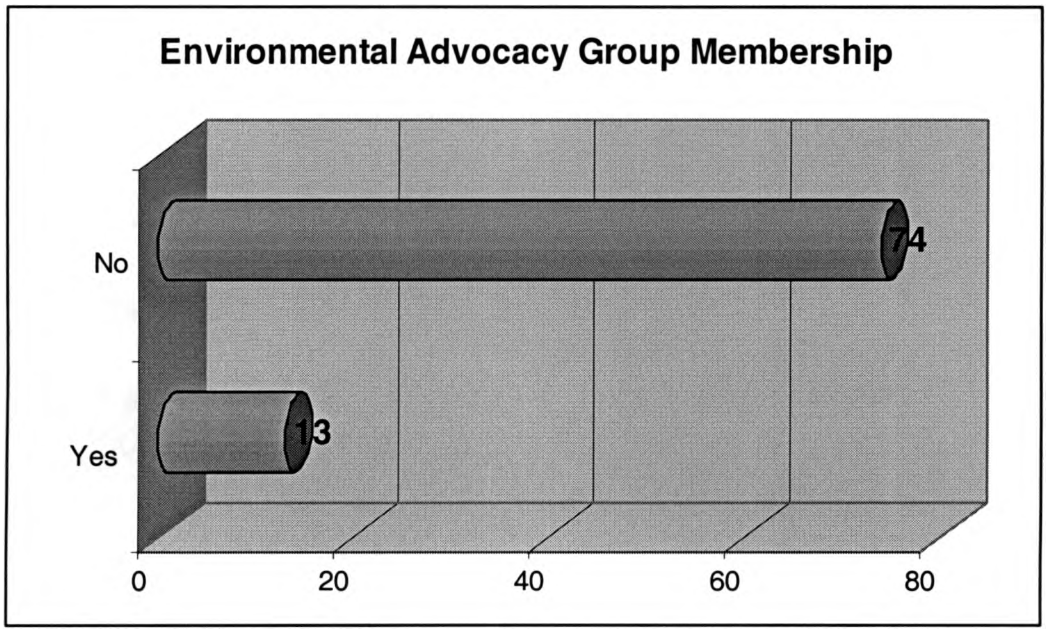


Fig. 12. Chart: Environmental Advocacy Group Membership. The chart above illustrates levels of environmental activism among the survey respondents.

Access to media exposure seemed to be consistent for the majority of survey respondents. Seventy-eight percent noted that a television, radio/stereo, and computer is found in their home and 21 percent have a television and a radio/stereo within the home (Figure 13). A sample majority at 68% subscribe to a daily newspaper within their home (Figure 14) and 77% have personal access to the Internet on a daily basis (Figure 15). Two inquiries were made regarding a respondent's propensity to participate in a citizen monitoring program to report on future operations, safety implementations, or accidents that may occur if the pipeline is allowed to reopen and becomes operational. Forty percent of the respondents agreed they would volunteer to participate in the citizen pipeline monitoring program (Figure 16), and 48 respondents expressed that an interactive web site would enhance their level of participation in the program. Only one respondent felt the utility of this web site would discourage their level of participation in the program (Figure 17).

Regarding the socio-cultural variables surveyed in the study, the age distribution of the survey sample consisted of 41% in the 46-60 age bracket, 20% in the 26-35 age bracket, 18% in the 36-45 years grouping, and 11% in the 61-75 year category. Eight percent of the sample respondents were older than 75 years of age and only 1% belonged to the 18-25 year group (Figure 18). The male to female ratio of survey respondents was almost 1:1 with the final count totaling 40 male and 44 female respondents (Figure 19). The 6 remaining respondents elected not to disclose their gender in the survey.

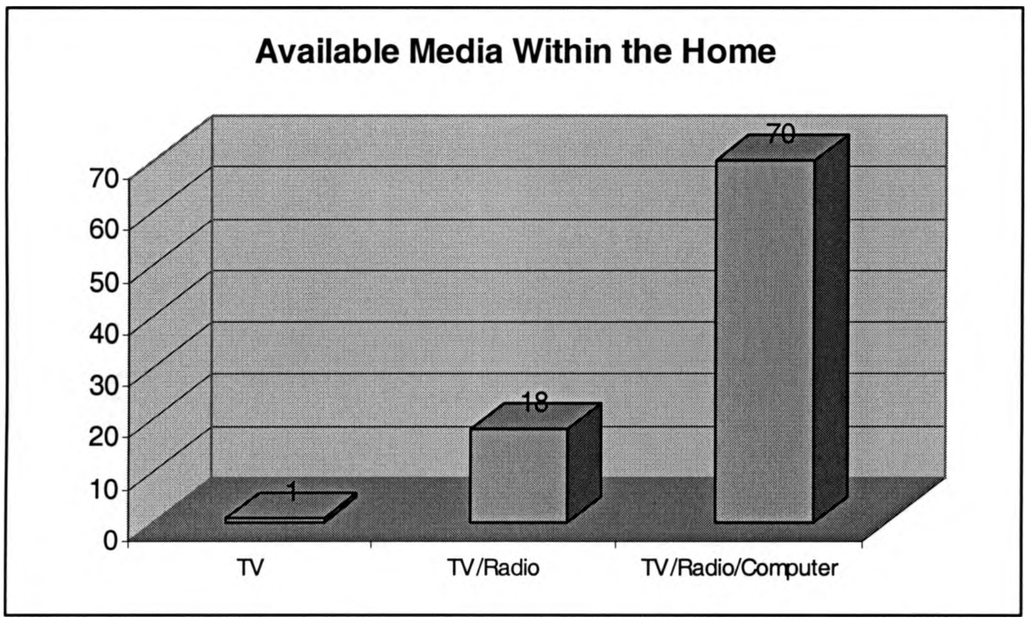


Fig. 13. Chart: Available Media Within the Home. This chart depicts levels of media exposure within the home as measured by the survey questionnaire.

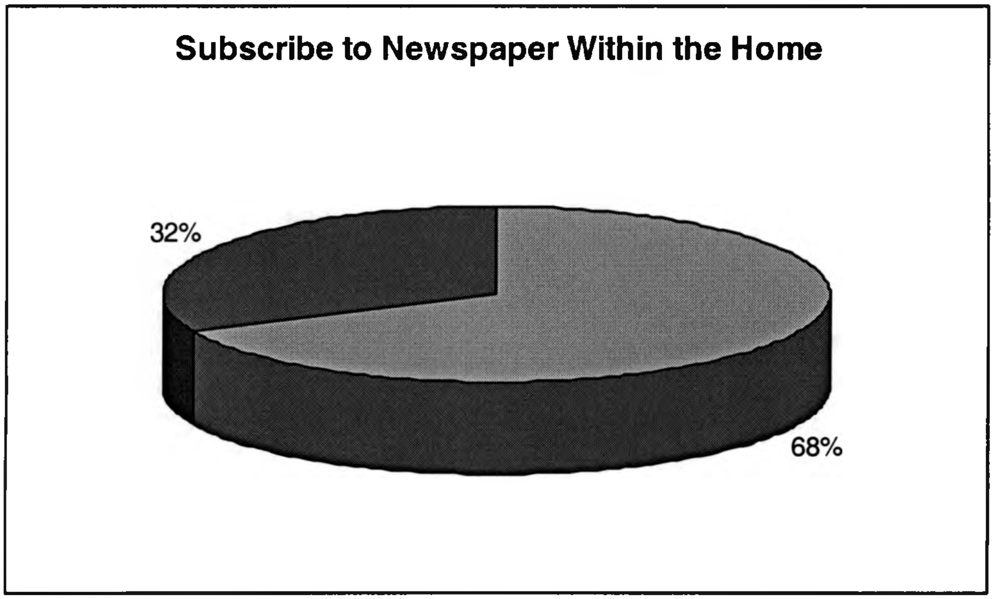


Fig. 14. Chart: Subscribe to Newspaper. The chart above depicts whether or not survey respondents subscribe to a newspaper at home. In this study, 68% subscribe to news periodicals.

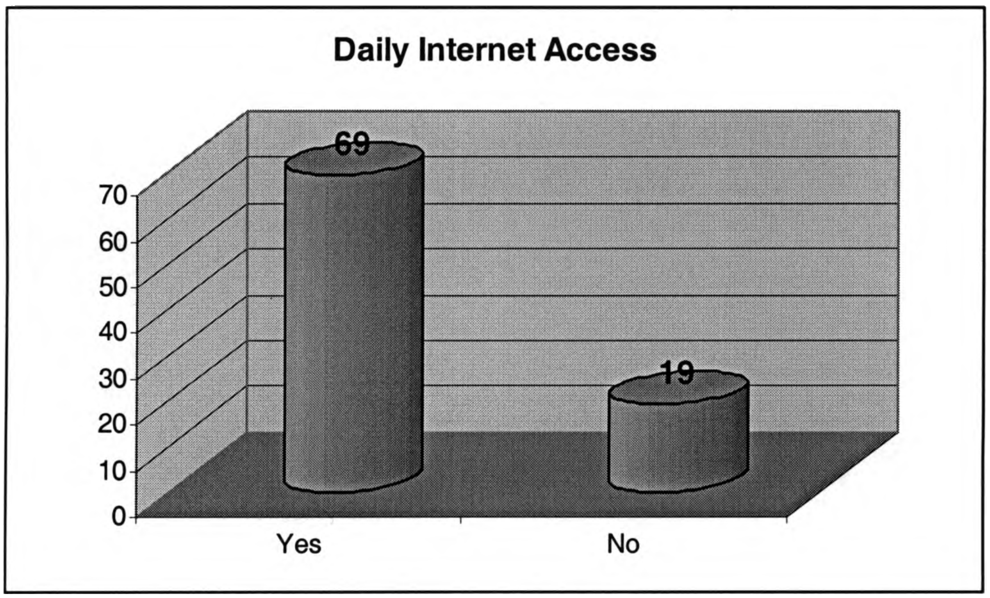


Fig. 15. Chart: Daily Internet Access. This chart reveals exposure to the Internet. Survey respondents were asked whether or not they had access to the Internet daily.

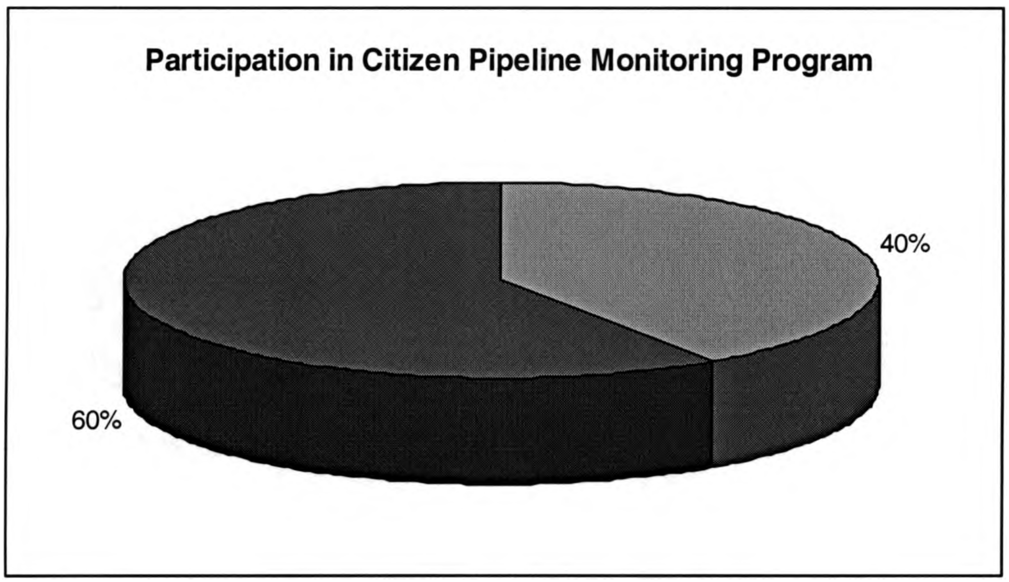


Fig. 16. Chart: Participation in Citizen Pipeline Monitoring Program. This chart illustrates the number of survey respondents that agreed to participate in a citizen pipeline monitoring program if the Longhorn Pipeline is allowed to reopen.

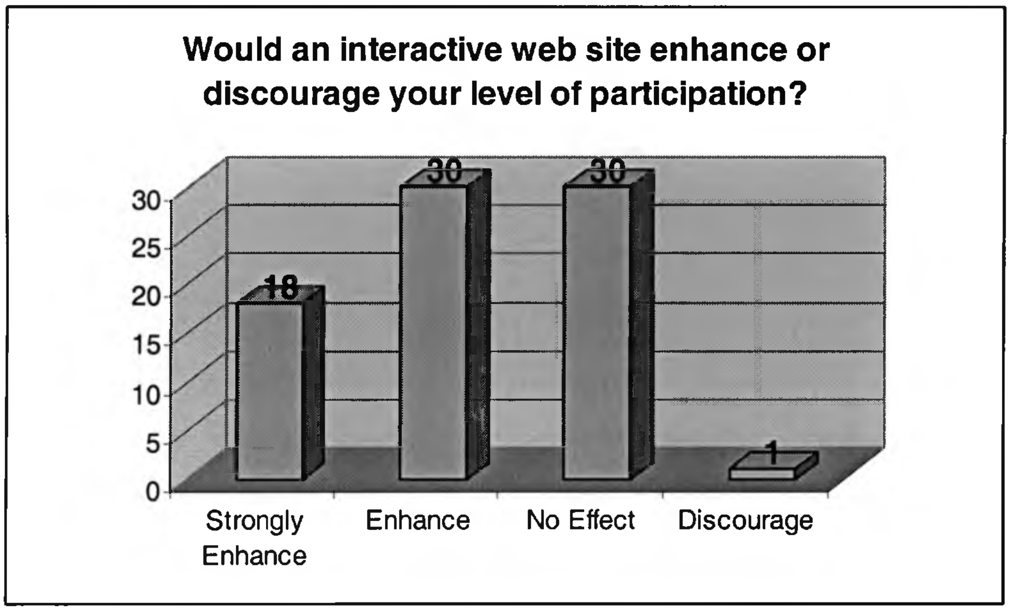


Fig. 17. Would an interactive web site enhance or discourage your level of participation? This chart reveals survey respondent opinion of the potential benefits from incorporating an interactive web site in the implementation of the volunteer pipeline monitoring program.

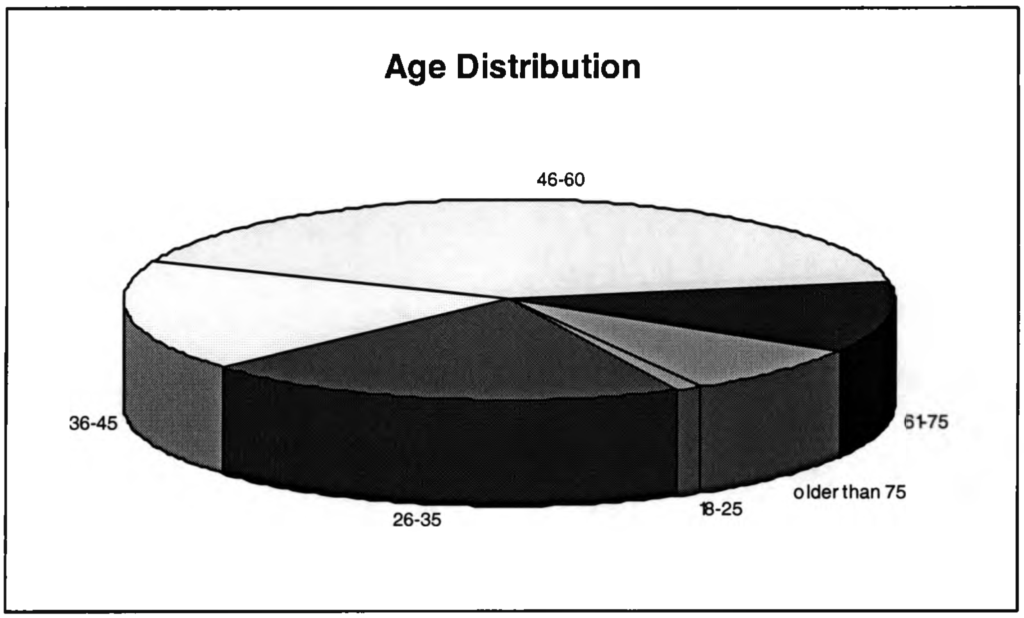


Fig. 18. Chart: Age Distribution. This chart depicts the age distribution of the survey respondents.

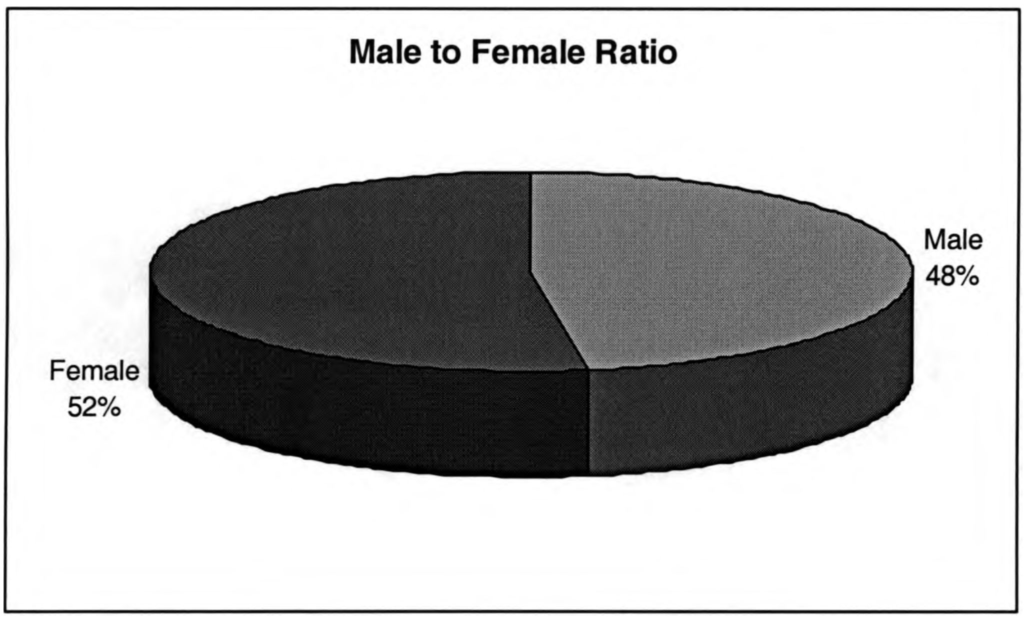


Fig. 19. Chart: Male to Female Ratio. The chart above illustrates the ratio of male to female respondents in the survey.

The racial diversity of the survey respondents is minimal at best. Eighty percent of the survey respondents designated themselves as "White". The "Black" survey respondent population was 4%, with 2% "Asian/Pacific Islander", 13 % "Hispanic origin", and 1% "Other" (Figure 20). Six respondents elected to omit answering this question as well. Of the 90 total respondents, 52 have children and 34 do not have any children (Figure 21). In this instance 4 survey respondents opted to not answer this question. It is important to note in reference to the respondent's geographic location, that 14% of the survey respondents have been living at their present address for less than a year and 36% have lived at this address for 1 to 5 years (Figure 22). The survey response of this study is predominantly represented by the affluent and the educated. A total of 59% of the survey respondents accrue a household income greater than $50,000 (Figure 23). Nine percent of the survey respondents have completed an Associate's or technical degree and 68% of the survey respondents have completed a Bachelor's degree or higher (Figure 24). The occupation variable within the study is primarily composed of citizens characterized within the "Professional", "Technical", and "Other" categorical designations. After further inspection, the "Other" designation was most often defined as "Real Estate" or "Private Business Owner". It is also important to note that 10% of the survey respondents designated themselves as retirees (Figure 25).

Survey respondents were also offered space for personal comment. In the "Additional Comments" section of the survey questionnaire, 64% of the respondents requested a copy of the final results of the study. Others elaborated on their questionnaire responses, justifying their opinions regarding the benefits and risks associated with the Longhorn Pipeline. Several significant statements have been summarized below to

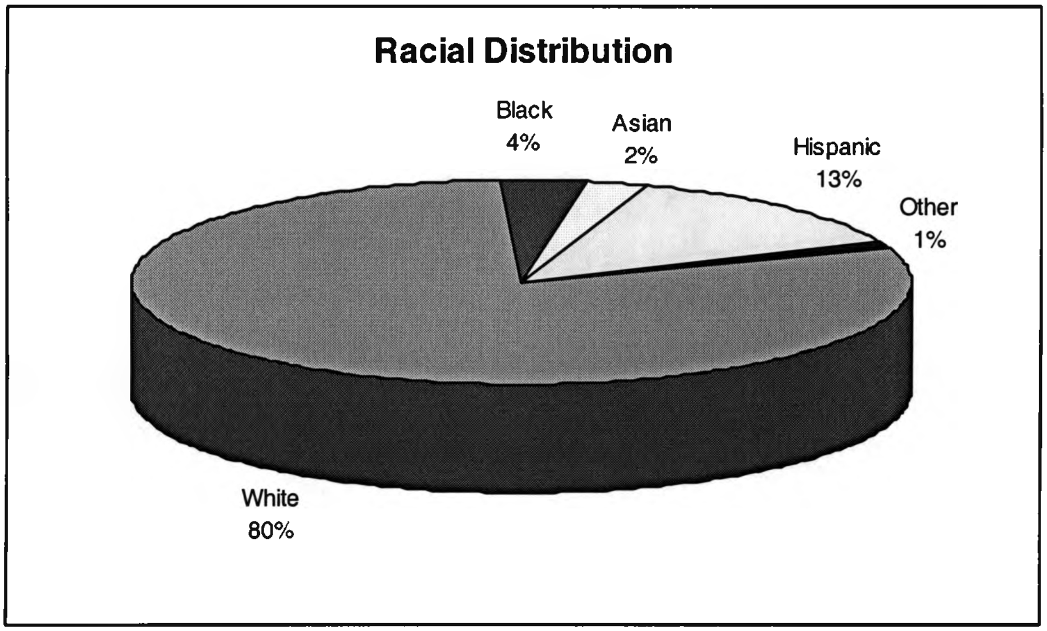


Fig. 20. Chart: Racial Distribution. This chart depicts the racial distribution of survey respondents.

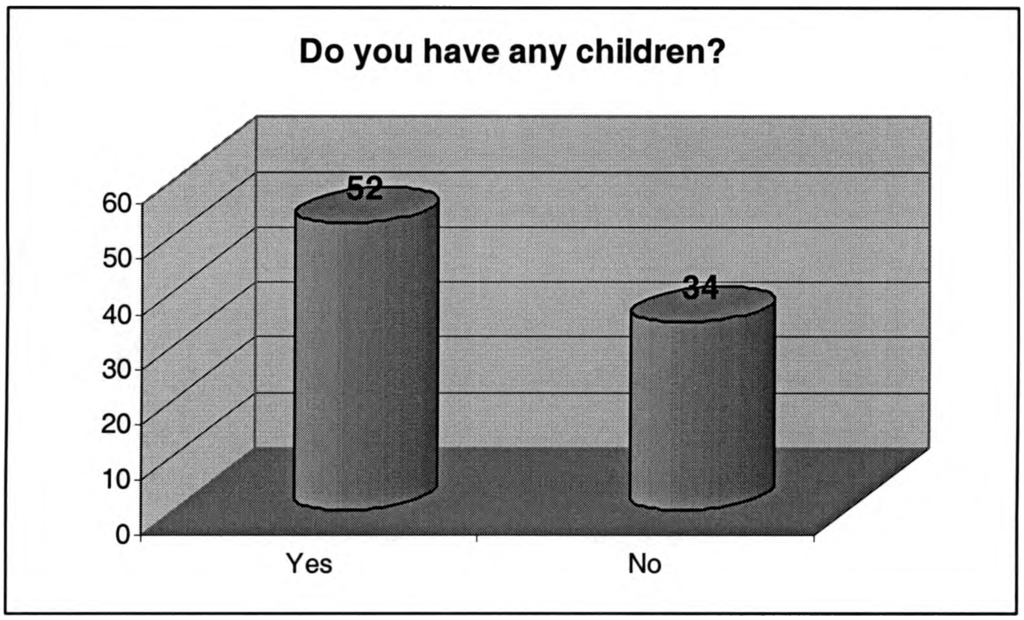


Fig. 21. Chart: Do you have any children? The chart above illustrates the number of survey respondents that have children.

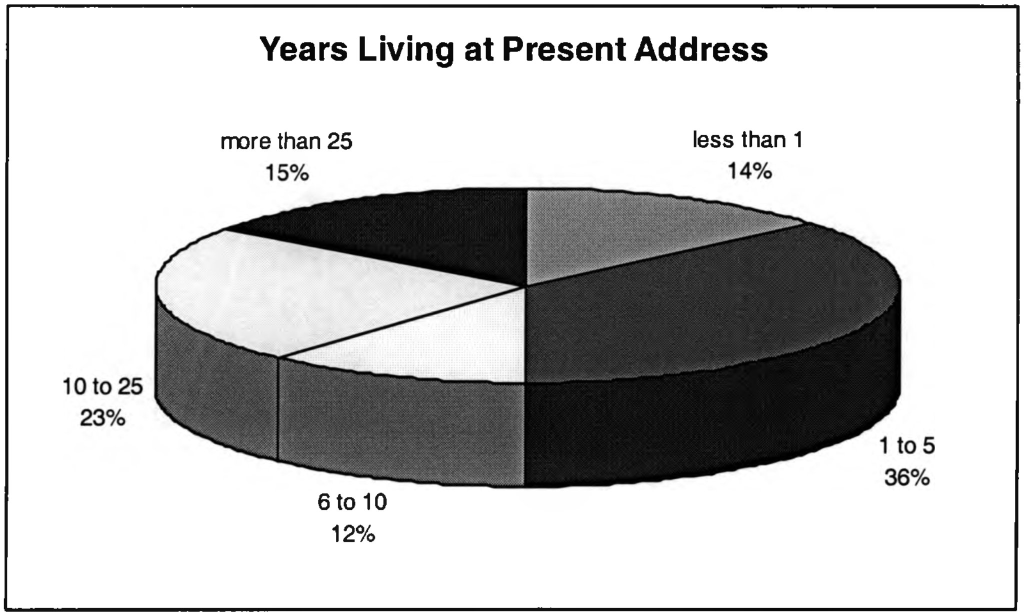


Fig. 22. Chart: Years Living at Present Address. Survey respondents were asked to note the number of years they have lived at their present address. The chart above depicts the percentages for the responses to this inquiry.

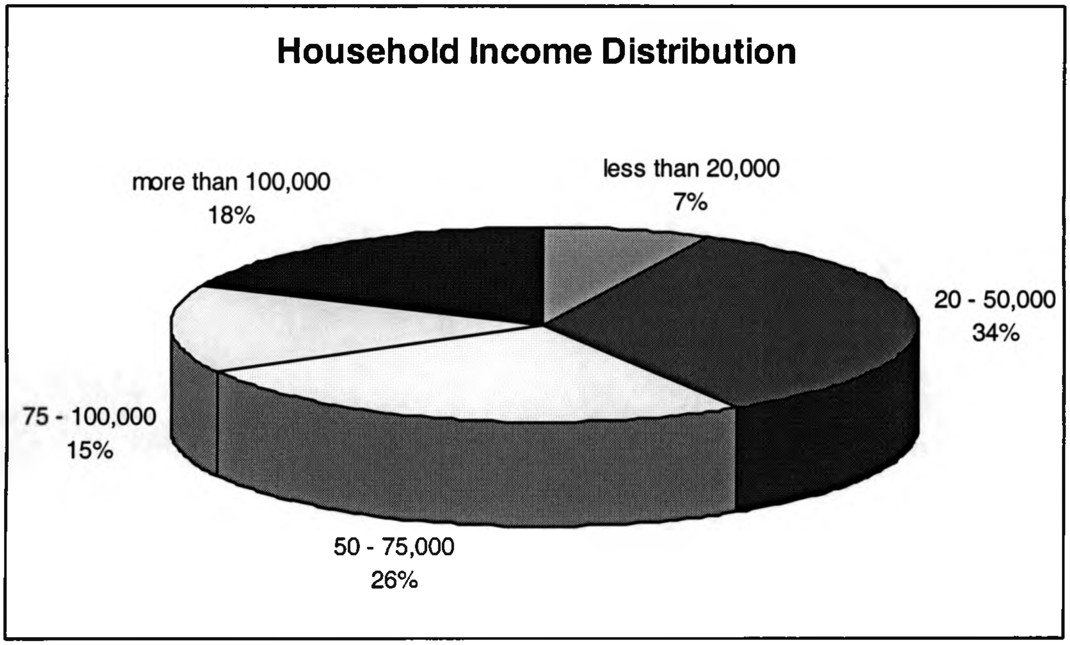


Fig. 23. Chart: Household Income Distribution. This chart represents the distribution of household income for the survey respondents in this study.

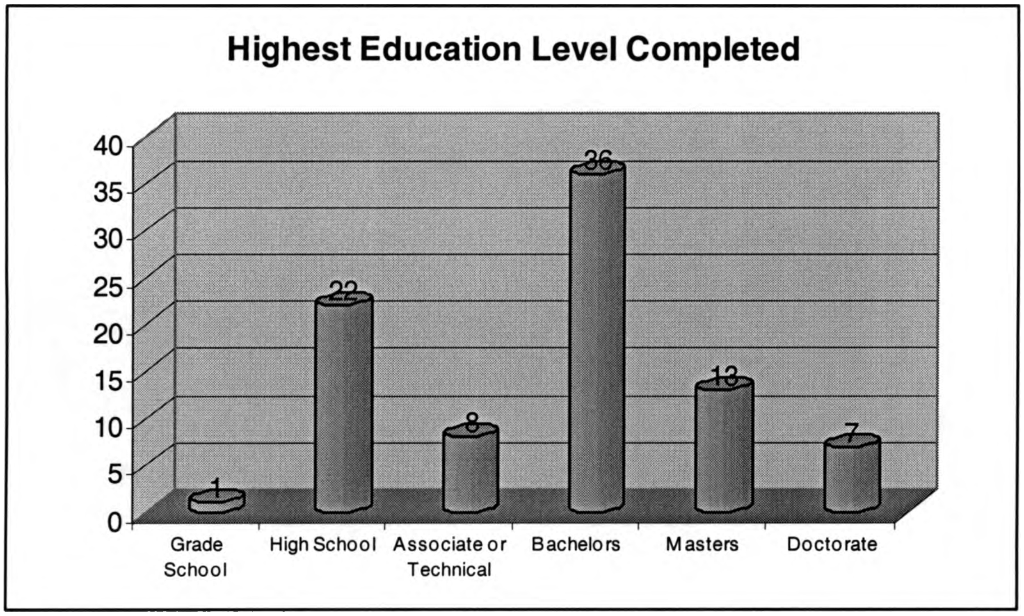


Fig. 24. Chart: Highest Education Level Completed. This chart represents education levels of the survey respondents.

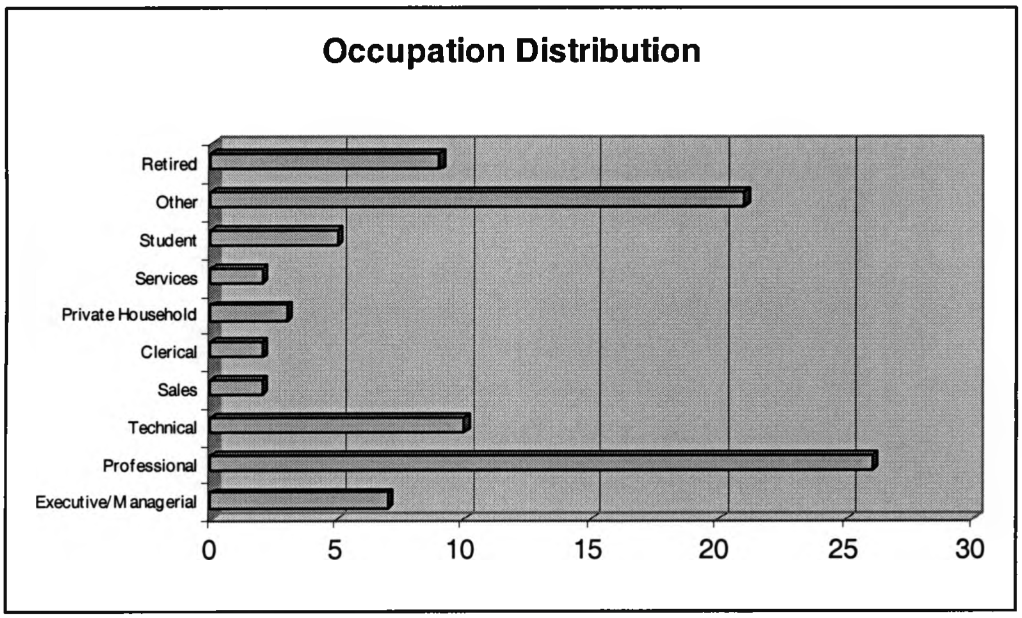


Fig. 25. Chart: Occupation Distribution. This chart depicts the occupation variable as assessed for the survey population.

document the array of ideas. One respondent expressed disappointment with the few community meetings that were held to discuss public opinion of the project, stating "we were consulted for our opinion…but only in public forums where dissenters were allowed to dissent and then ignored." A different survey respondent expressed approval of allowing public participation in the assessment process, stating "an equal vote would have been more helpful than the 'privilege' of being included…my opinion carries no weight or authority apparently."

Statistical Analyses and Data Correlations

Preliminary descriptive and inferential statistics were completed for the response data to discover and interpret significant data correlations among the dependent and independent variables of the study. The survey response data can be classified as nominal data, namely the "yes" and "no" inquiries, and ordinal data, those questions employing a ranking or scale system. Within SPSS I first calculated descriptive statistics on each of the assessed variables. I specifically focused upon measurements of central tendency due to the scale of data I was working with in the survey response data. Shaw and Wheeler (1998) propose that with nominal and ordinal scale data it is most helpful to assess the modal frequency of each attribute, thereby establishing the greatest number of observations or responses for any one variable. The modes were calculated and observed for each of the dependent and independent variables. A summary table of the modal frequencies for each variable and their associated histograms plotted against the normal distribution curve can be referenced and reviewed in the Appendix. Measures of dispersion are not recommended for nominal and ordinal data (Shaw and Wheeler, 1998).

I then conducted non-parametric correlation analyses for each of the variables surveyed within the questionnaire. In applications using ordinal and nominal scale data, research suggests the incorporation of either the Spearman's rank or the Kendall's tau in your analyses. Apparently, these are both suitable for ordinal data. However, the Spearman's rank correlation coefficient is used more widely and is easier to compute (Shaw and Wheeler, 1998). I employed a two-tailed test of significance to assess both positive and negative relationships among the variables and a t-test was calculated to confirm statistical significance. A correlation matrix can be referenced in the Appendix, which lists the results of the correlation analyses performed for each of the variables in the set.

Due to the complex nature of perception and participation, it is probable that many variables may be contributing factors. Shaw and Wheeler (1998) suggest that very few multivariate methods can deal satisfactorily with non-parametric data. In my multivariate analyses I opted to focus upon the analysis of dependence, not necessarily the interdependence of the variables. I processed a series of multiple regression analyses comparing the dependent variables of perception and participation, and the independent variables that exhibited statistical significance in the preliminary correlation analyses. Tables documenting the regression analyses performed can be referenced in the Appendix. With regard to perception, I incorporated the independent variables exhibiting statistically significant correlations within the regression. Based upon the values obtained in these regression equations, little could be explained or accounted for within the models. Regression equations for participation however, confirmed that perception of risk and prior participation in the assessment phase contributed significant levels of explanation within the models.

Spatial Distribution of Survey Response

Inspection and review of the geographic distribution of the survey sample and the actual survey respondents revealed several important spatial patterns and also a flaw in executing the selected sampling methodology. With respect to the spatial distribution of the potential survey respondents, several pockets without any potential respondents visible in the distribution of the study sample, more specifically an area just south of the pipeline bounded by MOPAC and Interstate 35 and two smaller pockets in central Austin (Figure 26). These pockets or holes in the geographic distribution of the potential sample population elements are associated with specific zip code groupings. I believe there are two possible explanations for this error in the sampling process. The first reflects the previously referenced limitation of this GIS dataset, in that the parcel coverage only represents the City of Austin's full purpose jurisdiction. The actual study area of this project however, encompasses the communities of Sunset Valley, San Leana, and also portions of Austin's extra-territorial jurisdiction. Therefore, multiple concentrations of these holes are associated with those records that were removed from the table prior to processing the sample due to the lack of a zip code variable (Figure 27). The remaining elements were not included due to an error in executing the systematic random sampling process within SPSS. I repeated the process within SPSS to recreate a distribution list and unveiled the mistake in my attempt. In the first iteration, I selected a sample of 200 elements from each buffer zone with the original goal of 1000 potential respondents in

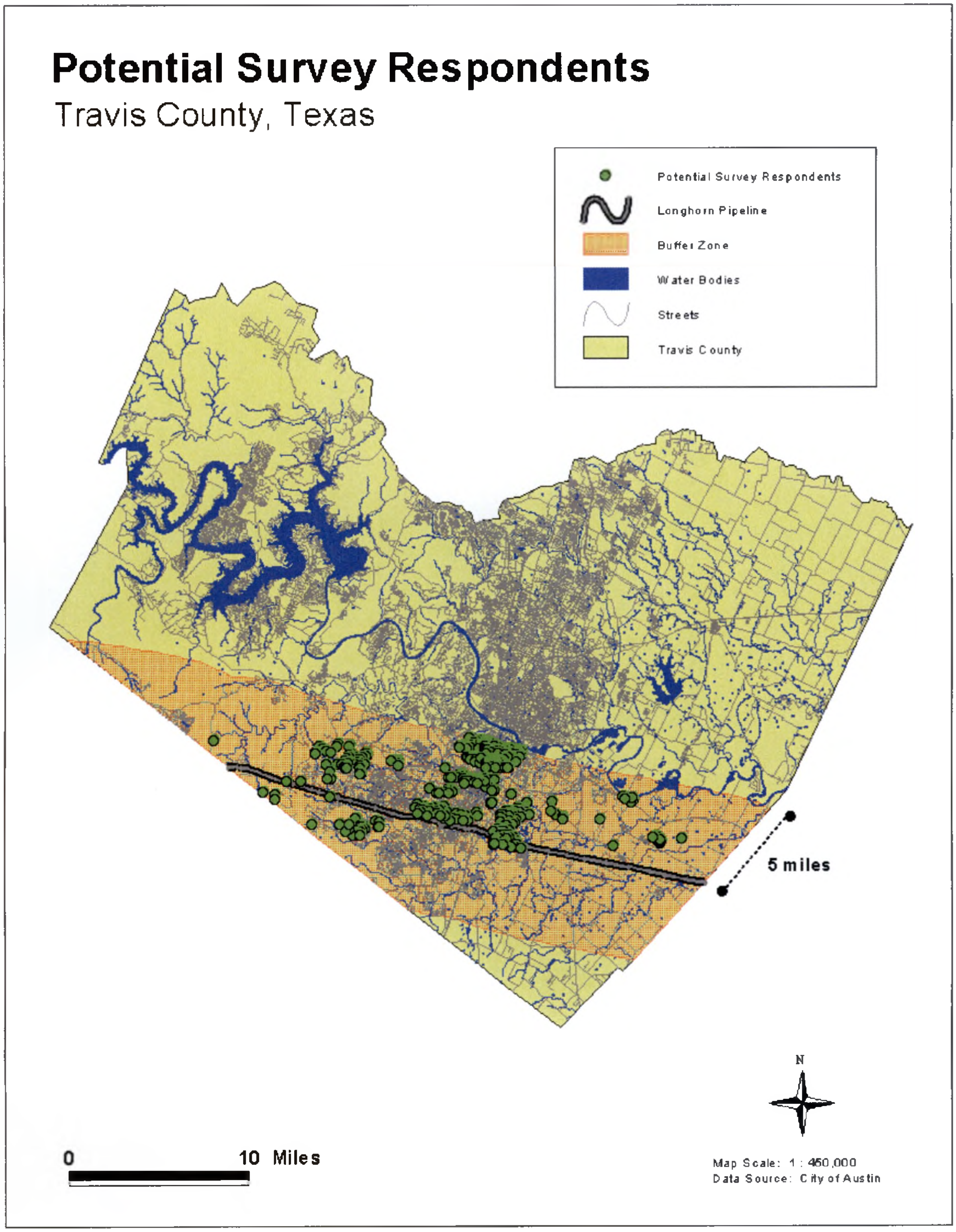


Fig. 26. Map: Potential Survey Respondents. This map depicts the geographic location of the 500 potential survey respondents in this study. The pockets without any respondents are clearly visible just south of the pipeline transect and just west and east of the central corridor of concentration.

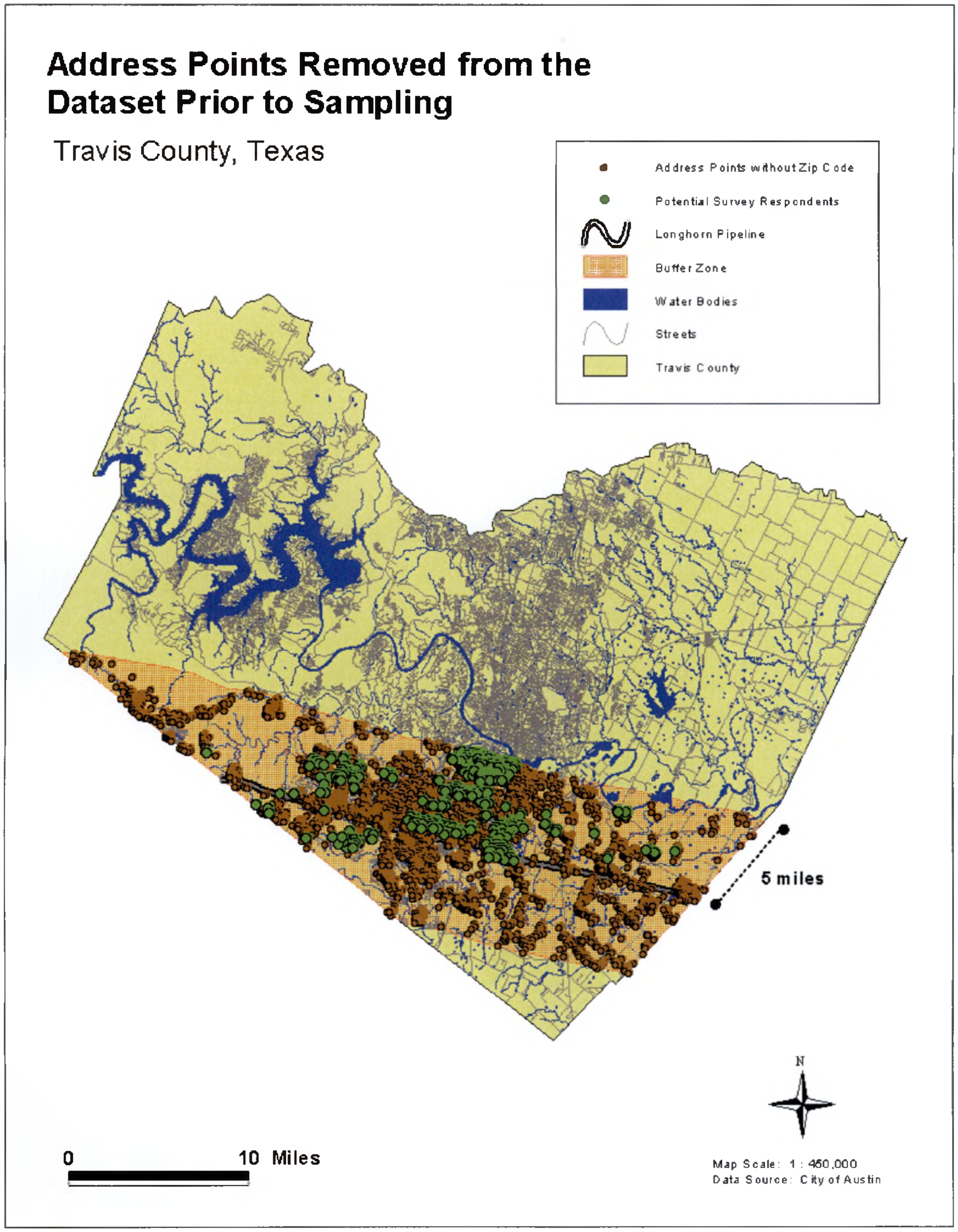


Fig. 27. Map: Address Points Omitted from the Dataset. This map illustrates the distribution of address points that were removed from the TCAD parcel coverage prior to sampling for potential survey respondents. This visual helps to explain some of the pockets or holes found in the distribution of the previous map.

the survey sample. However, it was decided at a later date to reduce the sample size to 500. Unfortunately, I simply omitted 100 elements from each buffer zone at that time in generating the final distribution list of potential survey respondents. I believe this oversight during the first iteration ultimately caused the exclusion of specific concentrations of potential respondents south of the pipeline transect. It is however important to note that the void in potential respondents south of the pipeline is uniform for each of the buffer zones. Therefore, in my opinion, this spatial consistency within the void of potential respondents will not skew the spatial results of the study based primarily upon proximity to the pipeline.

With respect to the spatial distribution of survey response, a central corridor of response is evident and concentrated within an area just north of the pipeline transect and bounded on the west and east by MOPAC and Interstate 35 respectively. The concentrations become more prevalent with distance from the pipeline transect, with two visible concentrations within the 4 and 5 mile buffer zones. As previously noted, the number of responses within each buffer tends to increase as a factor of proximity to the pipeline (Figure 28).

Thematic maps were produced and examined for spatial patterns within the distributions of awareness, perceived risk, and participation as identified within the survey responses collected during the application of the survey questionnaire. The map depicting awareness (Figure 29) reveals that all respondents living within the 1 mile buffer zone are aware of the Longhorn Pipeline. There are a few respondents within the 2 and 3 mile buffer zones that are unaware and a small concentration of 4 unaware

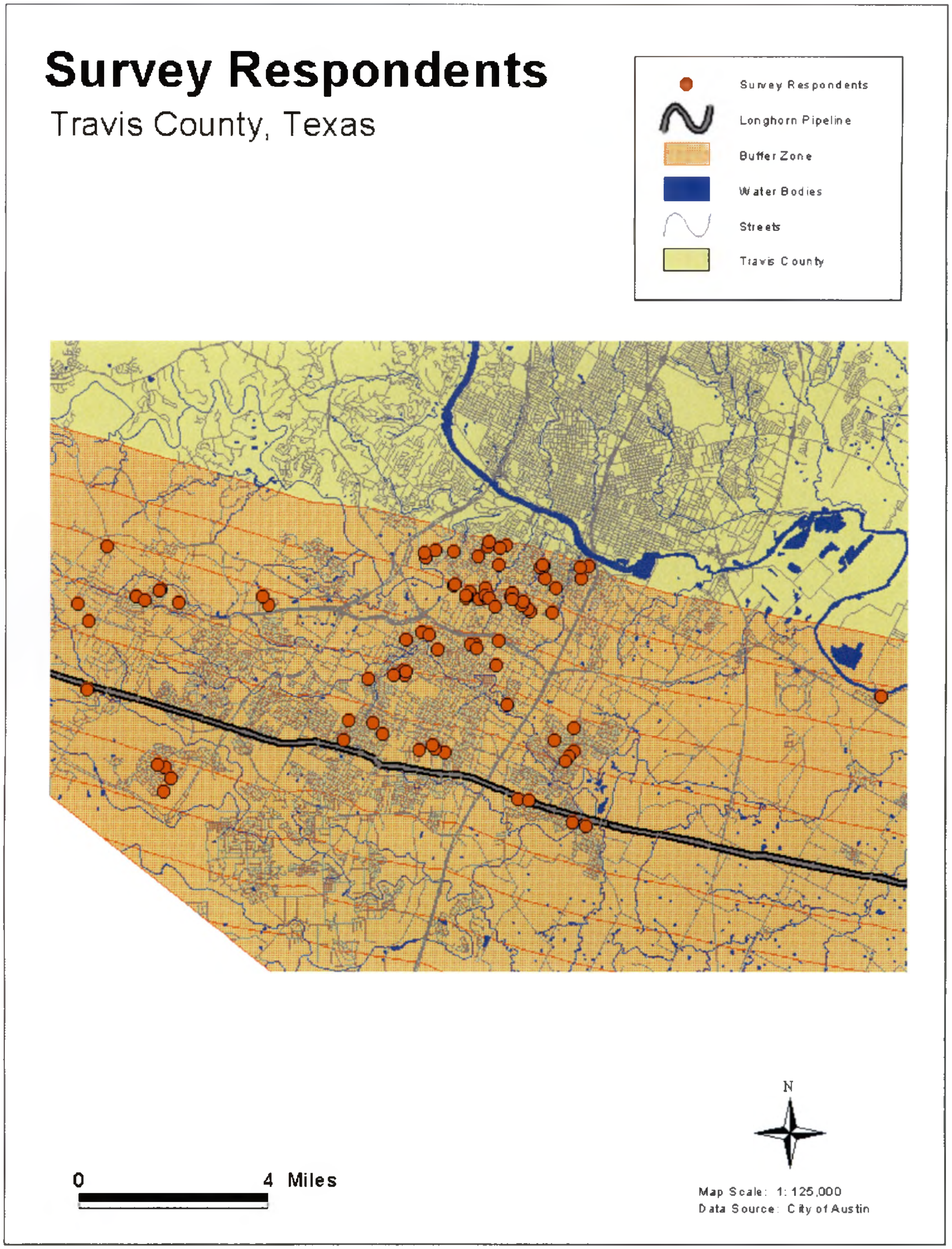


Fig. 28. Map: Survey Respondents. This map illustrates the spatial distribution of response. The central corridor and also the greater concentrations of response are visible within the 4th and 5th mile buffer delineations.

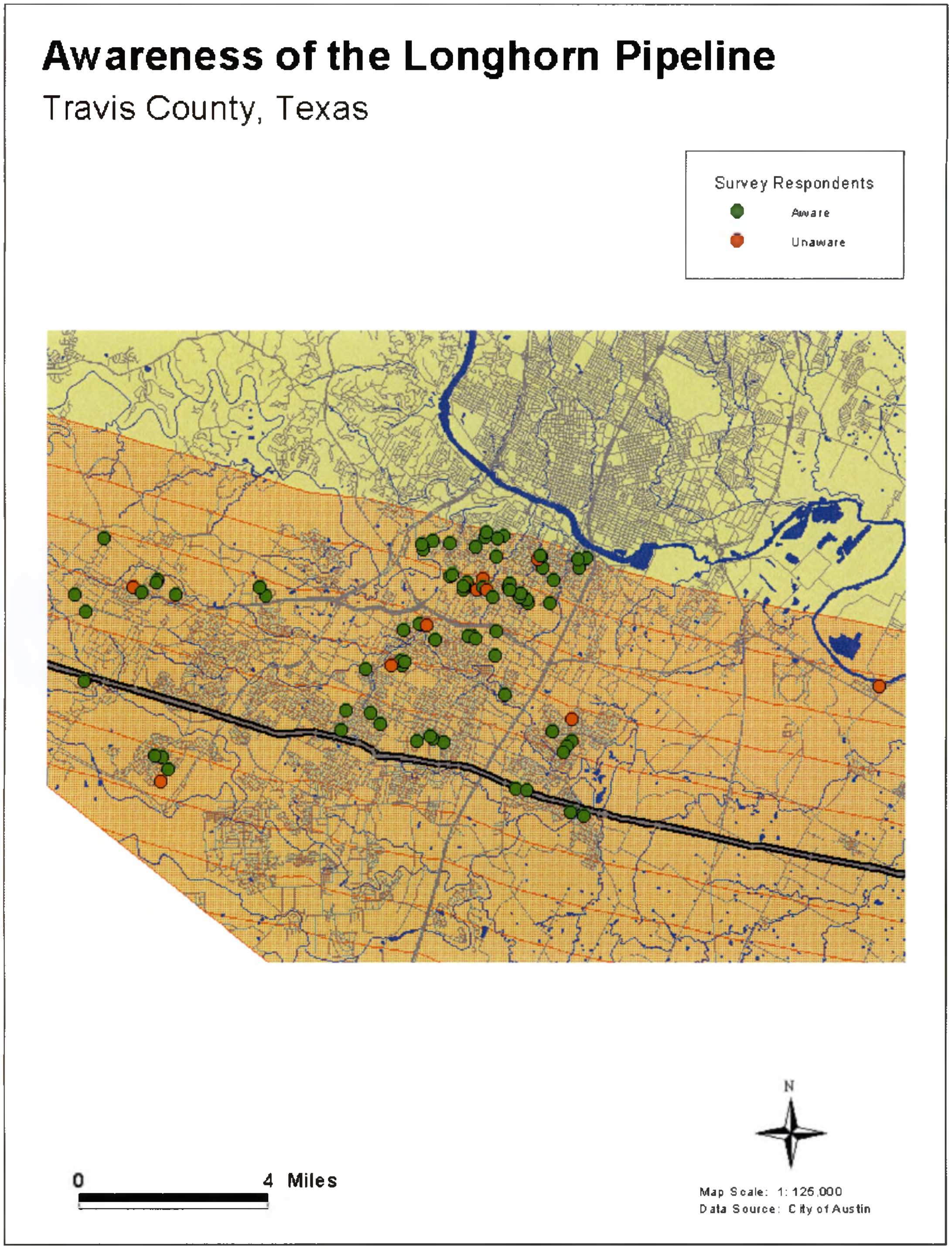


Fig. 29. Map: Awareness of the Longhorn Pipeline. This map illustrates the spatial distribution for awareness of the Longhorn Pipeline.

respondents visible in the 4 mile buffer zone. Only 1 unaware respondent is found within the 5 mile buffer zone.

As shown is Figure 30, perception of the Longhorn Pipeline is spatially consistent throughout the 5 buffer zones. With each mile of distance from the pipeline approval, no opinion, and disapproval were voiced by the respondents. Visibly there are greater concentrations of disapproval within each area of geographic stratification. Perception of human health and safety risk reveals a similar spatially consistent pattern throughout the 5 buffer zones, each region consisting of respondents that did and did not perceive the Longhorn Pipeline as a potential threat of risk to their personal health and safety. It is important to note the greater concentrations of respondents that perceive the pipeline as a health and safety risk throughout the 5 mile extent (Figure 31).

The spatial distribution reflecting the survey sample's perception of environmental risk imposed by the Longhorn Pipeline is clearly dominated by a consensus of response that believes the pipeline is a threat to the environment. More specifically, there are only 1 or 2 respondents found within the 1, 2, 3, and 5 mile buffer zones that did not perceive the pipeline as an environmental hazard and all respondents within the 4 mile delineation feel it imposes a threat to the environment (Figure 32).

The spatial pattern of the respondents' desire to participate in the environmental impact assessment process of pipelines is almost identical to that of perceived environmental risk. Most of the survey respondents stated they would definitely participate in the process, regardless of their stance on the issue (Figure 33). Only 1 or 2 respondents in each buffer zone stated that they would not participate even if given the

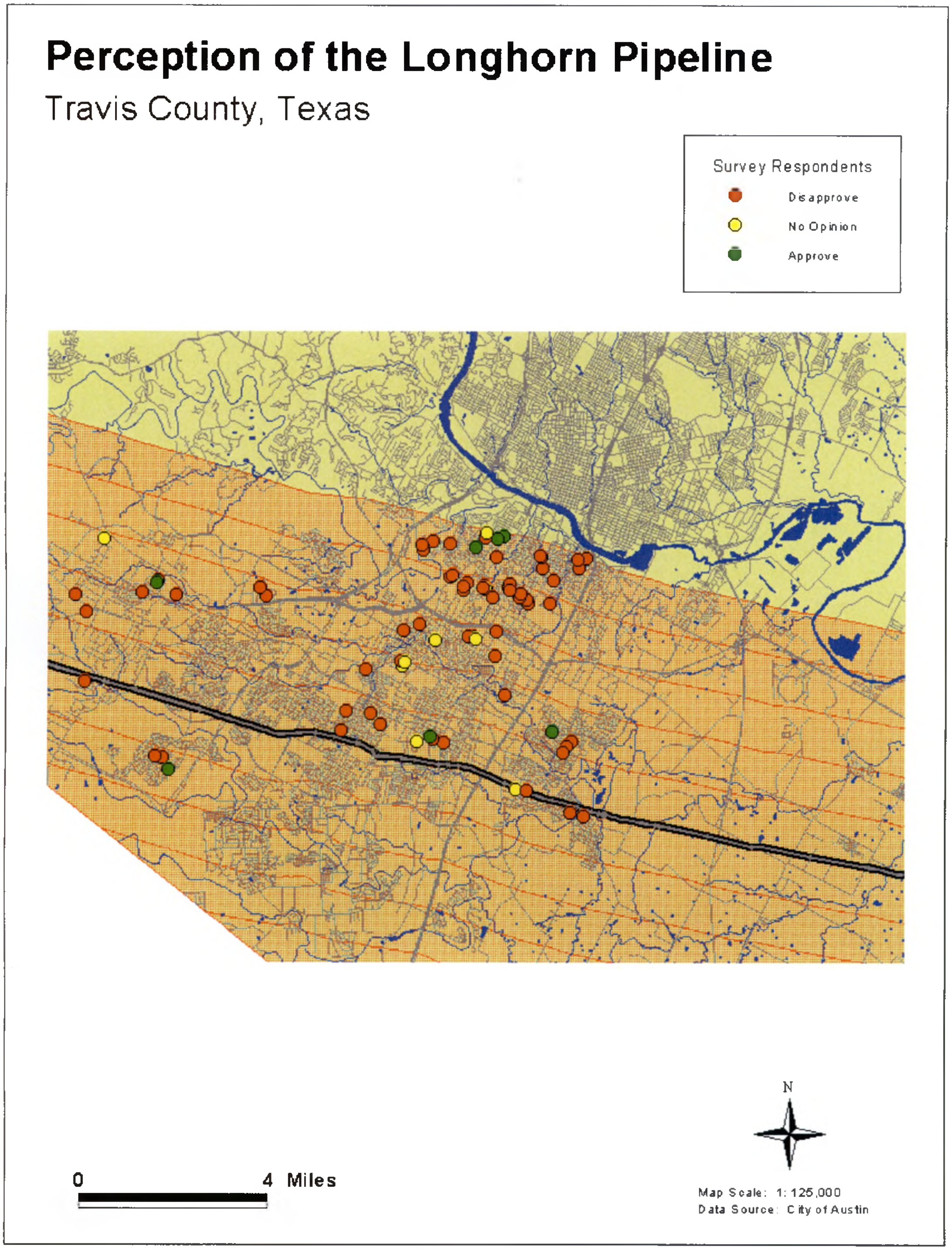


Fig. 30. Map: Perception of the Longhorn Pipeline. The map above depicts public perception of the Longhorn Pipeline for this study. Disapproval of the proposed initiative clearly pervades the sample of respondents.

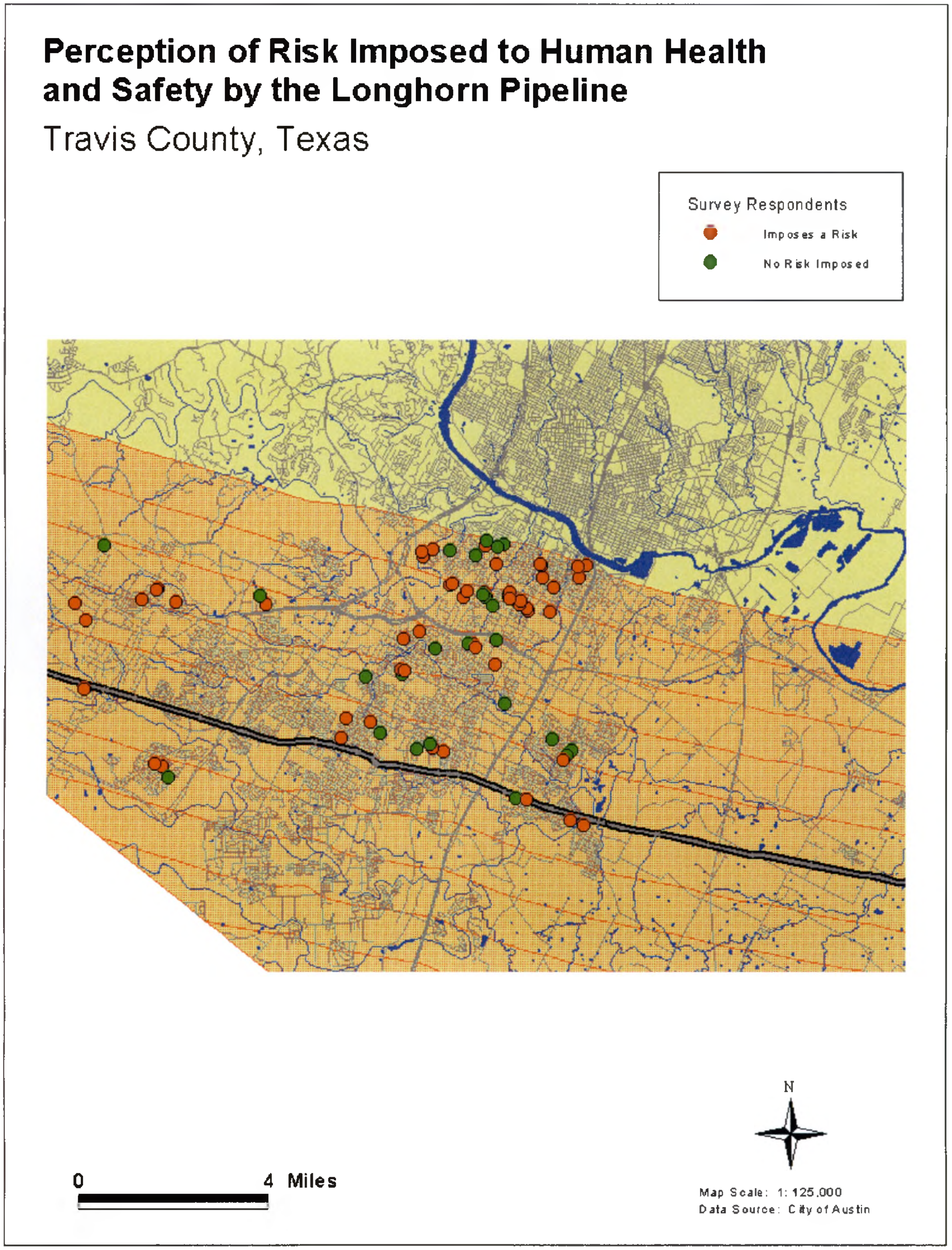


Fig. 31. Map: Perception of Potential Risk to Human Health and Safety. The map above illustrates the survey sample's perception of risk to human health and safety imposed by the Longhorn Pipeline.

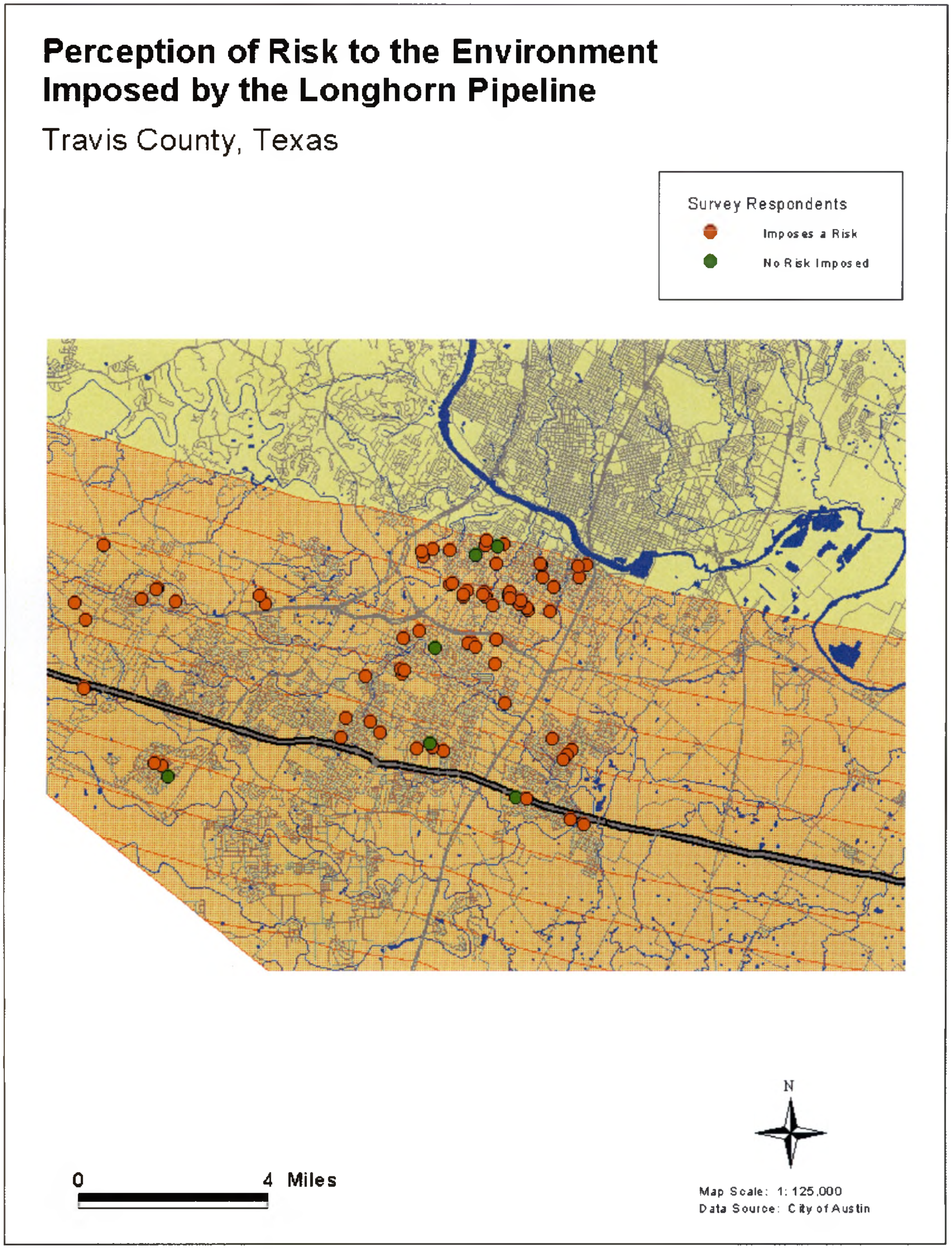


Fig. 32. Map: Perception of Potential Risk to the Environment. This map depicts the spatial distribution of perceived risk to the environment as imposed by the presence of the Longhorn Pipeline.

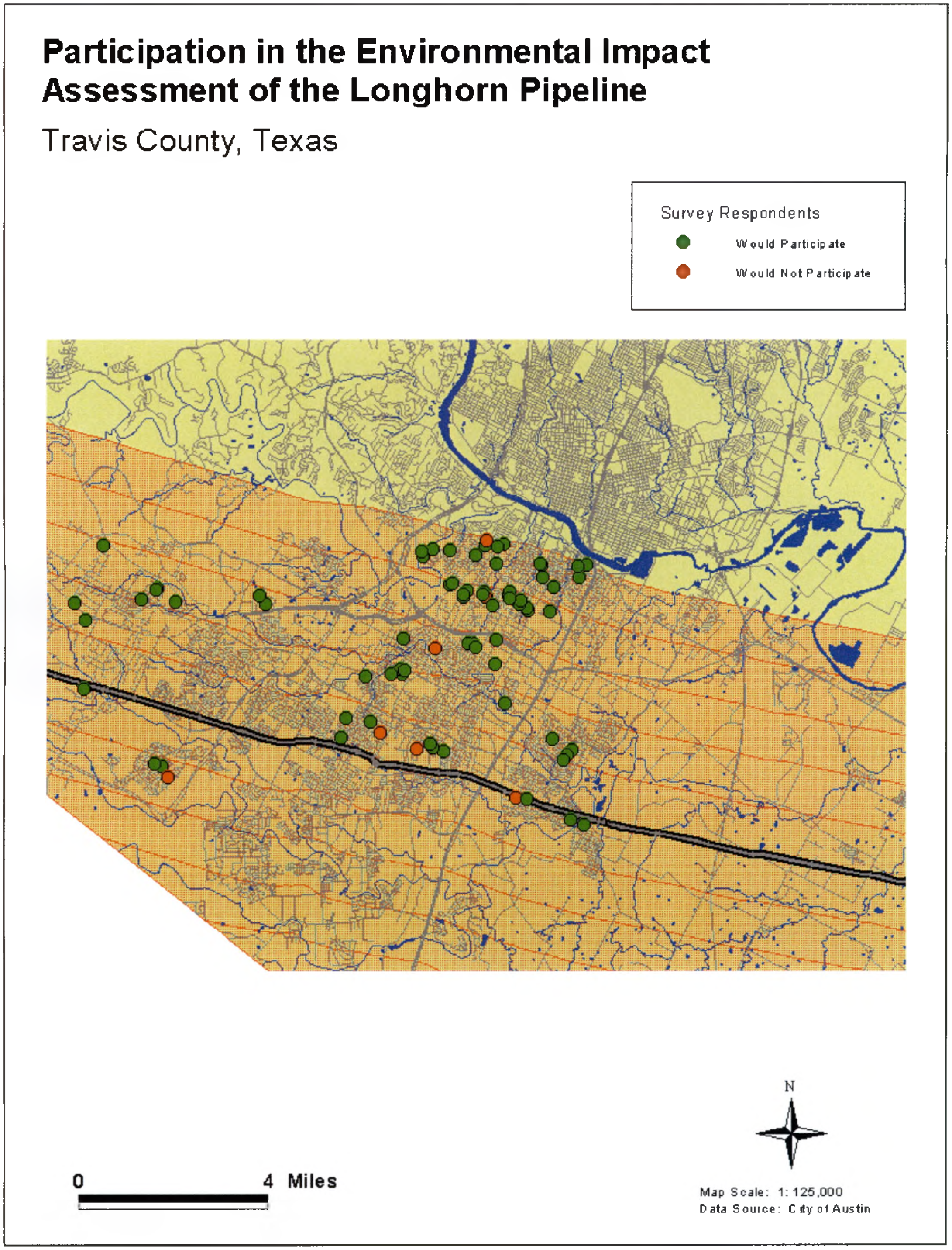


Fig. 33. Map: Participation in Environmental Impact Assessment. The map above illustrates survey respondents' desire to participation in the environmental impact assessment process of the Longhorn Pipeline. Clearly the majority of the sample would participate regardless of their stance on the issue.

opportunity. Finally, the map depicting the survey respondents' desire to participate in the public partnership volunteer pipeline monitoring program reveals just about a 1:1 ratio within each buffer zone. Therefore, a significant portion of the population would volunteer to participate in such an initiative (Figure 34).

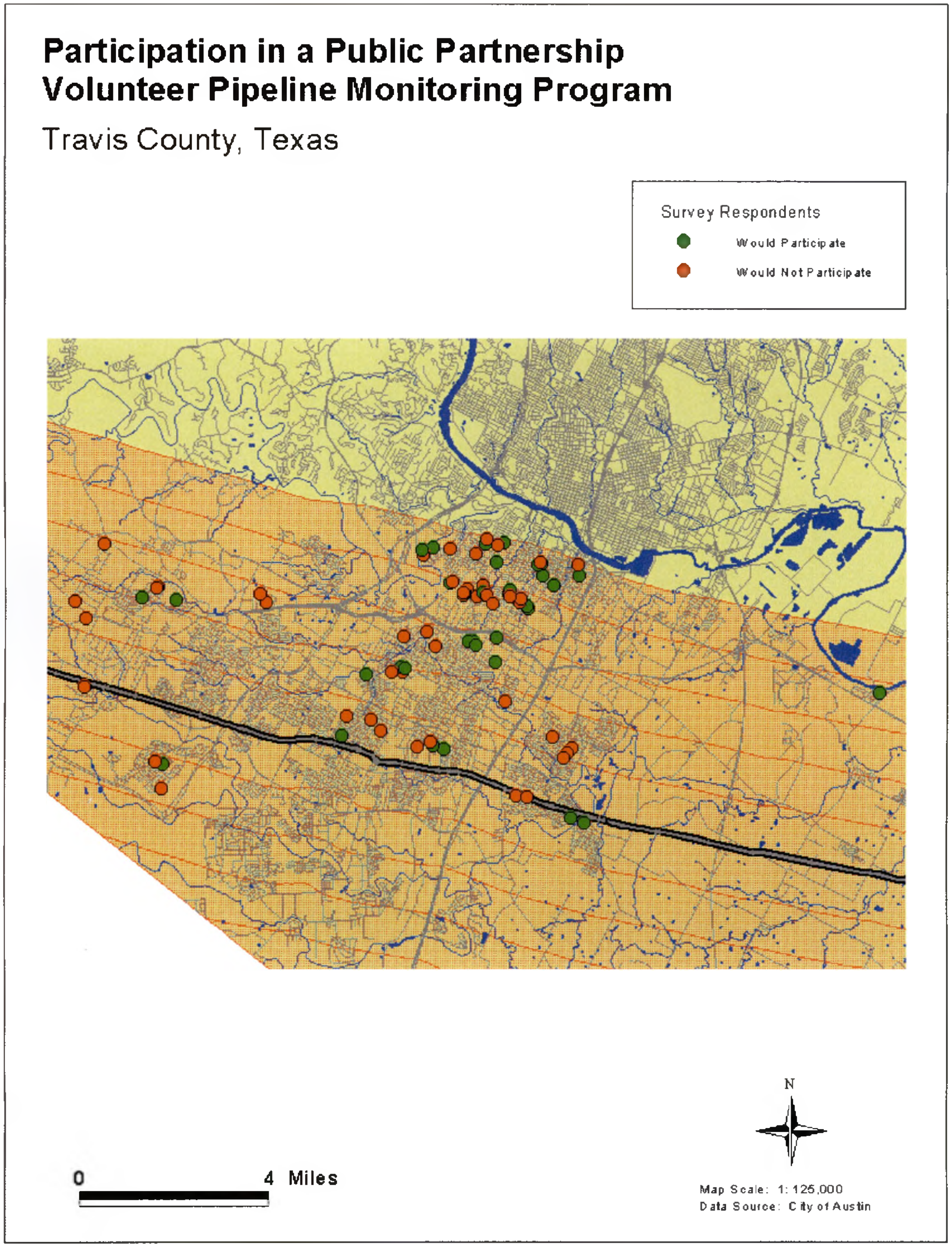


Fig. 34. Map: Participation in Volunteer Pipeline Monitoring Program. This map reveals the distribution of survey respondents that would volunteer to participate in a citizen pipeline monitoring program if the Longhorn Pipeline is indeed allowed to reopen.

CHAPTER V

DISCUSSION AND IMPLICATIONS OF RESEARCH

Sources of Error in Survey Design and Implementation

When conducting any piece of research the identification and exploration of potential sources of error within the design and methodology is imperative. In my selection of a spatial dataset from which to select the survey sample, the basic challenge was to select a dataset that was both accurate and representative of the population, excluding as few as possible. The primary goal is to utilize a dataset that allows all elements of the population to have an equal chance of selection. It is important to note the inconsistencies of the TCAD land parcel address point theme that was utilized in extraction of the survey sample. The lack of zip codes for specific records and the lack of database maintenance as cautioned by the City of Austin GIS division should be considered. Even so, the TCAD land parcel coverage stands to be the most reliable source of individual parcel data for Travis County at this spatial scale.

In my design and implementation of the self-administered mail survey questionnaire, I attempted to reduce the amount of measurement error that would be introduced due to poor question wording and questionnaire construction by employing a pilot test. This process offered a significant contribution to the design and success of the survey and valid changes in the structure of the survey and wording of specific inquiries.

In light of the low response rate associated with self-administered mail surveys it is important to define my reasoning in selecting this instrument of data collection. Social research suggests that a societal trend exists toward self-administration. This can be realized in the fact that tasks that once required human interaction are now shifting to self-administration. For example, daily tasks such as banking, shopping, and even pumping gas are now completed over the internet and with on-site computers. This is arguably cultivated by our culture's interest or obsession with saving time, removing any unnecessary or inefficient components or factors in completing our tasks. Furthermore, the administration of a self-administered mail survey questionnaire allows for voluntary participation and is less invasive, allowing the respondent the appropriate amount of time and prerogative to complete the survey at their leisure and on their terms without pressure, guilt, or influence. The mail survey also provides respondent anonymity and confidentiality.

After some bit of reflection upon the response rate of the survey, I can offer some personal speculation on some possible causes of non-response. First, it is probable that for some potential respondents, the survey questionnaire never even arrived. As previously noted, financial constraints of the study limited the expense devoted to postage and thus it is impossible to know how many surveys were not delivered and returned to the post office that had either been incorrectly addressed or the resident was deceased. Future studies should incorporate first class postage so that a follow-up mailing or hand delivery may be pursued for the undelivered surveys. Second, complacency could be a possible cause of non-response. The proposed reopening of the Longhorn Pipeline has been tangled in litigation for three years to date. It is my view that this sort of lengthy court battle cultivates the "lost cause syndrome" among constituents. Marguerite Jones, coordinator of the Safe Pipeline Coalition, supported this idea expressing that this was the sort of attitude she and her organization were trying to redirect within the affected communities. She expressed her concern for this issue, proposing that during this judicial process citizens lose hope and begin to believe their opinion is worthless and that their vote or effort will not make a difference. Third, it is possible that some potential survey respondents are illiterate or are simply unaware of proposed pipeline initiative and do not want to admit their personal lack of knowledge. Others may simply not care, and could be lulled into inaction either by laziness or apathy. I personally characterize the American culture as a somewhat self-absorbed and ambitious culture. A large majority of people live extremely fast paced lives and have multiple professional and social responsibilities and familial obligations. These individuals basically are so busy they have no time to care or act. Similarly, based upon my personal observations of present culture, I would suggest that we live in a reactive rather than proactive society. Often, individuals are indifferent to an issue and will not take the time to participate until it directly affects their personal agenda or someone they care about. Finally, I believe self-administered mail survey non-response is a factor of health, as a matter of sickness or age. In this study alone, two respondents reported that they were elderly or recovering from an illness and could not complete the survey, simply stating their opposition to the proposed reopening of the pipeline. It is highly likely, that the response rate of the study could be improved with more time and financial support. A second reminder postcard could be sent, thereby increasing the number of surveys returned. Twenty-three surveys were returned in total following the distribution of the follow-up reminder postcard. Additional funding would accommodate the expense of mailing the survey first class and any follow-up expenses associated with contacting the non-respondents, either by correcting the mailing address and resending or hand delivering the survey questionnaire to their home. Additional financial resources would support the inclusion of an incentive with the survey questionnaire, whether it be some sort of coupon or small amount of monetary compensation.

The negative effect and implications of non-response bias upon this study is debatable. Babbie (1973) suggests a response rate of 40% is the minimum acceptable rating for analyses. He further argues that a response rate of 50% is "good" and a response rate of 60% is "best". This may be an unlikely outcome, but that which should be strived for. However, Babbie goes on to state that this opinion has no statistical justification and his theory is basically a personal subjective interpretation based on previous experience and work with social surveys. Other sources suggest that a study that bodes a low response rate is compromised and in theory, the reliability of the study is in question (Dillman 2000). Even so, other sources offer a contradictory opinion, citing past research that was conducted on the "non-respondents" of a survey. Researchers argued that in some studies the opinions of the "non-respondents", as assessed in subsequent interviews, differed from those of the original survey respondents. However, in other cases the opinions did not differ, and they were indeed consistent with the opinions of the original survey respondents. It is important to address the last survey for the study that was returned on May 1st, following a significant lull in return of the surveys. The respondent lived within 1 mile of the pipeline and strongly opposed the Longhorn Pipeline. The respondent was white, affluent, educated, and very opinionated in their personal comments about the proposed initiative. This fact coupled with the proportion of survey respondents in support of the pipeline and the spatial distribution of perceived risk, suggests that other factors influence participation or survey response.

Extreme opposition is not the sole contributing factor in survey response; therefore, it is conceivable that the responses of the remaining 82% of the survey sample would not be that different and this sampling is representative of the total affected population. One final point with regard to the effect of non-response bias on the validity of the survey results is related to the issue of low voter turnout ratios. Despite the lack of public participation within the political process, the system must rely on those that do choose to participate in democracy. Low voter turnout levels pervade the electoral process throughout the country at the local, state, and national level. Yet, propositions are written into law and legislators are elected into office without a true consensus of the population's majority.

Reflection and Examination of Hypotheses

One of my initial hypotheses proposed that citizens who are aware of the Longhorn Pipeline will hold negative perceptions about its reopening and use. The results of the study determined that 69% of the survey respondents disapprove of the Longhorn Pipeline. In total, 58% perceive the pipeline as a potential threat to the health and safety of themselves and their family, and 80% of the survey sample believes the pipeline imposes a potential threat of risk to the natural environment. Furthermore, 77% of the survey respondents feel the pipeline should be rerouted away from homes, school ground, and hospitals prior to reopening and operation. It is therefore quite certain, that the results of this study uphold my original hypothesis, and a significant majority of the survey respondents who are aware of the Longhorn Pipeline do indeed oppose the proposed reopening and utilization.

Initially I believed spatial distributions in response, awareness, perception of risk, and participation would be reflective of the underlying principles in distance decay theory. It was thought that are core of intensity would exist closest to the pipeline transect, gradually decreasing as related to a factor of distance from the pipeline. Upon inspection of the spatial distribution of survey response and perception, this is not at all the case. The spatial pattern of survey response in the study represents almost an inverse of distance decay. In reality, the higher concentrations of awareness, perception of risk, and participation were actually found within the 4 and 5 mile buffer zones. It appears that in this specific case, geographic location is not necessarily the determining factor of risk perception and participation. Harold Daniel, a prominent volunteer and member of the Safe Pipeline Coalition further supported this idea, confirming that in his personal experience in working to stop or reroute the pipeline, he discovered that the core of people who are taking an active role in the opposition, are not those living closest to the pipeline, but those that live well outside the critical corridor of risk.

Preliminary thoughts proposed that participation would be lowest among minority and socially isolated groups. Based upon the survey response of the study, this would hold true. White, affluent, educated, politically active citizens dominate the response population. One may argue this is the effect of non-response bias. However, when the spatial theme of potential survey respondents is overlain with census data at the block group level depicting racial diversity, pockets of ethnic populations represented by no survey response are evident.

Additional hypotheses suggested that correlations would be evident between dependent variables of the study, awareness, perception of risk, and participation, and the independent variables, namely socio-cultural attributes and media access and exposure. However, statistical analysis indicated that awareness is not related to any of these possible socio-cultural attributes. When looking at the potential correlations with perception, several variables including the education level attained, occupation, environmental advocacy, daily internet access, and voting behavior showed statistically significant levels of correlation in the analyses. These correlations, while statistically significant, were fairly low; therefore, it is logical to assume that other factors are relevant and not accounted for in this study with respect to defining an individual's perception. In contrast, participation was found to be strongly correlated with perception or some preexisting opinion and socio-cultural attributes including age, voting behavior, education level attained, environmental advocacy, prior participation in the assessment process, and daily internet access. Sex, children, and income did not correlate with any of the dependent variables, and it is also important to note that geographic location or proximity to the pipeline did not prove to be statistically significant or relative to the dependent variables of the study.

It is important within the context of this study to question what sort of medium affects awareness, perception of risk, and public participation. Given the results of the inquiries relevant to media exposure and access this is somewhat difficult to discern, as these variables revealed consistent results among most of the respondents. Little if any variation exists with respect to media exposure. The study indicated that 78% have a television, radio/stereo, and computer within their home. It is however, relevant to note that television was the leading media source for public awareness and informing the general public about the proposed reopening and operation of the Longhorn Pipeline.

It is important in this discussion to remember that factors other than merely media do indeed affect perception significantly, and are possibly too difficult to capture in a survey. I am speaking of underlying morals, attitudes, and personal ethics or values, which perhaps may be more indicative of an individual's perception opinions and ideas regarding a contentious environmental issue. Perception is an intangible phenomenon, and it is thereby inherently difficult to quantify, interpret, and assess.

Ultimately, I believe participation is a factor of perception and also the freedom or ability to respond or participate. It is my judgment that this is directly related to aspects of society and culture. If you look past the debatable flaws imposed by response bias in this study, and look at the actual demographics of those who did participate, the response population is composed of white, affluent, educated, politically active individuals. It is my personal opinion that this is due to the fact that lower income or uneducated individuals are more concerned with survival and satisfying their most basic and "essential" needs each day. These affected populations are typically less informed and oftentimes intimidated by the social and political process unless it directly effects their survival. In contrast, survival is not in question for the wealthier, educated, politically active affected populations. Their basic needs and desires for that matter are economically feasible and can be satisfied without much concern. Persons can shift their focus from themselves and their families' well being to "non-essential" needs, allowing them the freedom to be environmentally aware and politically active. Therefore it becomes an issue of environmental and participatory inequity, and those who have less are in a sense subjected to greater risk either directly or indirectly through the lack of social access to environmental monitoring. Within the context of the Longhorn Pipeline, the issue of environmental inequity or discrimination– has previously been proposed by affected communities in Southwest and Southeast portions of the county. It seems some portions of the pipeline are being repaired or replaced in portions of more affluent neighborhoods in Southwest Austin, while corroding segments transecting communities in older lower-income areas of Southeast Austin remain untouched. The property values of the affected populations throughout the county will undoubtedly decline; therefore, the rights, health, and safety of these people is basically being ignored and without any just compensation for their losses. One may ask should LPP provide insurance to those living along the actual transect? If this were the case, would the communities react differently to the pipeline proposal. These are all possible topics warranting future research in this realm.

Implications of the Findings

This research endeavor, if nothing else, serves as an effort to move one step closer toward bridging the division among communities and governing bodies in pipeline regulation and the formulation of policy relevant to pipeline safety and permitting. It was my intent to apply geographic methods of analyses and GIS within this contextual framework to assess perception of risk and encourage participatory equity. It is my belief that public participation is essential for the sustainable implementation and management of pipelines throughout this country. I am satisfied that the results of this study accurately document the opinions of a locally affected population, that otherwise would have been ignored or not at all represented. The results of the survey regarding public perception of the Longhorn Pipeline reveal that there is a greater population at risk.

Citizens living well outside the critical corridor of risk perceive the pipeline as a significant threat of risk to their health and safety and the environment. It is important to recognize the affected population's concern and support for the proposal of rerouting the pipeline away from communities, school grounds, and sensitive environmental areas. Survey respondents that approved of the Longhorn Pipeline, based on the potential economic benefits and present energy demands, and even those respondents that claimed to feel indifferent to the proposal, believed the Longhorn Pipeline should be rerouted away from these sensitive areas and vulnerable populations. This point raises an important issue. In light of projected increases in future population levels and urban development within the study area and adjacent counties, will the pipeline eventually transect someone else's backyard? I believe the results of the study document the need for and support of public participation within the pipeline permitting process. Both advocates and opponents of the Longhorn Pipeline felt that they, as potentially affected citizens, should be included in the environmental impact assessment process. Furthermore, the respondents agreed that if allowed to, they would indeed participate, whether it be through a public vote or planning forum.

It is my judgment that these conclusions imply a need for changes in present policy. My ultimate goal is for the results of this study to in some way influence recognition of this need, and to affect some sort of significant change or amendment to present legislation guiding the pipeline permitting process and improvements in pipeline safety protocol. According to Arnstein's (1971) Ladder of Citizen Participation, public involvement within the assessment and permitting of pipelines balances on the lowest rung, manipulation. During the three-year battle to reopen the Longhorn Pipeline, town meetings have gathered, citizens have coordinated formal protests, and an independent film company is even creating a documentary to support the movement. These citizens are making a valiant effort to educate the public and reform current practices in an effort to ascend to the highest rung on the ladder, Citizen Control or Degrees of Citizen Power.

It is my hope that the conclusions of this research initiative will encourage the discussion of two issues relevant to pipelines. First, I would like to propose the implementation of a significant change to the methodological framework of an EIA, by adding a human component to the equation. This variable, perception of risk, would serve as a factor in the final assessment and be valued just as a resource, like that of water, or an endangered species. Perception of risk, quantitatively assessed in this sense, could then be factored into the model or equation by a weighting scheme and applied as a variable in the final calculations. Second, I hope the results of this study will serve to encourage the inception of dialogue among government, industry executives, environmental advocates, and citizens, centered on the future role of pipelines. Within the context of the present and future energy supply/demand matrix, it is important to recognize our society's needs and how to provide for those needs. The threat of terrorism now associated with pipelines only intensifies the severity of this issue, and given the recent political turmoil and concerns associated with domestic reliance on foreign energy reserves, I question the practicality of pipelines as a sustainable solution to our present energy needs. Clearly the use of pipelines in this country is not only an environmental hazard, but also a question of national security, exposing thousands to the potential threat of risk. I would propose a shift to a self-sustaining domestic renewable energy supply, thereby eliminating the risk of terrorism, the potential threat of political conflict or war, the destruction of sensitive environmental areas and resources, and the potentials risks imposed upon human health and safety.

Given that pipelines are a present reality of our culture, I would also like to propose the refinement of information resources regarding the existence, maintenance, and monitoring of pipelines throughout the nation. Thousands of miles of volatile pipelines transect the country, exposing millions of people to potential health and safety hazards. Since 1984, there have been 5,700 pipeline accidents resulting in more than 420 deaths and 1,500 injuries. The federal OPS does not even know exactly where all the pipelines are located. The OPS had only 56 inspectors to carry out its mandate last year, the equivalent of roughly one inspector for every 50,000 miles of pipeline. Therefore, in an effort to initiate this transition, I propose the implementation of a centralized database of pipeline documentation and better definition and coordination among the governing bodies.

Past research has documented the need for public participation and has explored the use of Internet based public participation models, suggesting that public participation is relative to the vehicle of communication. In my research I had hoped to explore the possible implications and potential success in evolving the typical public participation forum, from a town meeting to the Internet, thereby bypassing constraints of time, location, health, and emotion. Given the overwhelming presence of technology in our daily lives and eminent future for that matter, I posed the question, is and/or will the Internet become a venue that would serve as an accessible and effective decision making tool? In the same line of thought, would this forum exclude the lower-income minority populations, or does it have an effect at all? The latter question proposes a definite need for additional research to better define such issues. However, in response to the former question, the results of this study, more specifically the responses agreeing to volunteer as a participant in a citizen pipeline monitoring program, support the validity of the proposed Longhorn Public Partnership Team as a potentially successful pipeline monitoring and communication forum. Previously, LCRA proposed the establishment of the Longhorn Pipeline Public Partnership Team to regulate pipeline operations and mitigation efforts. This type of initiative could be enhanced and facilitated as a web-based public participation model that would encourage environmental awareness, community activism, and citizen involvement. It could provide a forum for all stakeholders – citizens, policy makers, and business interests – to communicate and obtain viable solutions to their environmental, economic, and safety concerns. It is my hope that this research will enable and justify such initiatives in the near future.

Recommendations for Future Research

Based upon the results of this study, I believe future studies of perceived risk and participatory equity would be beneficial, and I would suggest the incorporation of a balanced research epistemology, one addressing both extremes of the nomothetic and idiographic in the final assessment. It would be of benefit in my opinion to aspire toward a balanced integration of idealism and realism, implementing a quantitative assessment of qualitative intangible variables, in this case, phenomena such as perception.

With additional funding and a longer time frame of study allowed for data collection, the methodologies presented in this thesis could be applied on a larger scale, perhaps even at the state or national level. It may be helpful to institute personal interviews, rather than executing a mail survey to eliminate the debatable factor of non-response bias imposed on the results of the study. If I were to repeat this study I would most likely adopt the methodologies of Byrd et al. (2001), and conduct personal interviews of randomly selected households within three socially diverse communities within the locally affected population in Travis County, Texas within 5 miles of the pipeline. Another worthy potential research endeavor would be to compare and contrast three socially and economically similar communities within the critical corridor of risk in El Paso, Austin, and Houston, Texas. It would be interesting to discover how the results of such studies were differ from those I achieved in the course of my present research. In future studies, I would also like to explore whether or not people be as opposed to the pipeline if they were offered insurance by the oil company and financial assurance that they would be compensated for their losses in the event of an accident or leak.

Conclusion

It is my hope that the results of this study will serve to build upon past research, in an effort to demonstrate the positive implications of spatially documenting environmental perception and enhancing stakeholder participation in development planning and environmental monitoring. The study has established the spatial distribution of perceived risk among potentially affected populations in Travis County, Texas with regard to the reopening and operation of the Longhorn Pipeline. I assessed levels of stakeholder participation in the Longhorn Pipeline EIA process. By evaluating the socio-cultural data obtained from the survey questionnaire, I attempted to identify inequities in social access and participatory equity. A primary goal of this research endeavor was to re-evaluate the current structure of the pipeline permitting process and federal environmental impact assessment methodologies. It is my hope that the results of this study will illustrate and validate the importance of incorporating citizen perception and participation within the context of pipeline permitting and how perception could possibly be factored into the EIA equation. This study could possibly serve to support the need for policy amendments regarding the pipeline permitting process and further support legislation that is currently under review in Congress. I believe it is important to have the community involved in determining solutions to protect and improve the environment. It becomes an issue of mutual responsibility, requiring a concerted effort between government and the community to achieve such goals. In an effort to satisfy present energy demands, maintain economic benefit, and protect the environment and human life from potential the potential risk of harm, the division among communities and governing bodies needs to be dissolved in future pipeline permitting assessment and monitoring of pipeline operations.

APPENDIX

SWT

Dear Resident,

I am writing to you today to ask for your participation in an informal study regarding the Longhorn Pipeline. The goal of this study is to gain a better understanding of your awareness and personal opinion of the pipeline and the potential environmental and health risks that may be imposed by its presence in your community.

As a citizen of Travis County and a member of the potentially affected community, you are the most important factor in this study. Your personal values and opinions are essential to ensuring the success of this survey. I encourage you to please take about ten minutes of your time to complete the enclosed survey questionnaire and make your voice heard, regardless of your stance on the issue.

Enclosed you will find a copy of the survey questionnaire and a self-addressed, stamped envelope for your convenience Please complete the questionnaire and return it within **two weeks** in the enclosed envelope. Your survey responses will remain confidential and will not be disclosed to any other sources. I sincerely appreciate your personal contribution to my research and our community. I thank you for your sharing your time and insight If you have any questions regarding the survey questionnaire or you would like additional information about the Longhorn Pipeline, please feel free to contact me at the address listed below or by email at **kw58392@swt.edu**. This study is being conducted under the supervision of Dr Deborah Bryan.

Sincerely,

Kristi L Westphal
Graduate Student

Dr. Deborah Bryan
Associate Professor

Department of Geography
Southwest Texas State University
601 University Drive
San Marcos, Texas 78666

No. 200500

1. **Are you familiar with the Longhorn Pipeline?**

O Yes
O No (If you answered "no" to this question, please skip ahead to question 12)

2. **How did you find out about the Longhorn Pipeline? Please briefly describe below...**

____
____
____

3a. Do you approve or disapprove of the reopening and operation of the Longhorn Pipeline?

|---------------O----------------------------O-------------------------O-----------------------O------------------------O-------------|
Strongly Disapprove | Disapprove | No opinion | Approve | Strongly Approve

3b. Why do you approve or disapprove?

____
____
____

4. **How far is your home from the Longhorn Pipeline? (approximate distance)**

O less than 1 mile
O 1-5 miles
O 5-10 miles
O 10-15 miles
O 15-20 miles
O more than 20 miles
O I don't know.

5a. Do you feel the operation of the Longhorn Pipeline imposes a potential threat of risk upon you or your family's health and safety?

O Yes
O No

5b. If you answered "yes" to the previous question, define the risk that you feel may be imposed upon you or your family's health.

____
____
____

6a. Do you feel the operation of the Longhorn Pipeline imposes a potential threat of risk upon the environment?

O Yes
O No

6b. If you answered "yes" to the previous question, define the risk that you feel may be imposed upon the environment.

____
____
____

7. Do you feel the pipeline should be rerouted or moved away from homes, school grounds, and hospitals?

O Yes
O No

8. Were you consulted for your opinion regarding the Longhorn Pipeline during the impact assessment phase of the proposal?

O Yes
O No

9. Do you feel that you, as a potentially affected citizen, should have been included in the environmental impact assessment process?

O Yes
O No

10. Would you participate in the impact assessment process if you were personally consulted or allowed to? (i.e. public vote for approval or disapproval)

O Yes
O No

11a. Have you participated in the Longhorn Pipeline public opinion review process that has taken place over the last three years?

O Yes
O No

11b. If so, what was your level of involvement and/or participation?

O Attended a community meeting
O Participated in a public rally or protest
O Distributed flyers or brochures
O Wrote a letter to public officials
O Other ______________________________

12. Are you a registered voter?

O Yes
O No

13. Do you vote?

O Yes
O No

14. Rank your concern of the following public issues when you go to the polls to vote.

___ Taxes
___ Education
___ Roads
___ Environment
___ Water
___ Recreation

15. Do you belong to any environmental groups?

O Yes   If so, which group or groups? ______________________
O No

16. Is there a television, radio/stereo, or computer in your home? (Check all that apply)

O Television
O Radio/Stereo
O Computer

17. Do you subscribe to a newspaper or news magazine?

O Yes If so, which newspaper or news magazine? ________________________
O No

18. What type of media do you access to learn of current news?
(Check all that apply and rank their order of importance.)

___ O Television
___ O Radio/Stereo
___ O Computer (Internet)
___ O Newspaper/Newsmagazine
O None

19. Do you have personal access to the Internet daily?

O Yes
O No

20a. Would you volunteer to participate in a citizen monitoring program to report on future operations, safety measures, or accidents that may result if the pipeline is reopened and is fully operational?

O Yes
O No

20b. Would an interactive web site enhance or discourage your level of participation in such a pipeline monitoring program?

|---------------O--------------------------O-----------------------O-----------------------O-------------------------------O-------------|

Strongly Enhance	Enhance	No effect	Discourage	Strongly Discourage

21. Age

O under 18
O 18-25
O 26-35
O 36-45
O 46-60
O 61-75
O over 75

22. Sex

O Male
O Female

23. Race

O White
O Black
O American Indian, Eskimo, and Aleut
O Asian and Pacific Islander
O Hispanic origin
O Other________________________

24. Do you have any children?

O Yes
O No

25. How long have lived at your present address? ________________________

26. Household Income

O less than $20,000
O $20,000 - 50,000
O $50,001 - 75,000
O $75,001 - 100,000
O more than $100,000

27. Highest Education Level Completed

O Elementary School
O Grade School
O High School
O Associate or Technical degree
O Bachelor's degree
O Master's degree
O Doctoral degree
O Other ____________________

28. Occupation

O Executive and Managerial
O Professional
O Technical
O Sales
O Clerical
O Private Household
O Services
O Agriculture, Forestry, or Fishing
O Production and Related Operators
O Student
O Other ______________________________

If you have any additional comments please list them in the space below...

Thank you for your participation! If you would like to receive a copy of the survey results, please include your mailing address in the lines below and a brief report will be sent to you upon completion of the study this June.

____
Street Address

________________________ __________
City Zip Code

SWT

Estimado Residente,

Por medío de la presente le infrome que me hé graduado de la Universidad de Southwest Texas y que estoy conduceindo un estudio Usted ha sido seleccionado para participar en un estudio informal acerca de las tuberias de Longhorn El proposito de este estudio es obtener un major entendimiente de su opinión personal acerca de las tuberias y los riegas potenecíales en el medío ambiente y salud por la presencía de estas tuberias en su comunidad

Como miembro de esta comunidad afectada, usted es muy importante para este estudio Su opinion personal son esenciales para el éxito de este estudio Favor de tomar unos minutos para contestar este cuestionario y dejen que su voz se escuché, sin importar su punto de vista en este estudio

Adjunto, usted va a encontrar un cuestionario y un sobre con remitente para su comunidad Favor de llenar el cuestionario lo mas completo possible y regreselo en dos semanas en el sobre adjunto Este estudio es totalmente confidencial y las repuestas de este estudio no seran utilizadas para nada mas Muchas gracias por su participación en mí estudio y muchas gracias para su tiempo Este estudio se conduce abajo la supervisión de Dr Deborah Bryan

Sinceramente,

Kristi Westphal
Estudiante Graduado

Dr Deborah Bryan
Profesor Asociado

Departamento de Geografía
Southwest Texas State University
601 University Drive
San Marcos, Texas 78666

No 20500

1. ¿Esta familiarizado con las tuberias de Longhorn?

O Sí
O No (Si su respuesta es "no", pasé por favor a la pregunta 12)

2. ¿Como se enteró usted de las tuberias de Longhorn? Favor de explicar detachadamente...

____
____
____

3a. ¿Usted esta a favor o encontra de la reapertura y operación de las tuberias de Longhorn?

|------------O------------------------------O----------------------------O---------------------------O---------------------------O------------|
Muy Encontra Encontra No opinión A Favor Muy A Favor

3b. ¿Por qué está a favor o encontra?

____
____
____

4. ¿Que tan lejos esta su hogar de las tuberias de Longhorn? (distancia aproximada)

O menos que 1 milla
O 1-5 milla
O 5-10 milla
O 10-15 milla
O 15-20 milla
O mas que 20 milla
O No sé

5a. ¿Usted creé que la operación de las tuberias de Longhorn le pueden afectar du salud?

O Sí
O No

5b. Si usted contesto si, defina el riesgo que le puede oraciona a usted y a su familia.

____
____
____

6a. ¿Usted creé que la operación de las tuberias de Longhorn pueden dañar el medio ambiente?

O Sí
O No

6b. Si usted contesto si, defina el riesgo que puede causar al medio ambiente.

____
____
____

7. ¿Usted creé que se deberían de mover las tuberias de Longhorn fuera de colonias, escuelas, y hospitales?

O Sí
O No

8. ¿Se le pidio a usted su opinion acerca de la propación para instalar las tuberias de Longhorn?

O Sí
O No

9. ¿Usted creé que como afectado potencial debería de ser incluido en las decisions para la instalación de las tuberias?

O Sí
O No

10. ¿Usted participaria sí se le preguntara su opinion acerca de la instalación de las tuberias? (voto público de favor o encontra)

O Sí
O No

11a. ¿Usted há participado en algúna encuesta acerca del impacto del medio ambiente por las tuberias de Longhorn en los últimos tres años?

O Sí
O No

11b. ¿Sí fué así, cuál fué su nivel de participación?

____
____
____

12. ¿Es usted un votante registrado?

O Sí
O No

13. ¿Usted votó?

O Sí
O No

14. Sitúe su concierne de los asuntos siguientes del público cuando usted va a los sondeos a votar.

___ Impuestos
___ Educación
___ Caminos
___ El Ambiente
___ Agua
___ La Recreación

15. ¿Hágalo pertenece a algún grupo de entorno?

O Sí   Si ése es el caso, que agrupa? ____________________
O No

16. ¿Tiene televisión, radio/estereo, o computadora en su hogar? (Marqué las que tenga)

O Televisión
O Radio/Estereo
O Computadora

17. ¿Esta subscritó a algun periódico o revista?

O Sí Qué periódico o revista? ______________________
O No

18. ¿Qué clase de media útiliza para enterarsé de las noticias? (Marque los que utilizé)

O Televisión
O Radio/Estereo
O Computadora
O Periódico/Revista

19. ¿Tiene accesó al Internet diariamente?

O Sí
O No

20a. ¿Le gustaria participar en un monitoneo de los impactos del medio ambiente o riesgo de salud que pueda ocurrir debido a las tuberias se se vuelven abrir y si es completamente opcional?

O Sí
O No

20b. ¿Un sitio en el Internet lo animaria o disminuiria nivel de participación?

|------------O------------------------O-----------------------O---------------------O----------------------------O------------|
Muy Animado Animar No Efecto Disminuir No Participación

21. La edad

O abajo 18
O 18-25
O 26-35
O 36-45
O 46-60
O 61-75
O sobre 75

22. Genero

O Masculino
O Femenino

23. Grupo Etnica

O Caucasiano
O Africo-Americano
O Asiatico
O Hispanico
O Otro ________________

24. ¿Tiene usted a cualquier niño?

O Sí
O No

25. ¿Cuán largo lo tiene vivió en su dirección presente? ______________________

26. Ingreso de la Casa

O menos que $20,000
O $20,000 - 50,000
O $50,001 - 75,000
O $75,001 - 100,000
O mas que $100,000

27. Nivel Educativo

O Primaria
O Secundaria
O Preparatorial
O Licensiatura
O Maestria
O Doctorado

28. Ocupacion

- O Ejecutivo y Gerente
- O Profesional
- O Técnico
- O Ventas
- O Cajero
- O Ama de Casa
- O Servicios
- O Agricultura, Ganaderia, o Pesca
- O Producion y Relacionado Operador
- O Estudiante
- O Otro ________________________________

Si usted tiene algún comentario adicional, por favor los lista en el espacio abajo...

¡Gracias para su participación! Si usted apreciaría recibir una copia de los resultados de la inspección, incluye por favor su es dirección de envío y un informe breve será mandado a usted sobre terminación del estudio este Junio.

____
Dirección de la Calle

_________________________ _____________________
Ciudad Código de la Cremallera

Fig.1. This figure serves as a sample of the survey questionnaire that was distributed to the potential survey respondents within 5 miles of the Longhorn Pipeline.

Hello!

Recently, I sent a letter to you requesting your participation in a study surveying your personal opinion of the Longhorn Pipeline. While many have returned their questionnaires already, it is very important for you to do so as well. Your thoughts and opinions are essential to the success of this study.

Our letters may have crossed in the mail If you have already returned the survey questionnaire, please disregard this note and accept my sincere thanks for your assistance If you haven't had a chance to complete the survey, I encourage you to please set aside about ten minutes of your time and take this opportunity to voice your opinion of the Longhorn Pipeline. At your earliest convenience, please forward your completed survey questionnaire in the self-addressed, stamped envelope that was previously mailed to you Thank you very much for your time and consideration!

Take care,

Kristi Westphal

Graduate Student
Department of Geography
Southwest Texas State University
601 University Drive
San Marcos, Texas 78666

Fig. 2. This figure serves as a sample of the Follow-up Reminder Postcard that was distributed to potential survey respondents.

Survey Response Code Key

	Response Code											
Question	1	2	3	4	5	6	7	8	9	10	11	12
1	Yes	No										
2	Paper	TV	Person	TV/Person	TV/Paper	Paper/ Person	All					
3a	Stongly Disapprove	Disapprove	No Opinion	Approve	Strongly Approve							
3b	Environmental Risk	Health/Safety Risk	Both	None	Economic Benefit	Safer than Truck	Energy Needs					
4	< 1 Mile	1-5 Miles	5-10 Miles	10-15 Miles	15-20 Miles	> 20 Miles	I don't know					
5a	Yes	No										
5b	written description											
6a	Yes	No										
6b	written description											
7	Yes	No										
8	Yes	No										
9	Yes	No										
10	Yes	No										
11a	Yes	No										
11b	Meeting	Rally	Brochure	Letter	Other	None	Meeting/ Rally	Meeting/ Letter				
12	Yes	No										
13	Yes	No										
14	Taxes	Education	Roads	Environment	Water	Recreation	None					
15	Yes	No										
16	TV	Radio	Computer	All	None	TV/Radio	TV/Computer	Radio/ Computer				
17	Yes	No										
18	TV	Radio	Computer	Newspaper	None							
19	Yes	No										
20a	Yes	No										
20b	Strongly Enhance	Enhance	No Effect	Discourage	Stongly Discourage							
21	< 18	18-25	26-35	36-45	46-60	61-75	>75					
22	Male	Female										
23	White	Black	American Indian/Eskimo/Aleut	Asian/Pacific Islander	Hispanic Origin	Other						
24	Yes	No										
25	number = year											
26	< 20,000	20,000-50,000	50,001-75,000	75,001-100,000	>100,000							
27	Elementary	Grade School	High School	Associate/ Technical	Bachelor's	Master's	Doctoral	Other				
28	Executive/ Managerial	Professional	Technical	Sales	Clerical	Private Household	Services	Agriculture, Forestry, Fishing	Production/Operators	Student	Other	Retired

Table 1. This table represents the Response Code Key that was utilized in coding the survey responses in the study.

Nonparametric Correlations

Correlations

			BUFFER	Q_1	Q_2	Q_3A
Spearman's rho	BUFFER	Correlation Coefficient	1.000	.039	- 058	-.033
		Sig (2-tailed)		712	622	774
		N	90	90	75	79
	Q_1	Correlation Coefficient	039	1.000		
		Sig. (2-tailed)	712	.		
		N	90	90	75	79
	Q_2	Correlation Coefficient	- 058	.	1 000	-.334**
		Sig. (2-tailed)	.622	.	.	.003
		N	75	75	75	75
	Q_3A	Correlation Coefficient	- 033	.	-.334**	1 000
		Sig. (2-tailed)	774	.	.003	.
		N	79	79	75	79
	Q_3B	Correlation Coefficient	- 112	.	- 161	.385**
		Sig. (2-tailed)	362	.	.198	.001
		N	69	69	66	69
	Q_4	Correlation Coefficient	.405**	.	-.070	.223*
		Sig. (2-tailed)	000	.	552	.050
		N	78	78	74	78
	Q_5A	Correlation Coefficient	- 078		- 112	613**
		Sig. (2-tailed)	.498	.	.344	000
		N	77	77	74	77
	Q_5B	Correlation Coefficient		.	.	.
		Sig. (2-tailed)		.	.	.
		N	0	0	0	0
	Q_6A	Correlation Coefficient	-.028		-.096	508**
		Sig. (2-tailed)	807	.	415	000
		N	79	79	75	79
	Q_6B	Correlation Coefficient	.	.	.	.
		Sig. (2-tailed)	.	.	.	.
		N	0	0	0	0
	Q_7	Correlation Coefficient	- 013	-.045	-.290*	504**
		Sig. (2-tailed)	910	692	.012	.000
		N	80	80	75	79
	Q_8	Correlation Coefficient	278*	.035	-.021	.156
		Sig. (2-tailed)	013	757	.857	172
		N	79	79	74	78
	Q_9	Correlation Coefficient	- 024		-.010	.400**
		Sig (2-tailed)	840		.933	.000
		N	74	74	71	74
	Q_10	Correlation Coefficient	- 149	-.036	.016	.408**
		Sig. (2-tailed)	194	756	894	000
		N	78	78	74	77
	Q_11A	Correlation Coefficient	.089	.052	-.161	292**
		Sig. (2-tailed)	430	648	.168	.009
		N	80	80	75	79
	Q_11B	Correlation Coefficient	- 084	015	- 111	.036
		Sig. (2-tailed)	462	896	342	.755
		N	79	79	75	78
	Q_12	Correlation Coefficient	- 113	- 081	111	182
		Sig. (2-tailed)	291	448	344	110
		N	89	89	75	78

Correlations

			BUFFER	Q_1	Q_2	Q_3A
Spearman's rho	Q_13	Correlation Coefficient	-.152	-.014	- 089	.332**
		Sig. (2-tailed)	.158	.896	.448	.003
		N	88	88	75	77
	Q_14	Correlation Coefficient	.009	.070	011	- 106
		Sig (2-tailed)	937	.520	.923	362
		N	87	87	73	76
	Q_15	Correlation Coefficient	-.096	.159	-.167	.229*
		Sig. (2-tailed)	374	.140	.156	.046
		N	87	87	74	76
	Q_16	Correlation Coefficient	-.062	.154	.121	.033
		Sig. (2-tailed)	.566	.149	.303	.777
		N	89	89	75	78
	Q_17	Correlation Coefficient	-.080	-.037	-.320**	.255*
		Sig (2-tailed)	.459	.733	.006	.025
		N	88	88	74	77
	Q_18	Correlation Coefficient	- 030	-.047	.124	-.221
		Sig (2-tailed)	781	.665	.292	.054
		N	88	88	74	77
	Q_18*	Correlation Coefficient	014	-.001	.020	.030
		Sig. (2-tailed)	.895	995	.867	793
		N	88	88	74	77
	Q_19	Correlation Coefficient	- 088	.136	.008	.235*
		Sig. (2-tailed)	413	.207	.945	.040
		N	88	88	74	77
	Q_20A	Correlation Coefficient	- 093	.129	- 064	.263*
		Sig. (2-tailed)	402	.243	.595	.023
		N	84	84	72	75
	Q_20B	Correlation Coefficient	-.055	145	.072	.218
		Sig. (2-tailed)	.632	202	.558	.068
		N	79	79	68	71
	Q_21	Correlation Coefficient	036	111	.231*	-.062
		Sig. (2-tailed)	743	303	.047	.591
		N	88	88	74	77
	Q_22	Correlation Coefficient	213	.017	216	.036
		Sig. (2-tailed)	.052	879	.072	762
		N	84	84	70	73
	Q_23	Correlation Coefficient	-.350**	034	.064	.056
		Sig. (2-tailed)	001	757	.595	.636
		N	84	84	71	73
	Q_24	Correlation Coefficient	.309**	046	- 184	-.104
		Sig. (2-tailed)	.004	672	.121	374
		N	86	86	72	75
	Q_25	Correlation Coefficient	-.105	- 020	191	.004
		Sig (2-tailed)	336	.857	105	.975
		N	86	86	73	75
	Q_26	Correlation Coefficient	.031	- 130	.091	- 049
		Sig. (2-tailed)	.784	243	455	.685
		N	83	83	70	72
	Q_27	Correlation Coefficient	.261*	- 054	097	-.274*
		Sig (2-tailed)	.015	618	414	.017
		N	87	87	73	76
	Q_28	Correlation Coefficient	.074	.025	- 063	.288*
		Sig. (2-tailed)	.498	821	.594	.012
		N	87	87	73	76

Correlations

			Q_3B	Q_4	Q_5A	Q_5B
Spearman's rho	BUFFER	Correlation Coefficient	-.112	405**	- 078	
		Sig. (2-tailed)	.362	000	498	.
		N	69	78	77	0
	Q_1	Correlation Coefficient		.		
		Sig. (2-tailed)	.	.		
		N	69	78	77	0
	Q_2	Correlation Coefficient	-.161	- 070	- 112	
		Sig. (2-tailed)	.198	.552	.344	
		N	66	74	74	0
	Q_3A	Correlation Coefficient	.385**	.223*	.613**	.
		Sig (2-tailed)	.001	.050	.000	.
		N	69	78	77	0
	Q_3B	Correlation Coefficient	1.000	-.099	432**	
		Sig. (2-tailed)	.	.422	.000	
		N	69	68	68	0
	Q_4	Correlation Coefficient	-.099	1 000	108	
		Sig. (2-tailed)	.422	.	.355	
		N	68	78	76	0
	Q_5A	Correlation Coefficient	.432**	108	1.000	
		Sig (2-tailed)	000	355	.	
		N	68	76	77	0
	Q_5B	Correlation Coefficient		.	.	
		Sig (2-tailed)			.	
		N	0	0	0	0
	Q_6A	Correlation Coefficient	.464**	-.164	.456**	
		Sig (2-tailed)	.000	.152	.000	
		N	69	78	77	0
	Q_6B	Correlation Coefficient	.	.	.	
		Sig (2-tailed)	.	.	.	
		N	0	0	0	0
	Q_7	Correlation Coefficient	487**	.036	.351**	
		Sig (2-tailed)	000	.753	.002	
		N	69	78	77	0
	Q_8	Correlation Coefficient	.133	.199	.118	
		Sig (2-tailed)	279	082	.308	
		N	68	77	76	0
	Q_9	Correlation Coefficient	237	-.063	.328**	
		Sig (2-tailed)	.058	596	.005	.
		N	65	73	73	0
	Q_10	Correlation Coefficient	.010	-.005	455**	
		Sig (2-tailed)	937	964	.000	
		N	68	76	76	0
	Q_11A	Correlation Coefficient	171	.196	327**	
		Sig. (2-tailed)	161	.086	.004	
		N	69	78	77	0
	Q_11B	Correlation Coefficient	033	- 084	033	.
		Sig (2-tailed)	792	469	777	.
		N	68	77	76	0
	Q_12	Correlation Coefficient	051	028	.211	.
		Sig (2-tailed)	678	806	067	.
		N	68	77	76	0

Correlations

			Q 3B	Q 4	Q 5A	Q 5B
Spearman's rho	Q_13	Correlation Coefficient	-.105	081	.216	
		Sig (2-tailed)	.395	485	.061	
		N	68	76	76	0
	Q_14	Correlation Coefficient	-.259*	083	- 235*	
		Sig (2-tailed)	.034	481	044	
		N	67	75	74	0
	Q_15	Correlation Coefficient	.063	118	.100	
		Sig (2-tailed)	.610	314	.395	
		N	67	75	75	0
	Q_16	Correlation Coefficient	059	.024	197	
		Sig (2-tailed)	.633	.837	.088	
		N	68	77	76	0
	Q_17	Correlation Coefficient	.108	.229*	020	
		Sig. (2-tailed)	385	047	.867	
		N	67	76	75	0
	Q_18	Correlation Coefficient	.062	-.231*	-.195	.
		Sig. (2-tailed)	.620	.044	093	.
		N	67	76	75	0
	Q_18*	Correlation Coefficient	-.073	182	009	.
		Sig (2-tailed)	555	116	.938	.
		N	67	76	75	0
	Q_19	Correlation Coefficient	307*	074	.300**	.
		Sig (2-tailed)	012	524	009	.
		N	67	76	75	0
	Q_20A	Correlation Coefficient	.093	188	266*	.
		Sig. (2-tailed)	462	105	023	.
		N	65	75	73	0
	Q_20B	Correlation Coefficient	.067	102	.249*	.
		Sig. (2-tailed)	.606	399	.039	.
		N	61	71	69	0
	Q_21	Correlation Coefficient	-.219	- 058	-.010	.
		Sig. (2-tailed)	075	620	934	.
		N	67	76	75	0
	Q_22	Correlation Coefficient	.052	390**	- 131	.
		Sig. (2-tailed)	.685	001	.275	.
		N	64	72	71	0
	Q_23	Correlation Coefficient	213	-.077	- 050	
		Sig. (2-tailed)	094	.520	.680	
		N	63	72	71	0
	Q_24	Correlation Coefficient	- 162	198	- 027	.
		Sig. (2-tailed)	198	091	821	
		N	65	74	73	0
	Q_25	Correlation Coefficient	086	- 194	112	
		Sig. (2-tailed)	497	.098	347	
		N	65	74	73	0
	Q_26	Correlation Coefficient	- 161	- 044	- 213	.
		Sig. (2-tailed)	212	.714	077	
		N	62	71	70	0
	Q_27	Correlation Coefficient	- 089	- 091	- 306**	
		Sig (2-tailed)	475	440	008	
		N	66	75	74	0
	Q_28	Correlation Coefficient	- 004	241*	354**	
		Sig. (2-tailed)	975	.037	002	
		N	66	75	74	0

Correlations

			Q_6A	Q_6B	Q_7	Q_8
Spearman's rho	BUFFER	Correlation Coefficient	- 028	.	- 013	.278*
		Sig. (2-tailed)	.807		910	013
		N	79	0	80	79
	Q_1	Correlation Coefficient		.	-.045	035
		Sig. (2-tailed)	.	.	692	757
		N	79	0	80	79
	Q_2	Correlation Coefficient	- 096	.	- 290*	- 021
		Sig. (2-tailed)	.415	.	.012	.857
		N	75	0	75	74
	Q_3A	Correlation Coefficient	.508**	.	.504**	.156
		Sig. (2-tailed)	.000	.	.000	.172
		N	79	0	79	78
	Q_3B	Correlation Coefficient	464**	.	487**	.133
		Sig. (2-tailed)	.000	.	.000	.279
		N	69	0	69	68
	Q_4	Correlation Coefficient	- 164	.	.036	.199
		Sig. (2-tailed)	.152		.753	082
		N	78	0	78	77
	Q_5A	Correlation Coefficient	456**		.351**	118
		Sig. (2-tailed)	000		.002	.308
		N	77	0	77	76
	Q_5B	Correlation Coefficient		.	.	
		Sig. (2-tailed)		.	.	
		N	0	0	0	0
	Q_6A	Correlation Coefficient	1 000	.	.518**	.099
		Sig (2-tailed)		.	.000	.390
		N	79	0	79	78
	Q_6B	Correlation Coefficient		.	.	
		Sig (2-tailed)		.		
		N	0	0	0	0
	Q_7	Correlation Coefficient	.518**		1.000	-.003
		Sig (2-tailed)	.000			.977
		N	79	0	80	79
	Q_8	Correlation Coefficient	.099	.	-.003	1 000
		Sig (2-tailed)	390	.	.977	
		N	78	0	79	79
	Q_9	Correlation Coefficient	482**	.	.222	113
		Sig (2-tailed)	000	.	.058	.340
		N	74	0	74	74
	Q_10	Correlation Coefficient	.371**	.	.002	.092
		Sig (2-tailed)	.001		.989	427
		N	77	0	78	77
	Q_11A	Correlation Coefficient	145		184	.322**
		Sig. (2-tailed)	.203		.102	.004
		N	79	0	80	79
	Q_11B	Correlation Coefficient	042		.053	- 134
		Sig (2-tailed)	717		643	.242
		N	78	0	79	78
	Q_12	Correlation Coefficient	334**		074	073
		Sig (2-tailed)	003	.	518	.525
		N	78	0	79	78

Correlations

			Q 6A	Q 6B	Q 7	Q 8
Spearman's rho	Q_13	Correlation Coefficient	.188	.	106	-.040
		Sig (2-tailed)	.101		.356	.727
		N	77	0	78	77
	Q_14	Correlation Coefficient	-.090	.	-.164	- 099
		Sig (2-tailed)	438	.	155	395
		N	76	0	77	76
	Q_15	Correlation Coefficient	.024	.	.085	-.003
		Sig (2-tailed)	.838	.	.463	977
		N	76	0	77	76
	Q_16	Correlation Coefficient	.204	.	.002	-.080
		Sig (2-tailed)	.073	.	.984	.488
		N	78	0	79	78
	Q_17	Correlation Coefficient	-.098	.	.147	.026
		Sig (2-tailed)	.396		198	.820
		N	77	0	78	77
	Q_18	Correlation Coefficient	-.047		- 008	.024
		Sig. (2-tailed)	.683		.942	.835
		N	77	0	78	77
	Q_18*	Correlation Coefficient	053		067	-.234*
		Sig. (2-tailed)	644	.	.558	041
		N	77	0	78	77
	Q_19	Correlation Coefficient	.346**	.	090	-.061
		Sig (2-tailed)	.002	.	.433	.600
		N	77	0	78	77
	Q_20A	Correlation Coefficient	.254*	.	017	187
		Sig. (2-tailed)	.028	.	.887	109
		N	75	0	76	75
	Q_20B	Correlation Coefficient	.163	.	-.054	- 085
		Sig. (2-tailed)	174	.	.655	486
		N	71	0	71	70
	Q_21	Correlation Coefficient	.078	.	-.041	- 079
		Sig. (2-tailed)	501	.	.721	494
		N	77	0	78	77
	Q_22	Correlation Coefficient	-.174	.	-.144	.060
		Sig. (2-tailed)	.141	.	.220	.614
		N	73	0	74	73
	Q_23	Correlation Coefficient	-.017	.	- 072	- 081
		Sig. (2-tailed)	.885		.539	498
		N	73	0	74	73
	Q_24	Correlation Coefficient	- 133	.	.004	.040
		Sig. (2-tailed)	.255	.	.971	732
		N	75	0	76	75
	Q_25	Correlation Coefficient	.059	.	.068	-.047
		Sig. (2-tailed)	.614	.	562	.691
		N	75	0	76	75
	Q_26	Correlation Coefficient	- 039	.	.134	- 114
		Sig. (2-tailed)	747	.	.260	.340
		N	72	0	73	72
	Q_27	Correlation Coefficient	- 246*		-.037	.119
		Sig. (2-tailed)	032	.	752	.304
		N	76	0	77	76
	Q_28	Correlation Coefficient	072		157	067
		Sig. (2-tailed)	537		173	.565
		N	76	0	77	76

Correlations

			Q 9	Q 10	Q 11A	Q 11B
Spearman's rho	BUFFER	Correlation Coefficient	-.024	- 149	.089	- 084
		Sig. (2-tailed)	.840	194	.430	462
		N	74	78	80	79
	Q_1	Correlation Coefficient	.	- 036	.052	015
		Sig. (2-tailed)		756	.648	.896
		N	74	78	80	79
	Q_2	Correlation Coefficient	-.010	.016	-.161	-.111
		Sig. (2-tailed)	.933	.894	168	342
		N	71	74	75	75
	Q_3A	Correlation Coefficient	400**	408**	.292**	.036
		Sig. (2-tailed)	000	000	.009	755
		N	74	77	79	78
	Q_3B	Correlation Coefficient	.237	010	.171	.033
		Sig. (2-tailed)	.058	937	161	792
		N	65	68	69	68
	Q_4	Correlation Coefficient	-.063	-.005	196	- 084
		Sig. (2-tailed)	.596	964	086	.469
		N	73	76	78	77
	Q_5A	Correlation Coefficient	328**	455**	.327**	.033
		Sig. (2-tailed)	.005	000	.004	.777
		N	73	76	77	76
	Q_5B	Correlation Coefficient	.	.	.	
		Sig. (2-tailed)		.	.	.
		N	0	0	0	0
	Q_6A	Correlation Coefficient	.482**	371**	.145	.042
		Sig. (2-tailed)	000	.001	.203	.717
		N	74	77	79	78
	Q_6B	Correlation Coefficient		.	.	.
		Sig. (2-tailed)		.	.	
		N	0	0	0	0
	Q_7	Correlation Coefficient	.222	.002	.184	.053
		Sig. (2-tailed)	.058	989	.102	.643
		N	74	78	80	79
	Q_8	Correlation Coefficient	.113	.092	322**	-.134
		Sig. (2-tailed)	340	.427	.004	.242
		N	74	77	79	78
	Q_9	Correlation Coefficient	1 000	.534**	.168	.048
		Sig. (2-tailed)		000	152	.684
		N	74	74	74	73
	Q_10	Correlation Coefficient	.534**	1 000	147	.042
		Sig. (2-tailed)	.000	.	199	.715
		N	74	78	78	77
	Q_11A	Correlation Coefficient	.168	147	1.000	.210
		Sig. (2-tailed)	152	.199		.064
		N	74	78	80	79
	Q_11B	Correlation Coefficient	048	.042	210	1.000
		Sig. (2-tailed)	.684	715	.064	
		N	73	77	79	79
	Q_12	Correlation Coefficient	.108	333**	107	.030
		Sig. (2-tailed)	.362	003	.347	.790
		N	73	77	79	79

Correlations

			Q_9	Q_10	Q_11A	Q_11B
Spearman's rho	Q_13	Correlation Coefficient	.158	485**	158	045
		Sig. (2-tailed)	183	.000	.167	696
		N	73	77	78	78
	Q_14	Correlation Coefficient	- 163	- 049	- 119	-.169
		Sig (2-tailed)	.174	.677	.303	.142
		N	71	75	77	77
	Q_15	Correlation Coefficient	.051	.024	.167	123
		Sig. (2-tailed)	670	838	.146	286
		N	72	76	77	77
	Q_16	Correlation Coefficient	.088	.078	.204	-.012
		Sig. (2-tailed)	460	.500	.071	.920
		N	73	77	79	79
	Q_17	Correlation Coefficient	-.042	.107	.035	-.044
		Sig. (2-tailed)	.724	.359	.762	.703
		N	72	76	78	78
	Q_18	Correlation Coefficient	- 071	-.130	-.109	- 082
		Sig. (2-tailed)	.551	.262	.344	.475
		N	72	76	78	78
	Q_18*	Correlation Coefficient	091	144	-.205	-.127
		Sig. (2-tailed)	448	.213	.071	.269
		N	72	76	78	78
	Q_19	Correlation Coefficient	090	.088	.072	-.008
		Sig. (2-tailed)	454	.449	.530	.942
		N	72	76	78	78
	Q_20A	Correlation Coefficient	.205	.155	.282*	- 030
		Sig. (2-tailed)	087	.184	014	.799
		N	71	75	76	76
	Q_20B	Correlation Coefficient	.169	.091	- 047	- 129
		Sig (2-tailed)	173	.458	.698	.282
		N	67	69	71	71
	Q_21	Correlation Coefficient	027	.017	-.085	- 126
		Sig. (2-tailed)	820	.881	460	.271
		N	72	76	78	78
	Q_22	Correlation Coefficient	048	.040	-.011	-.082
		Sig. (2-tailed)	695	.742	.929	.486
		N	68	72	74	74
	Q_23	Correlation Coefficient	- 051	- 019	-.227	-.184
		Sig. (2-tailed)	681	872	.052	117
		N	68	72	74	74
	Q_24	Correlation Coefficient	- 074	- 137	.106	-.048
		Sig. (2-tailed)	.542	244	.362	.682
		N	71	74	76	76
	Q_25	Correlation Coefficient	.099	- 049	-.095	-.007
		Sig. (2-tailed)	410	677	.416	.954
		N	71	75	76	76
	Q_26	Correlation Coefficient	.396**	- 082	- 058	.209
		Sig. (2-tailed)	001	498	627	.076
		N	67	71	73	73
	Q_27	Correlation Coefficient	-.178	- 284*	- 159	-.122
		Sig (2-tailed)	.138	014	168	.291
		N	71	75	77	77
	Q_28	Correlation Coefficient	.213	119	205	.066
		Sig (2-tailed)	.074	311	074	.566
		N	71	75	77	77

Correlations

			Q_12	Q_13	Q_14	Q_15
Spearman's rho	BUFFER	Correlation Coefficient	- 113	-.152	.009	- 096
		Sig (2-tailed)	.291	.158	.937	374
		N	89	88	87	87
	Q_1	Correlation Coefficient	- 081	-.014	.070	.159
		Sig (2-tailed)	448	.896	.520	140
		N	89	88	87	87
	Q_2	Correlation Coefficient	111	- 089	.011	- 167
		Sig (2-tailed)	344	.448	.923	156
		N	75	75	73	74
	Q_3A	Correlation Coefficient	182	.332**	-.106	229*
		Sig (2-tailed)	.110	.003	.362	.046
		N	78	77	76	76
	Q_3B	Correlation Coefficient	051	-.105	-.259*	063
		Sig (2-tailed)	678	.395	.034	.610
		N	68	68	67	67
	Q_4	Correlation Coefficient	028	.081	.083	118
		Sig (2-tailed)	806	.485	481	314
		N	77	76	75	75
	Q_5A	Correlation Coefficient	211	.216	- 235*	.100
		Sig (2-tailed)	067	.061	.044	.395
		N	76	76	74	75
	Q_5B	Correlation Coefficient			.	
		Sig (2-tailed)	.			
		N	0	0	0	0
	Q_6A	Correlation Coefficient	334**	188	- 090	024
		Sig (2-tailed)	003	101	.438	.838
		N	78	77	76	76
	Q_6B	Correlation Coefficient	.	.		.
		Sig (2-tailed)				.
		N	0	0	0	0
	Q_7	Correlation Coefficient	.074	106	- 164	085
		Sig (2-tailed)	.518	356	155	.463
		N	79	78	77	77
	Q_8	Correlation Coefficient	073	- 040	- 099	- 003
		Sig (2-tailed)	.525	727	395	.977
		N	78	77	76	76
	Q_9	Correlation Coefficient	.108	158	- 163	.051
		Sig. (2-tailed)	.362	183	174	.670
		N	73	73	71	72
	Q_10	Correlation Coefficient	.333**	.485**	- 049	024
		Sig (2-tailed)	.003	.000	677	838
		N	77	77	75	76
	Q_11A	Correlation Coefficient	107	.158	- 119	.167
		Sig (2-tailed)	.347	167	303	146
		N	79	78	77	77
	Q_11B	Correlation Coefficient	.030	045	- 169	.123
		Sig (2-tailed)	.790	696	142	.286
		N	79	78	77	77
	Q_12	Correlation Coefficient	1 000	.647**	219*	092
		Sig (2-tailed)		.000	041	397
		N	89	88	87	87

Correlations

			Q_12	Q_13	Q_14	Q_15
Spearman's rho	Q_13	Correlation Coefficient	.647**	1.000	.223*	142
		Sig (2-tailed)	.000		039	.188
		N	88	88	86	87
	Q_14	Correlation Coefficient	219*	.223*	1.000	- 128
		Sig (2-tailed)	041	.039		.243
		N	87	86	87	85
	Q_15	Correlation Coefficient	.092	142	- 128	1.000
		Sig (2-tailed)	.397	.188	.243	.
		N	87	87	85	87
	Q_16	Correlation Coefficient	.030	- 068	.125	044
		Sig. (2-tailed)	.782	.527	.248	.687
		N	89	88	87	87
	Q_17	Correlation Coefficient	.085	.251*	-.007	.208
		Sig. (2-tailed)	430	.019	.951	.054
		N	88	87	86	86
	Q_18	Correlation Coefficient	007	- 129	-.067	-.062
		Sig (2-tailed)	.949	.234	.540	572
		N	88	87	86	86
	Q_18*	Correlation Coefficient	154	083	.066	.019
		Sig. (2-tailed)	.152	.443	.546	.859
		N	88	87	86	86
	Q_19	Correlation Coefficient	.018	- 088	.079	.214*
		Sig. (2-tailed)	867	417	.468	.047
		N	88	87	86	86
	Q_20A	Correlation Coefficient	-.043	-.025	-.105	364**
		Sig (2-tailed)	.695	.825	.350	.001
		N	84	83	82	82
	Q_20B	Correlation Coefficient	-.135	-.082	-.140	.278*
		Sig. (2-tailed)	.235	477	.224	.014
		N	79	78	77	77
	Q_21	Correlation Coefficient	-.112	-.261*	.002	.096
		Sig. (2-tailed)	.298	015	.985	.380
		N	88	87	86	86
	Q_22	Correlation Coefficient	- 202	-.175	149	-.059
		Sig. (2-tailed)	.066	113	.182	.599
		N	84	83	82	82
	Q_23	Correlation Coefficient	.033	.024	-.057	109
		Sig. (2-tailed)	.766	.828	.609	.328
		N	84	83	82	82
	Q_24	Correlation Coefficient	- 066	.031	.018	-.218*
		Sig. (2-tailed)	548	.777	874	.047
		N	86	85	84	84
	Q_25	Correlation Coefficient	- 277**	-.309**	- 132	.063
		Sig. (2-tailed)	010	004	231	568
		N	86	85	84	84
	Q_26	Correlation Coefficient	- 131	-.117	- 198	.180
		Sig. (2-tailed)	.238	.296	077	108
		N	83	82	81	81
	Q_27	Correlation Coefficient	- 119	- 112	- 078	-.272*
		Sig. (2-tailed)	271	.306	480	.012
		N	87	86	85	85
	Q_28	Correlation Coefficient	- 023	026	- 071	.062
		Sig. (2-tailed)	829	814	518	.574
		N	87	86	85	85

Correlations

			Q_16	Q_17	Q_18	Q_18*
Spearman's rho	BUFFER	Correlation Coefficient	- 062	- 080	- 030	014
		Sig. (2-tailed)	566	459	781	.895
		N	89	88	88	88
	Q_1	Correlation Coefficient	154	- 037	- 047	-.001
		Sig. (2-tailed)	149	.733	665	.995
		N	89	88	88	88
	Q_2	Correlation Coefficient	121	- 320**	.124	.020
		Sig. (2-tailed)	.303	006	.292	867
		N	75	74	74	74
	Q_3A	Correlation Coefficient	.033	.255*	-.221	.030
		Sig. (2-tailed)	.777	.025	.054	793
		N	78	77	77	77
	Q_3B	Correlation Coefficient	059	.108	.062	-.073
		Sig. (2-tailed)	.633	.385	.620	.555
		N	68	67	67	67
	Q_4	Correlation Coefficient	024	.229*	-.231*	182
		Sig (2-tailed)	837	.047	.044	.116
		N	77	76	76	76
	Q_5A	Correlation Coefficient	.197	.020	-.195	.009
		Sig. (2-tailed)	088	.867	093	.938
		N	76	75	75	75
	Q_5B	Correlation Coefficient			.	.
		Sig. (2-tailed)	.	.	.	.
		N	0	0	0	0
	Q_6A	Correlation Coefficient	204	-.098	-.047	.053
		Sig. (2-tailed)	073	.396	683	.644
		N	78	77	77	77
	Q_6B	Correlation Coefficient			.	
		Sig. (2-tailed)			.	
		N	0	0	0	0
	Q_7	Correlation Coefficient	.002	.147	- 008	.067
		Sig. (2-tailed)	.984	.198	942	.558
		N	79	78	78	78
	Q_8	Correlation Coefficient	-.080	.026	.024	-.234*
		Sig. (2-tailed)	488	.820	.835	.041
		N	78	77	77	77
	Q_9	Correlation Coefficient	088	-.042	- 071	.091
		Sig. (2-tailed)	460	724	.551	.448
		N	73	72	72	72
	Q_10	Correlation Coefficient	.078	.107	-.130	.144
		Sig. (2-tailed)	.500	359	.262	.213
		N	77	76	76	76
	Q_11A	Correlation Coefficient	204	.035	-.109	-.205
		Sig (2-tailed)	.071	762	344	.071
		N	79	78	78	78
	Q_11B	Correlation Coefficient	- 012	- 044	-.082	-.127
		Sig. (2-tailed)	.920	703	475	.269
		N	79	78	78	78
	Q_12	Correlation Coefficient	030	085	007	.154
		Sig. (2-tailed)	782	430	949	.152
		N	89	88	88	88

Correlations

			Q_16	Q_17	Q_18	Q_18*
Spearman's rho	Q_13	Correlation Coefficient	-.068	.251*	- 129	083
		Sig (2-tailed)	.527	019	.234	443
		N	88	87	87	87
	Q_14	Correlation Coefficient	125	-.007	-.067	066
		Sig (2-tailed)	.248	.951	.540	546
		N	87	86	86	86
	Q_15	Correlation Coefficient	.044	.208	-.062	019
		Sig. (2-tailed)	687	.054	.572	.859
		N	87	86	86	86
	Q_16	Correlation Coefficient	1 000	- 192	-.298**	064
		Sig. (2-tailed)	.	.073	.005	.554
		N	89	88	88	88
	Q_17	Correlation Coefficient	- 192	1.000	- 183	.022
		Sig. (2-tailed)	073		088	839
		N	88	88	88	88
	Q_18	Correlation Coefficient	-.298**	- 183	1.000	- 181
		Sig. (2-tailed)	.005	.088	.	091
		N	88	88	88	88
	Q_18*	Correlation Coefficient	064	022	- 181	1 000
		Sig. (2-tailed)	.554	839	.091	.
		N	88	88	88	88
	Q_19	Correlation Coefficient	695**	-.062	-.444**	.114
		Sig. (2-tailed)	000	566	.000	.291
		N	88	88	88	88
	Q_20A	Correlation Coefficient	.207	152	-.270*	-.126
		Sig. (2-tailed)	.059	167	.013	.253
		N	84	84	84	84
	Q_20B	Correlation Coefficient	130	- 242*	- 190	- 043
		Sig. (2-tailed)	.253	.032	.093	.704
		N	79	79	79	79
	Q_21	Correlation Coefficient	.334**	-.299**	-.247*	.298**
		Sig. (2-tailed)	.001	005	.020	005
		N	88	88	88	88
	Q_22	Correlation Coefficient	.155	197	-.264*	.080
		Sig. (2-tailed)	.158	.073	.015	.467
		N	84	84	84	84
	Q_23	Correlation Coefficient	- 038	.052	.129	.152
		Sig. (2-tailed)	729	.641	.243	.169
		N	84	84	84	84
	Q_24	Correlation Coefficient	-.118	-.004	.106	-.205
		Sig. (2-tailed)	280	.974	.333	.058
		N	86	86	86	86
	Q_25	Correlation Coefficient	.262*	-.139	-.308**	.039
		Sig. (2-tailed)	015	.203	.004	.719
		N	86	86	86	86
	Q_26	Correlation Coefficient	- 175	- 245*	144	- 006
		Sig. (2-tailed)	114	026	.194	.956
		N	83	83	83	83
	Q_27	Correlation Coefficient	- 328**	- 047	266*	-.284**
		Sig. (2-tailed)	.002	667	013	.008
		N	87	87	87	87
	Q_28	Correlation Coefficient	.153	076	- 149	134
		Sig. (2-tailed)	157	483	167	.215
		N	87	87	87	87

Correlations

			Q_19	Q_20A	Q_20B	Q_21
Spearman's rho	BUFFER	Correlation Coefficient	- 088	-.093	-.055	.036
		Sig (2-tailed)	413	.402	.632	.743
		N	88	84	79	88
	Q_1	Correlation Coefficient	.136	.129	.145	.111
		Sig. (2-tailed)	.207	.243	.202	.303
		N	88	84	79	88
	Q_2	Correlation Coefficient	008	-.064	.072	.231*
		Sig. (2-tailed)	.945	.595	.558	.047
		N	74	72	68	74
	Q_3A	Correlation Coefficient	.235*	.263*	.218	-.062
		Sig. (2-tailed)	.040	.023	.068	.591
		N	77	75	71	77
	Q_3B	Correlation Coefficient	307*	.093	.067	-.219
		Sig. (2-tailed)	012	.462	.606	.075
		N	67	65	61	67
	Q_4	Correlation Coefficient	.074	.188	.102	-.058
		Sig. (2-tailed)	.524	.105	.399	.620
		N	76	75	71	76
	Q_5A	Correlation Coefficient	.300**	.266*	.249*	-.010
		Sig. (2-tailed)	.009	.023	.039	.934
		N	75	73	69	75
	Q_5B	Correlation Coefficient		.	.	
		Sig. (2-tailed)			.	
		N	0	0	0	0
	Q_6A	Correlation Coefficient	346**	.254*	.163	078
		Sig. (2-tailed)	002	.028	.174	.501
		N	77	75	71	77
	Q_6B	Correlation Coefficient	.		.	
		Sig (2-tailed)	.		.	.
		N	0	0	0	0
	Q_7	Correlation Coefficient	090	.017	-.054	- 041
		Sig. (2-tailed)	433	.887	.655	.721
		N	78	76	71	78
	Q_8	Correlation Coefficient	- 061	.187	-.085	-.079
		Sig. (2-tailed)	600	109	.486	.494
		N	77	75	70	77
	Q_9	Correlation Coefficient	090	.205	.169	027
		Sig. (2-tailed)	.454	.087	.173	.820
		N	72	71	67	72
	Q_10	Correlation Coefficient	.088	155	.091	.017
		Sig (2-tailed)	.449	184	.458	881
		N	76	75	69	76
	Q_11A	Correlation Coefficient	.072	.282*	- 047	-.085
		Sig (2-tailed)	530	.014	698	.460
		N	78	76	71	78
	Q_11B	Correlation Coefficient	- 008	- 030	- 129	- 126
		Sig (2-tailed)	942	799	282	.271
		N	78	76	71	78
	Q_12	Correlation Coefficient	.018	- 043	- 135	-.112
		Sig (2-tailed)	.867	695	235	.298
		N	88	84	79	88

Correlations

			Q 19	Q 20A	Q 20B	Q 21
Spearman's rho	Q_13	Correlation Coefficient	- 088	-.025	-.082	-.261*
		Sig. (2-tailed)	.417	.825	.477	015
		N	87	83	78	87
	Q_14	Correlation Coefficient	079	-.105	-.140	.002
		Sig (2-tailed)	468	.350	.224	985
		N	86	82	77	86
	Q_15	Correlation Coefficient	.214*	.364**	.278*	.096
		Sig. (2-tailed)	.047	.001	.014	380
		N	86	82	77	86
	Q_16	Correlation Coefficient	695**	207	.130	.334**
		Sig. (2-tailed)	.000	059	.253	.001
		N	88	84	79	88
	Q_17	Correlation Coefficient	-.062	152	-.242*	-.299**
		Sig. (2-tailed)	.566	167	.032	.005
		N	88	84	79	88
	Q_18	Correlation Coefficient	- 444**	-.270*	-.190	-.247*
		Sig. (2-tailed)	.000	013	.093	.020
		N	88	84	79	88
	Q_18*	Correlation Coefficient	.114	- 126	-.043	.298**
		Sig. (2-tailed)	.291	.253	.704	.005
		N	88	84	79	88
	Q_19	Correlation Coefficient	1 000	.312**	.324**	.451**
		Sig. (2-tailed)	.	004	.004	.000
		N	88	84	79	88
	Q_20A	Correlation Coefficient	.312**	1.000	.393**	.215*
		Sig (2-tailed)	.004	.	000	.049
		N	84	84	78	84
	Q_20B	Correlation Coefficient	324**	393**	1 000	.313**
		Sig (2-tailed)	004	000	.	.005
		N	79	78	79	79
	Q_21	Correlation Coefficient	.451**	.215*	.313**	1.000
		Sig. (2-tailed)	000	.049	.005	.
		N	88	84	79	88
	Q_22	Correlation Coefficient	149	.041	- 039	091
		Sig. (2-tailed)	175	.719	.737	410
		N	84	80	75	84
	Q_23	Correlation Coefficient	009	-.007	144	.019
		Sig (2-tailed)	934	.949	.217	.865
		N	84	80	75	84
	Q_24	Correlation Coefficient	-.282**	-.066	- 197	-.342**
		Sig. (2-tailed)	.009	.553	086	001
		N	86	82	77	86
	Q_25	Correlation Coefficient	.382**	.147	309**	.534**
		Sig. (2-tailed)	.000	185	006	.000
		N	86	83	77	86
	Q_26	Correlation Coefficient	-.244*	023	153	.097
		Sig (2-tailed)	026	.838	192	.385
		N	83	79	74	83
	Q_27	Correlation Coefficient	-.456**	- 095	-.099	-.213*
		Sig. (2-tailed)	000	.391	389	.047
		N	87	83	78	87
	Q_28	Correlation Coefficient	225*	148	070	.154
		Sig (2-tailed)	036	.183	544	.153
		N	87	83	78	87

Correlations

			Q_22	Q_23	Q_24	Q_25
Spearman's rho	BUFFER	Correlation Coefficient	.213	- 350**	.309**	-.105
		Sig (2-tailed)	.052	.001	.004	.336
		N	84	84	86	86
	Q_1	Correlation Coefficient	.017	.034	.046	-.020
		Sig. (2-tailed)	.879	757	.672	.857
		N	84	84	86	86
	Q_2	Correlation Coefficient	.216	064	- 184	191
		Sig. (2-tailed)	.072	.595	.121	105
		N	70	71	72	73
	Q_3A	Correlation Coefficient	.036	.056	-.104	.004
		Sig. (2-tailed)	.762	.636	.374	.975
		N	73	73	75	75
	Q_3B	Correlation Coefficient	.052	.213	-.162	.086
		Sig (2-tailed)	.685	.094	198	497
		N	64	63	65	65
	Q_4	Correlation Coefficient	.390**	-.077	.198	- 194
		Sig. (2-tailed)	.001	.520	.091	.098
		N	72	72	74	74
	Q_5A	Correlation Coefficient	- 131	-.050	-.027	.112
		Sig. (2-tailed)	.275	680	.821	.347
		N	71	71	73	73
	Q_5B	Correlation Coefficient		.	.	
		Sig. (2-tailed)	.	.	.	.
		N	0	0	0	0
	Q_6A	Correlation Coefficient	-.174	- 017	-.133	.059
		Sig. (2-tailed)	.141	885	255	.614
		N	73	73	75	75
	Q_6B	Correlation Coefficient		.	.	.
		Sig. (2-tailed)	.	.	.	
		N	0	0	0	0
	Q_7	Correlation Coefficient	- 144	- 072	.004	.068
		Sig. (2-tailed)	.220	.539	.971	.562
		N	74	74	76	76
	Q_8	Correlation Coefficient	060	- 081	.040	-.047
		Sig. (2-tailed)	614	498	.732	.691
		N	73	73	75	75
	Q_9	Correlation Coefficient	048	-.051	- 074	.099
		Sig. (2-tailed)	695	.681	542	.410
		N	68	68	71	71
	Q_10	Correlation Coefficient	040	- 019	-.137	-.049
		Sig. (2-tailed)	742	.872	.244	677
		N	72	72	74	75
	Q_11A	Correlation Coefficient	- 011	-.227	.106	- 095
		Sig. (2-tailed)	929	052	362	.416
		N	74	74	76	76
	Q_11B	Correlation Coefficient	- 082	- 184	- 048	-.007
		Sig. (2-tailed)	486	117	682	954
		N	74	74	76	76
	Q_12	Correlation Coefficient	- 202	033	- 066	-.277**
		Sig. (2-tailed)	066	766	.548	.010
		N	84	84	86	86

Correlations

			Q_22	Q_23	Q_24	Q_25
Spearman's rho	Q_13	Correlation Coefficient	- 175	.024	.031	-.309**
		Sig. (2-tailed)	.113	.828	.777	.004
		N	83	83	85	85
	Q_14	Correlation Coefficient	149	-.057	.018	- 132
		Sig (2-tailed)	.182	.609	.874	.231
		N	82	82	84	84
	Q_15	Correlation Coefficient	- 059	.109	-.218*	.063
		Sig (2-tailed)	599	.328	.047	.568
		N	82	82	84	84
	Q_16	Correlation Coefficient	.155	-.038	-.118	262*
		Sig (2-tailed)	158	.729	.280	.015
		N	84	84	86	86
	Q_17	Correlation Coefficient	.197	.052	-.004	-.139
		Sig (2-tailed)	073	.641	.974	.203
		N	84	84	86	86
	Q_18	Correlation Coefficient	-.264*	.129	.106	-.308**
		Sig (2-tailed)	015	.243	.333	.004
		N	84	84	86	86
	Q_18*	Correlation Coefficient	080	.152	-.205	.039
		Sig. (2-tailed)	467	169	.058	.719
		N	84	84	86	86
	Q_19	Correlation Coefficient	.149	009	-.282**	382**
		Sig. (2-tailed)	.175	934	.009	.000
		N	84	84	86	86
	Q_20A	Correlation Coefficient	.041	- 007	- 066	147
		Sig. (2-tailed)	.719	949	553	185
		N	80	80	82	83
	Q_20B	Correlation Coefficient	- 039	.144	-.197	.309**
		Sig. (2-tailed)	.737	217	.086	.006
		N	75	75	77	77
	Q_21	Correlation Coefficient	.091	019	- 342**	.534**
		Sig. (2-tailed)	.410	865	001	.000
		N	84	84	86	86
	Q_22	Correlation Coefficient	1.000	- 081	- 089	.142
		Sig. (2-tailed)		467	.426	.204
		N	84	82	82	82
	Q_23	Correlation Coefficient	-.081	1 000	- 261*	054
		Sig. (2-tailed)	.467	.	.018	.627
		N	82	84	82	83
	Q_24	Correlation Coefficient	-.089	-.261*	1.000	-.428**
		Sig. (2-tailed)	.426	.018		000
		N	82	82	86	84
	Q_25	Correlation Coefficient	.142	.054	- 428**	1 000
		Sig. (2-tailed)	.204	.627	000	
		N	82	83	84	86
	Q_26	Correlation Coefficient	-.080	-.079	-.132	- 018
		Sig. (2-tailed)	.479	.487	238	.870
		N	80	80	81	82
	Q_27	Correlation Coefficient	-.136	-.249*	.245*	- 175
		Sig (2-tailed)	.216	.023	024	109
		N	84	83	85	85
	Q_28	Correlation Coefficient	.032	.014	.234*	018
		Sig (2-tailed)	775	.901	.031	868
		N	84	83	85	85

Correlations

			Q_26	Q_27	Q_28
Spearman's rho	BUFFER	Correlation Coefficient	.031	.261*	.074
		Sig. (2-tailed)	784	.015	.498
		N	83	87	87
	Q_1	Correlation Coefficient	-.130	- 054	025
		Sig. (2-tailed)	.243	618	.821
		N	83	87	87
	Q_2	Correlation Coefficient	.091	.097	- 063
		Sig. (2-tailed)	.455	.414	.594
		N	70	73	73
	Q_3A	Correlation Coefficient	-.049	-.274*	288*
		Sig. (2-tailed)	.685	.017	012
		N	72	76	76
	Q_3B	Correlation Coefficient	-.161	-.089	- 004
		Sig. (2-tailed)	.212	.475	975
		N	62	66	66
	Q_4	Correlation Coefficient	- 044	- 091	241*
		Sig. (2-tailed)	.714	440	037
		N	71	75	75
	Q_5A	Correlation Coefficient	-.213	-.306**	354**
		Sig. (2-tailed)	.077	.008	002
		N	70	74	74
	Q_5B	Correlation Coefficient			
		Sig. (2-tailed)		.	
		N	0	0	0
	Q_6A	Correlation Coefficient	- 039	- 246*	072
		Sig. (2-tailed)	.747	.032	537
		N	72	76	76
	Q_6B	Correlation Coefficient			
		Sig. (2-tailed)	.	.	
		N	0	0	0
	Q_7	Correlation Coefficient	.134	-.037	157
		Sig. (2-tailed)	.260	.752	173
		N	73	77	77
	Q_8	Correlation Coefficient	- 114	119	.067
		Sig. (2-tailed)	340	.304	.565
		N	72	76	76
	Q_9	Correlation Coefficient	.396**	-.178	213
		Sig. (2-tailed)	001	138	074
		N	67	71	71
	Q_10	Correlation Coefficient	- 082	- 284*	119
		Sig. (2-tailed)	498	.014	311
		N	71	75	75
	Q_11A	Correlation Coefficient	-.058	-.159	.205
		Sig. (2-tailed)	.627	168	074
		N	73	77	77
	Q_11B	Correlation Coefficient	.209	- 122	066
		Sig. (2-tailed)	076	291	566
		N	73	77	77
	Q_12	Correlation Coefficient	- 131	-.119	- 023
		Sig. (2-tailed)	.238	271	.829
		N	83	87	87

Correlations

			Q 26	Q 27	Q 28
Spearman's rho	Q_13	Correlation Coefficient	- 117	- 112	.026
		Sig. (2-tailed)	.296	306	814
		N	82	86	86
	Q_14	Correlation Coefficient	- 198	- 078	-.071
		Sig. (2-tailed)	077	480	518
		N	81	85	85
	Q_15	Correlation Coefficient	180	- 272*	.062
		Sig. (2-tailed)	108	012	.574
		N	81	85	85
	Q_16	Correlation Coefficient	-.175	- 328**	.153
		Sig. (2-tailed)	.114	.002	.157
		N	83	87	87
	Q_17	Correlation Coefficient	-.245*	-.047	076
		Sig. (2-tailed)	.026	667	.483
		N	83	87	87
	Q_18	Correlation Coefficient	.144	266*	- 149
		Sig. (2-tailed)	.194	013	.167
		N	83	87	87
	Q_18*	Correlation Coefficient	-.006	-.284**	.134
		Sig. (2-tailed)	956	008	.215
		N	83	87	87
	Q_19	Correlation Coefficient	-.244*	- 456**	.225*
		Sig. (2-tailed)	026	.000	.036
		N	83	87	87
	Q_20A	Correlation Coefficient	.023	- 095	.148
		Sig. (2-tailed)	838	.391	183
		N	79	83	83
	Q_20B	Correlation Coefficient	153	-.099	.070
		Sig. (2-tailed)	192	.389	.544
		N	74	78	78
	Q_21	Correlation Coefficient	097	-.213*	.154
		Sig. (2-tailed)	.385	.047	153
		N	83	87	87
	Q_22	Correlation Coefficient	-.080	- 136	032
		Sig. (2-tailed)	.479	.216	.775
		N	80	84	84
	Q_23	Correlation Coefficient	-.079	-.249*	014
		Sig. (2-tailed)	.487	.023	901
		N	80	83	83
	Q_24	Correlation Coefficient	- 132	.245*	234*
		Sig. (2-tailed)	.238	.024	031
		N	81	85	85
	Q_25	Correlation Coefficient	-.018	-.175	.018
		Sig. (2-tailed)	870	.109	.868
		N	82	85	85
	Q_26	Correlation Coefficient	1 000	.222*	- 206
		Sig. (2-tailed)		043	.062
		N	83	83	83
	Q_27	Correlation Coefficient	.222*	1 000	- 295**
		Sig (2-tailed)	043	.	006
		N	83	87	87
	Q_28	Correlation Coefficient	-.206	-.295**	1 000
		Sig. (2-tailed)	062	006	
		N	83	87	87

** Correlation is significant at the 01 level (2-tailed)

Frequencies

Statistics

		BUFFER	Q 1	Q 2	Q 3A	Q 3B
N	Valid	90	90	75	79	69
	Missing	0	0	15	11	21
Mode		4	1	5	1	3
Std Deviation		1 379	.329	1 710	1.022	1.467
Skewness		- 196	2.346	.070	1 152	1 534
Std. Error of Skewness		254	.254	.277	271	.289
Kurtosis		-1 215	3 583	-1 445	.025	3.164
Std Error of Kurtosis		503	503	.548	535	.570

Statistics

		Q 4	Q 5A	Q 6A	Q 7	Q 8
N	Valid	78	77	79	80	79
	Missing	12	13	11	10	11
Mode		2	1	1	1	2
Std. Deviation		2 279	471	286	347	286
Skewness		.539	.764	2 952	2 146	-2.952
Std. Error of Skewness		272	.274	271	.269	271
Kurtosis		-1 350	-1.455	6 886	2.670	6.886
Std Error of Kurtosis		538	541	535	532	535

Statistics

		Q 9	Q 10	Q 11A	Q 11B	Q 12
N	Valid	74	78	80	79	89
	Missing	16	12	10	11	1
Mode		1	1	2	6	1
Std Deviation		313	288	.382	1 373	.208
Skewness		2 577	2.927	-1 744	-2.696	4 469
Std. Error of Skewness		279	.272	.269	271	255
Kurtosis		4 767	6.742	1.066	7 230	18 380
Std. Error of Kurtosis		552	.538	.532	.535	506

Statistics

		Q 13	Q 14	Q 15	Q 16	Q 17
N	Valid	88	87	87	89	88
	Missing	2	3	3	1	2
Mode		1	2	2	4	1
Std Deviation		305	2 123	.359	884	468
Skewness		2 671	570	-2 001	.605	794
Std Error of Skewness		257	258	.258	.255	257
Kurtosis		5.253	- 985	2 052	2.020	-1 401
Std Error of Kurtosis		508	511	511	506	508

Statistics

		Q 18	Q 18*	Q 19	Q 20A	Q 20B
N	Valid	88	88	88	84	79
	Missing	2	2	2	6	11
Mode		4	5	1	2	2[a]
Std. Deviation		.965	1 632	414	.494	797
Skewness		- 846	- 599	1 405	-.395	- 176
Std. Error of Skewness		.257	257	.257	.263	.271
Kurtosis		- 457	-1 314	- 027	-1 889	-1 079
Std Error of Kurtosis		508	508	508	.520	535

Statistics

		Q 21	Q 22	Q 23	Q 24	Q 25
N	Valid	88	84	84	86	86
	Missing	2	6	6	4	4
Mode		5	2	1	1	3
Std Deviation		1 194	502	1.481	.492	12.887
Skewness		.097	- 097	1 831	436	1.504
Std. Error of Skewness		.257	263	.263	260	.260
Kurtosis		- 485	-2 040	1 569	-1 854	1 607
Std Error of Kurtosis		508	520	520	514	514

Statistics

		Q 26	Q 27	Q 28
N	Valid	83	87	87
	Missing	7	3	3
Mode		2	5	2
Std Deviation		1 272	1.262	4 342
Skewness		358	-.040	251
Std Error of Skewness		.264	258	258
Kurtosis		- 909	-.792	-1 795
Std Error of Kurtosis		.523	.511	511

a Multiple modes exist. The smallest value is shown

Frequency Table

BUFFER

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	14	15 6	15.6	15 6
	2	17	18 9	18.9	34 4
	3	17	18 9	18 9	53 3
	4	23	25 6	25 6	78 9
	5	19	21 1	21.1	100 0
	Total	90	100 0	100.0	

Q_1

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	79	87.8	87 8	87.8
	2	11	12.2	12.2	100.0
	Total	90	100.0	100.0	

Q_2

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	10	11.1	13.3	13.3
	2	22	24.4	29.3	42.7
	3	8	8.9	10.7	53.3
	4	3	3.3	4.0	57.3
	5	26	28.9	34.7	92.0
	6	5	5.6	6.7	98.7
	7	1	1.1	1.3	100.0
	Total	75	83.3	100.0	
Missing	System	15	16.7		
Total		90	100.0		

Q_3A

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	46	51.1	58.2	58.2
	2	16	17.8	20.3	78.5
	3	9	10.0	11.4	89.9
	4	8	8.9	10 1	100.0
	Total	79	87.8	100.0	
Missing	System	11	12.2		
Total		90	100.0		

Q_3B

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	10	11.1	14 5	14.5
	2	13	14 4	18.8	33 3
	3	38	42.2	55.1	88.4
	5	3	3.3	4.3	92 8
	6	1	1.1	1.4	94.2
	7	3	3.3	4.3	98 6
	8	1	1.1	1.4	100.0
	Total	69	76.7	100.0	
Missing	System	21	23.3		
Total		90	100 0		

Q_4

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	12	13.3	15 4	15.4
	2	23	25.6	29 5	44.9
	3	15	16.7	19 2	64 1
	4	2	2 2	2 6	66.7
	5	3	3.3	3 8	70 5
	6	3	3.3	3 8	74 4
	7	20	22 2	25.6	100 0
	Total	78	86 7	100.0	
Missing	System	12	13.3		
Total		90	100.0		

Q_5A

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	52	57.8	67 5	67 5
	2	25	27.8	32.5	100.0
	Total	77	85.6	100.0	
Missing	System	13	14 4		
Total		90	100 0		

Q_6A

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	72	80.0	91.1	91 1
	2	7	7.8	8 9	100 0
	Total	79	87.8	100 0	
Missing	System	11	12.2		
Total		90	100.0		

Q_7

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	69	76.7	86 3	86.3
	2	11	12.2	13.8	100.0
	Total	80	88.9	100 0	
Missing	System	10	11 1		
Total		90	100.0		

Q_8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	7	7.8	8 9	8.9
	2	72	80.0	91 1	100.0
	Total	79	87.8	100 0	
Missing	System	11	12.2		
Total		90	100.0		

Q_9

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	66	73.3	89.2	89.2
	2	8	8.9	10 8	100.0
	Total	74	82.2	100.0	
Missing	System	16	17.8		
Total		90	100.0		

Q_10

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	71	78.9	91 0	91 0
	2	7	7.8	9 0	100.0
	Total	78	86.7	100.0	
Missing	System	12	13.3		
Total		90	100 0		

Q_11A

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	14	15 6	17.5	17.5
	2	66	73 3	82.5	100.0
	Total	80	88 9	100.0	
Missing	System	10	11 1		
Total		90	100 0		

Q_11B

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	5	5 6	6.3	6.3
	2	1	1 1	1.3	7.6
	5	3	3 3	3.8	11.4
	6	65	72 2	82.3	93.7
	7	3	3 3	3.8	97.5
	8	2	2 2	2.5	100.0
	Total	79	87.8	100.0	
Missing	System	11	12.2		
Total		90	100 0		

Q_12

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	85	94 4	95 5	95 5
	2	4	4 4	4 5	100 0
	Total	89	98 9	100.0	
Missing	System	1	1 1		
Total		90	100 0		

Q_13

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	79	87 8	89.8	89 8
	2	9	10.0	10.2	100 0
	Total	88	97.8	100.0	
Missing	System	2	2.2		
Total		90	100 0		

Q_14

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	17	18 9	19.5	19 5
	2	25	27.8	28.7	48.3
	3	3	3.3	3.4	51 7
	4	20	22.2	23 0	74 7
	5	5	5.6	5 7	80 5
	7	17	18 9	19 5	100.0
	Total	87	96.7	100.0	
Missing	System	3	3.3		
Total		90	100.0		

Q_15

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	13	14.4	14 9	14 9
	2	74	82.2	85.1	100 0
	Total	87	96.7	100 0	
Missing	System	3	3.3		
Total		90	100.0		

Q_16

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	1	1.1	1 1	1.1
	4	70	77.8	78 7	79.8
	6	18	20.0	20.2	100.0
	Total	89	98.9	100.0	
Missing	System	1	1 1		
Total		90	100.0		

Q_17

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	60	66.7	68 2	68.2
	2	28	31 1	31 8	100.0
	Total	88	97.8	100 0	
Missing	System	2	2.2		
Total		90	100 0		

Q_18

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	6	6.7	6.8	6.8
	2	16	17.8	18.2	25.0
	3	22	24.4	25 0	50.0
	4	44	48.9	50 0	100.0
	Total	88	97 8	100.0	
Missing	System	2	2.2		
Total		90	100.0		

Q_18*

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	19	21.1	21.6	21.6
	2	7	7.8	8.0	29.5
	3	9	10.0	10.2	39.8
	4	12	13.3	13.6	53.4
	5	41	45.6	46.6	100 0
	Total	88	97.8	100.0	
Missing	System	2	2.2		
Total		90	100.0		

Q_19

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	69	76.7	78.4	78.4
	2	19	21.1	21.6	100.0
	Total	88	97.8	100.0	
Missing	System	2	2.2		
Total		90	100.0		

Q_20A

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	34	37.8	40.5	40.5
	2	50	55.6	59.5	100 0
	Total	84	93 3	100.0	
Missing	System	6	6 7		
Total		90	100 0		

Q_20B

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	18	20.0	22.8	22 8
	2	30	33 3	38.0	60 8
	3	30	33 3	38.0	98 7
	4	1	1 1	1 3	100 0
	Total	79	87 8	100.0	
Missing	System	11	12 2		
Total		90	100 0		

Q_21

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	1	1.1	1.1	1.1
	3	18	20.0	20.5	21.6
	4	16	17.8	18.2	39.8
	5	36	40.0	40.9	80.7
	6	10	11.1	11.4	92.0
	7	7	7.8	8.0	100.0
	Total	88	97.8	100.0	
Missing	System	2	2.2		
Total		90	100.0		

Q_22

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	40	44.4	47.6	47.6
	2	44	48.9	52.4	100.0
	Total	84	93.3	100.0	
Missing	System	6	6.7		
Total		90	100.0		

Q_23

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	67	74.4	79.8	79.8
	2	3	3 3	3.6	83.3
	4	2	2.2	2.4	85.7
	5	11	12.2	13.1	98.8
	6	1	1.1	1.2	100.0
	Total	84	93.3	100.0	
Missing	System	6	6.7		
Total		90	100.0		

Q_24

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	52	57.8	60.5	60.5
	2	34	37.8	39.5	100.0
	Total	86	95.6	100.0	
Missing	System	4	4.4		
Total		90	100.0		

Q_26

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	6	6.7	7.2	7.2
	2	28	31.1	33.7	41.0
	3	21	23.3	25.3	66.3
	4	12	13.3	14.5	80.7
	5	15	16.7	18.1	98.8
	6	1	1.1	1.2	100.0
	Total	83	92.2	100.0	
Missing	System	7	7.8		
Total		90	100.0		

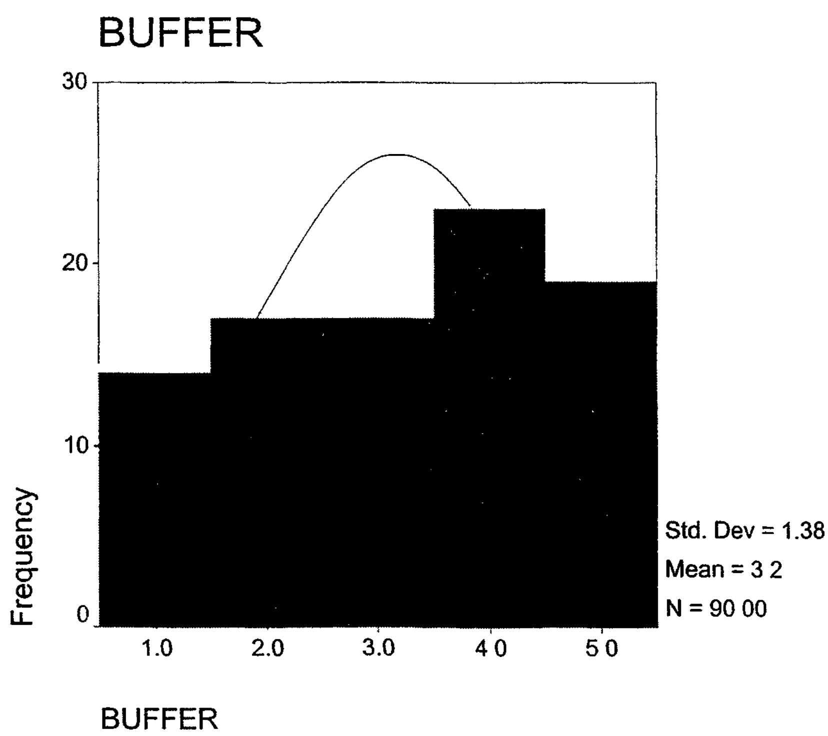
Q_27

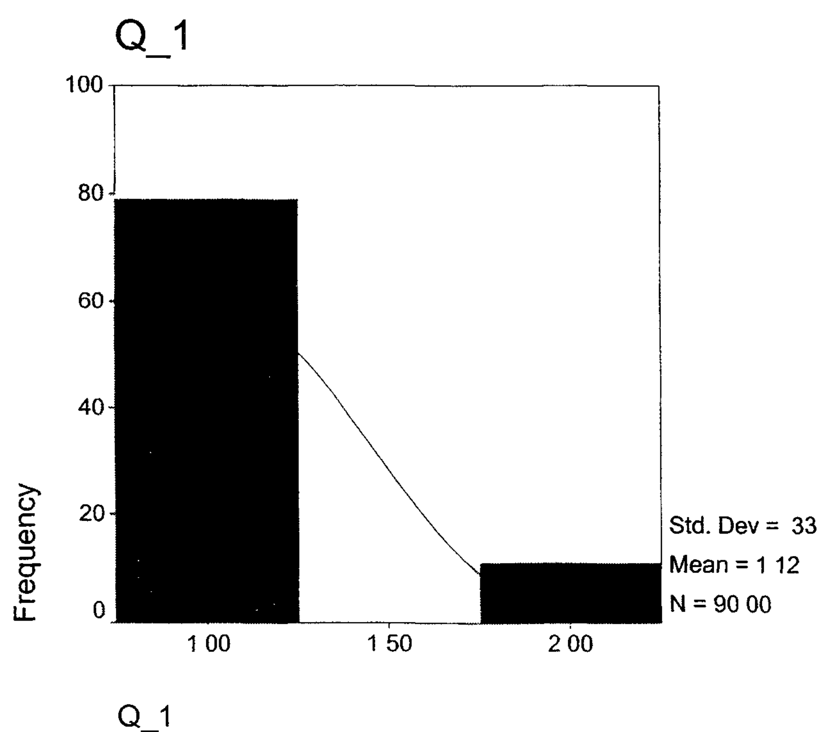
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	1	1.1	1.1	1.1
	3	22	24.4	25.3	26 4
	4	8	8.9	9.2	35.6
	5	36	40.0	41.4	77.0
	6	13	14.4	14.9	92.0
	7	7	7.8	8.0	100.0
	Total	87	96.7	100.0	
Missing	System	3	3.3		
Total		90	100.0		

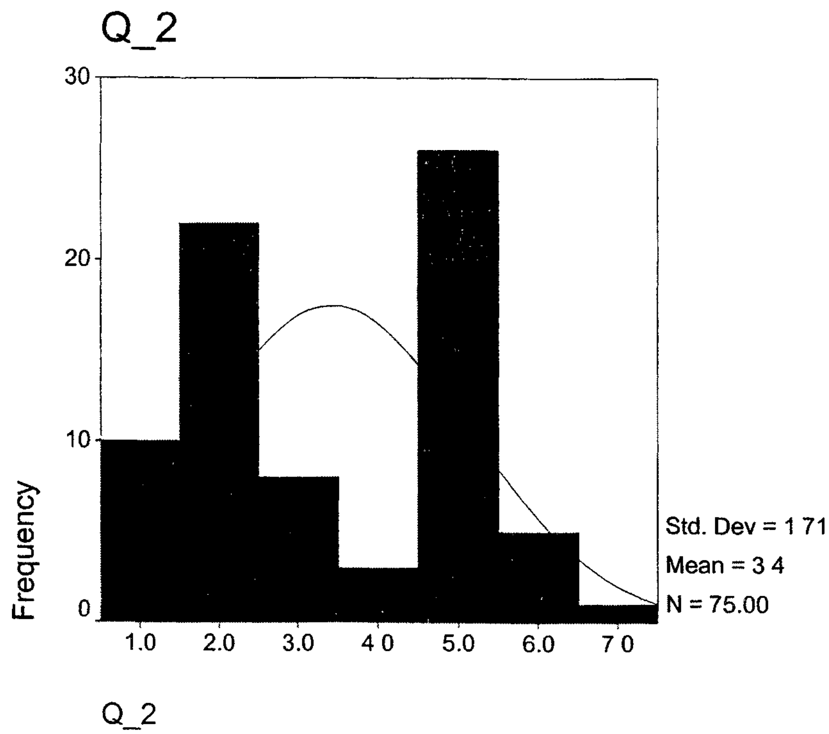
Q_28

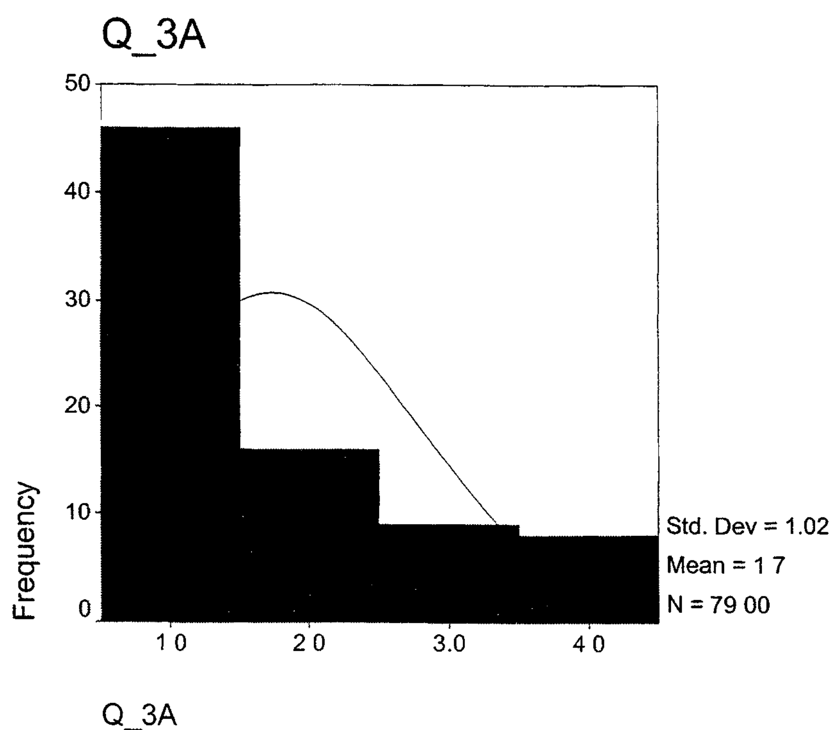
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	7	7.8	8.0	8.0
	2	26	28.9	29.9	37 9
	3	10	11 1	11.5	49.4
	4	2	2.2	2.3	51.7
	5	2	2.2	2.3	54.0
	6	3	3.3	3.4	57.5
	7	2	2.2	2.3	59.8
	10	5	5.6	5.7	65 5
	11	21	23.3	24.1	89.7
	12	9	10.0	10.3	100.0
	Total	87	96.7	100.0	
Missing	System	3	3.3		
Total		90	100 0		

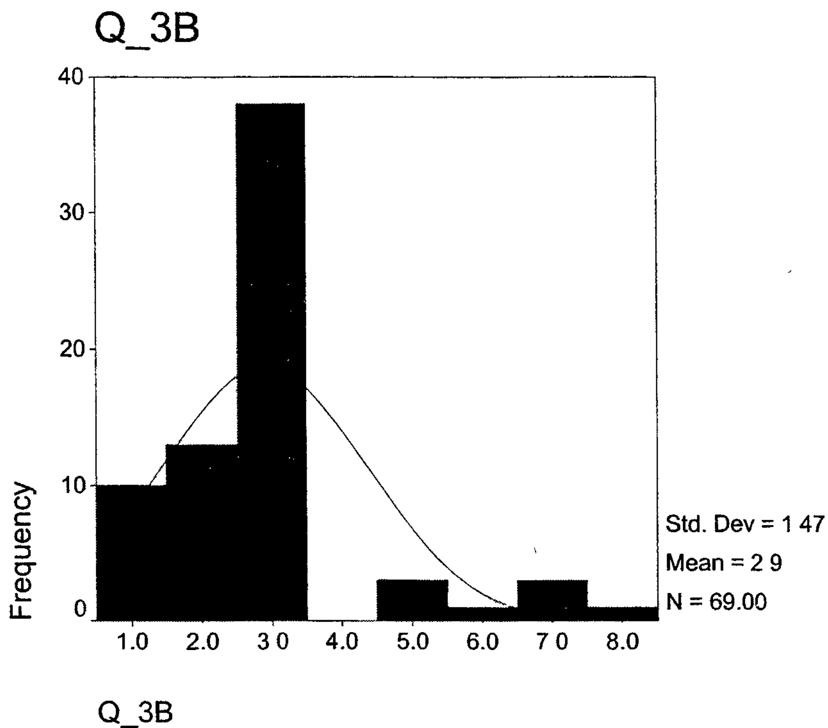
Histogram

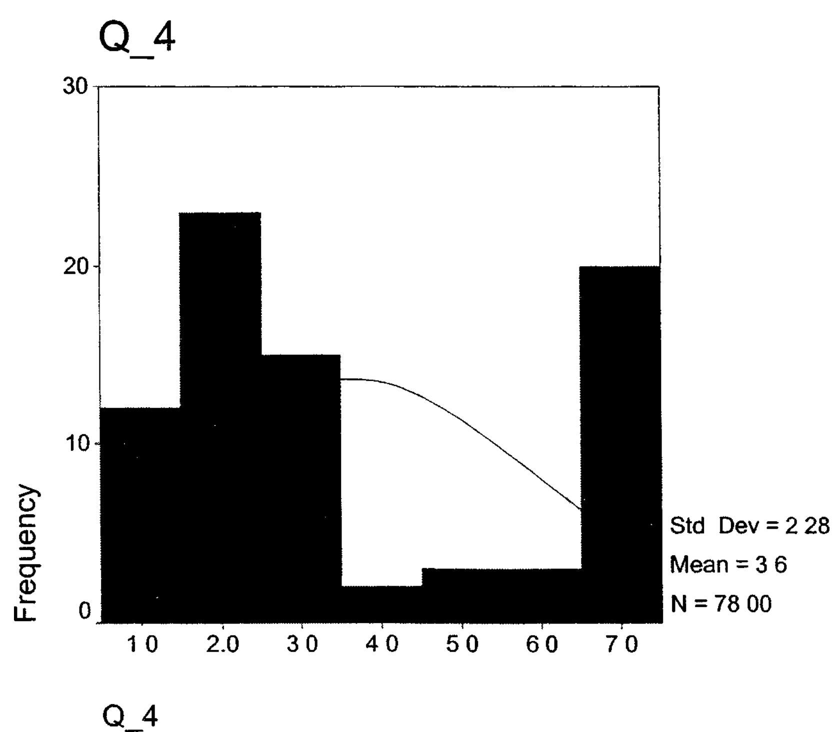

BUFFER
30
20
10
0
Frequency
1.0
2.0
3.0
4 0
5 0
Std. Dev = 1.38
Mean = 3 2
N = 90 00
BUFFER

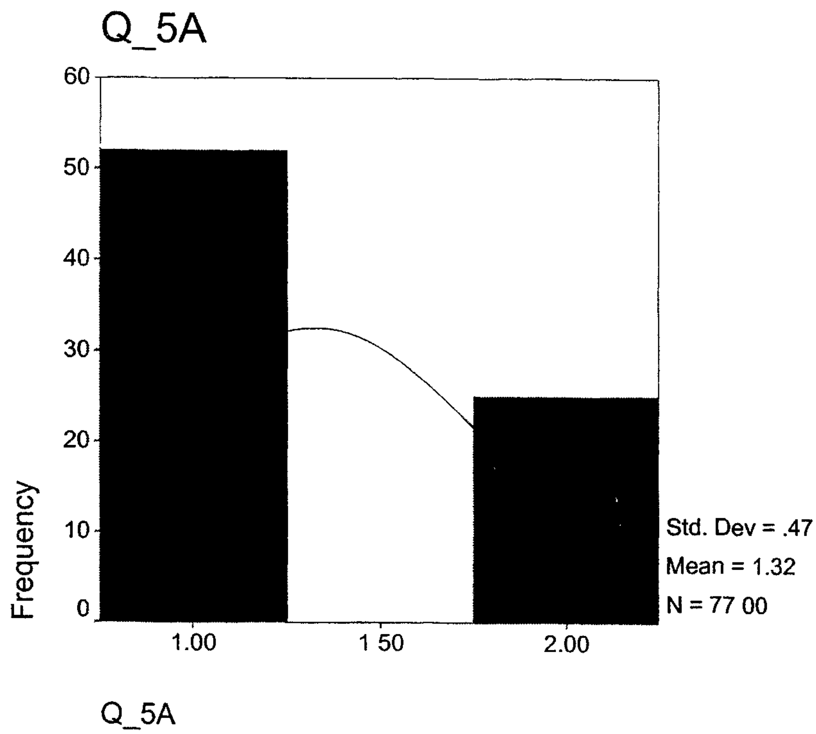

Q_1
100
80
60
40
20
0
Frequency
1 00
1 50
2 00
Std. Dev = 33
Mean = 1 12
N = 90 00
Q_1

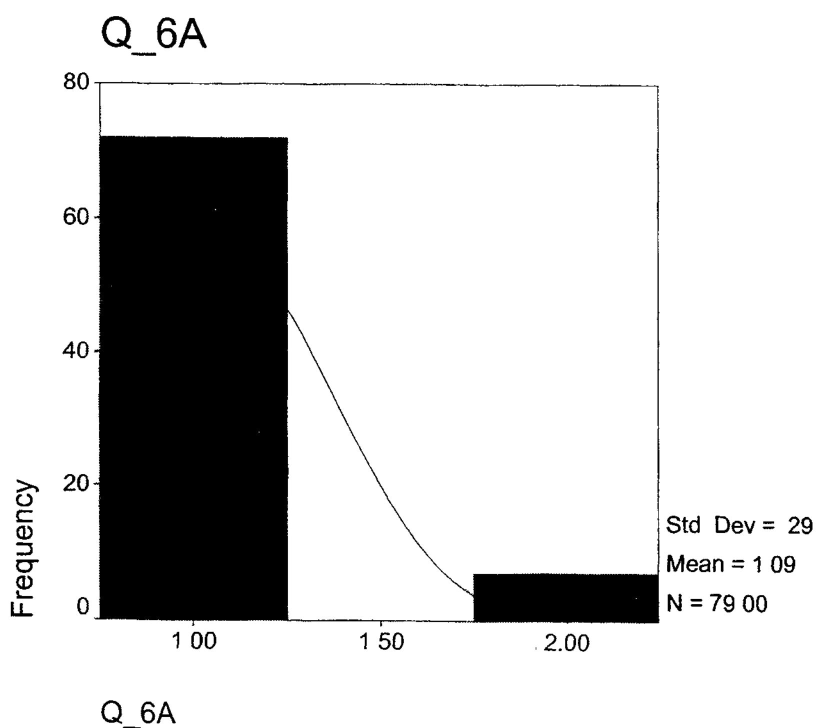

Q_2
30
20
10
0
Frequency
1.0
2.0
3.0
4 0
5.0
6.0
7 0
Std. Dev = 1 71
Mean = 3 4
N = 75.00
Q_2


Q_3A
50
40
30
20
10
0
Frequency
1 0
2 0
3.0
4 0
Std. Dev = 1.02
Mean = 1 7
N = 79 00
Q_3A

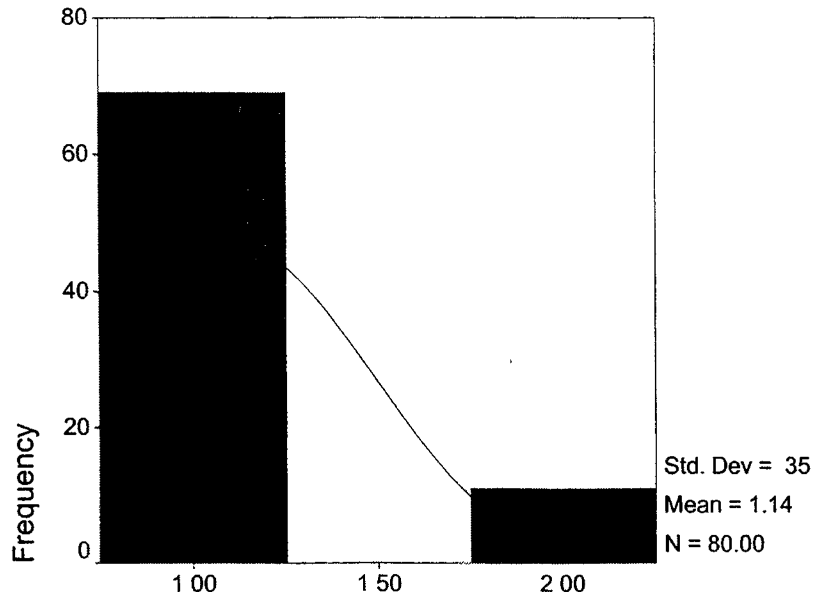

Q_3B
40
30
20
10
0
Frequency
Std. Dev = 1 47
Mean = 2 9
N = 69.00
1.0
2.0
3 0
4.0
5.0
6.0
7 0
8.0
Q_3B


Q_4
30
20
10
0
Frequency
Std Dev = 2 28
Mean = 3 6
N = 78 00
1 0
2.0
3 0
4 0
5 0
6 0
7 0
Q_4


Q_5A
60
50
40
30
20
10
0
Frequency
1.00
1 50
2.00
Std. Dev = .47
Mean = 1.32
N = 77 00
Q_5A

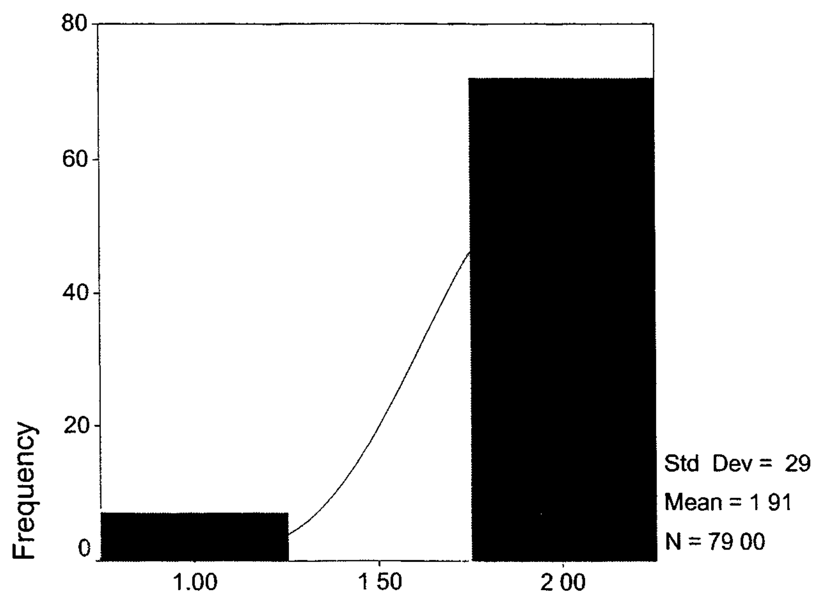

Q_6A
80
60
40
20
0
Frequency
1 00
1 50
2.00
Std Dev = 29
Mean = 1 09
N = 79 00
Q_6A

Q_7

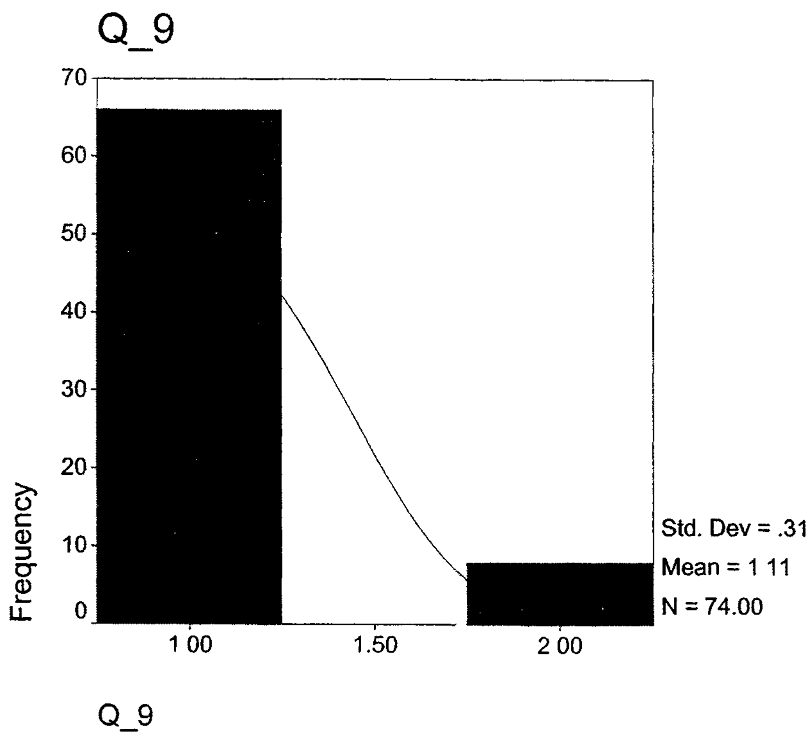

80
60
40
20
0
Frequency
1 00
1 50
2 00
Std. Dev = 35
Mean = 1.14
N = 80.00

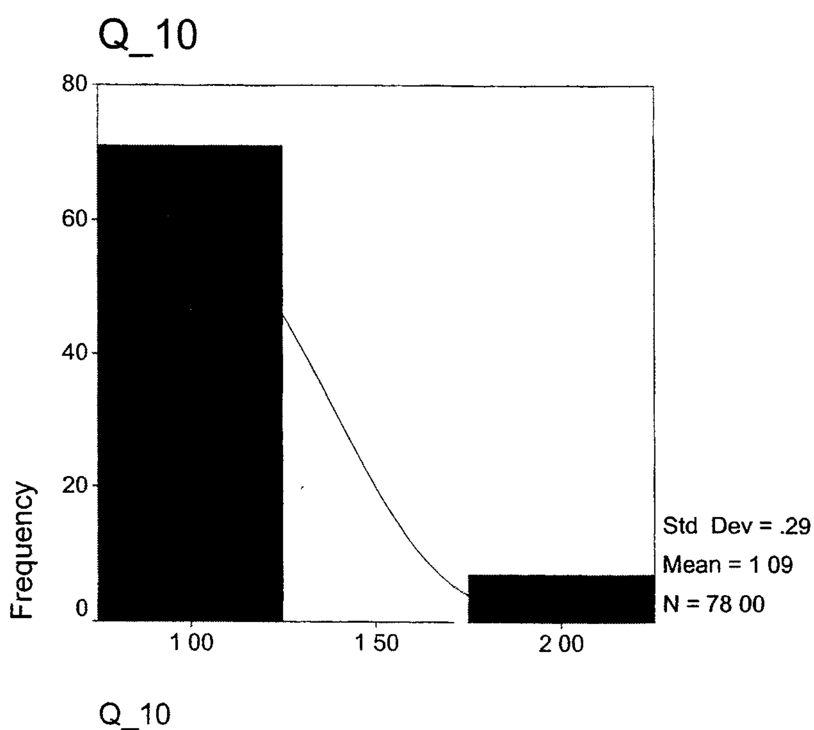
Q_7

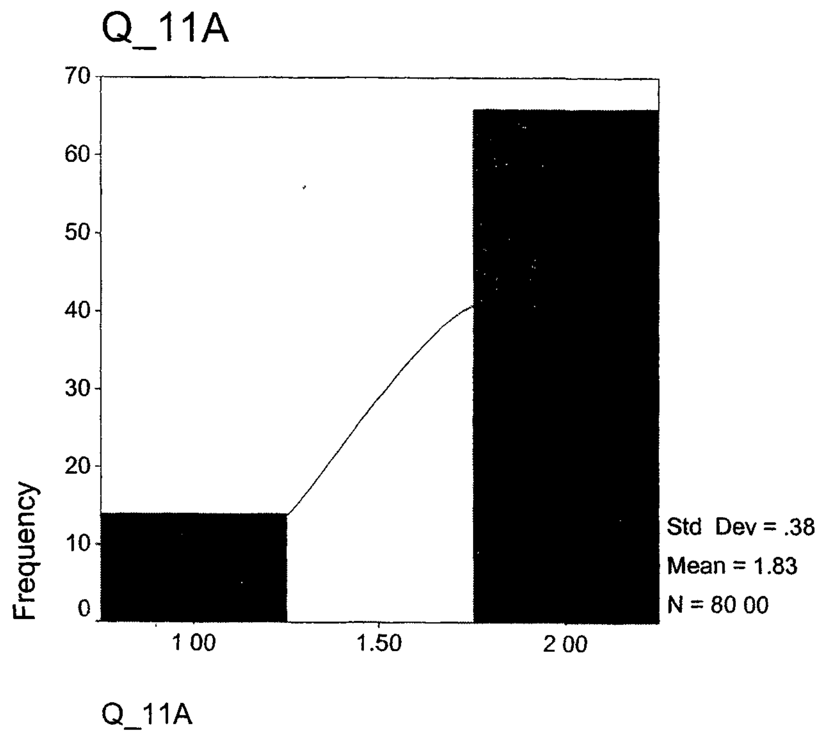
Q_8

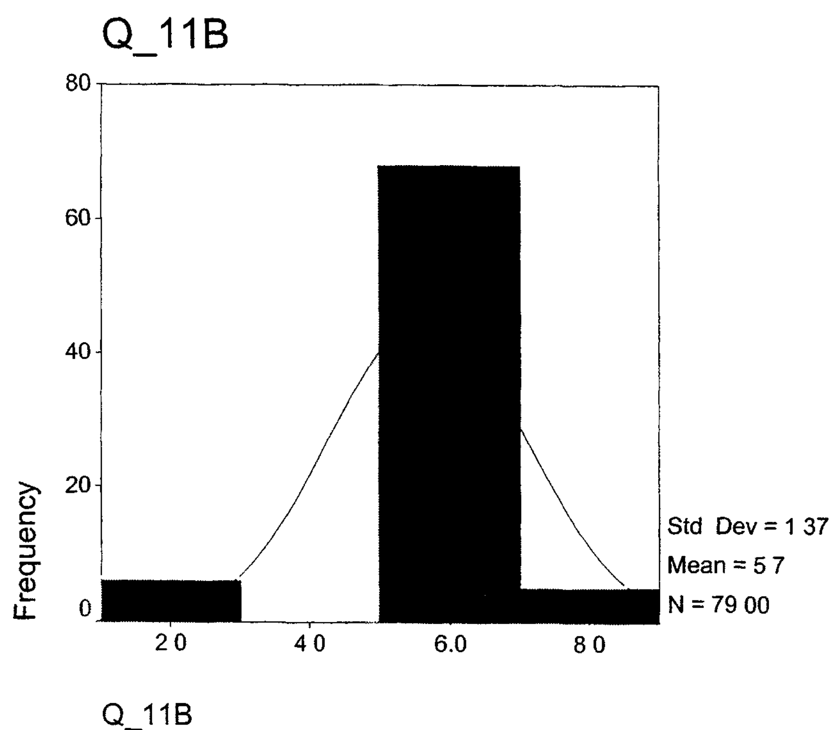

80
60
40
20
0
Frequency
1.00
1 50
2 00
Std Dev = 29
Mean = 1 91
N = 79 00

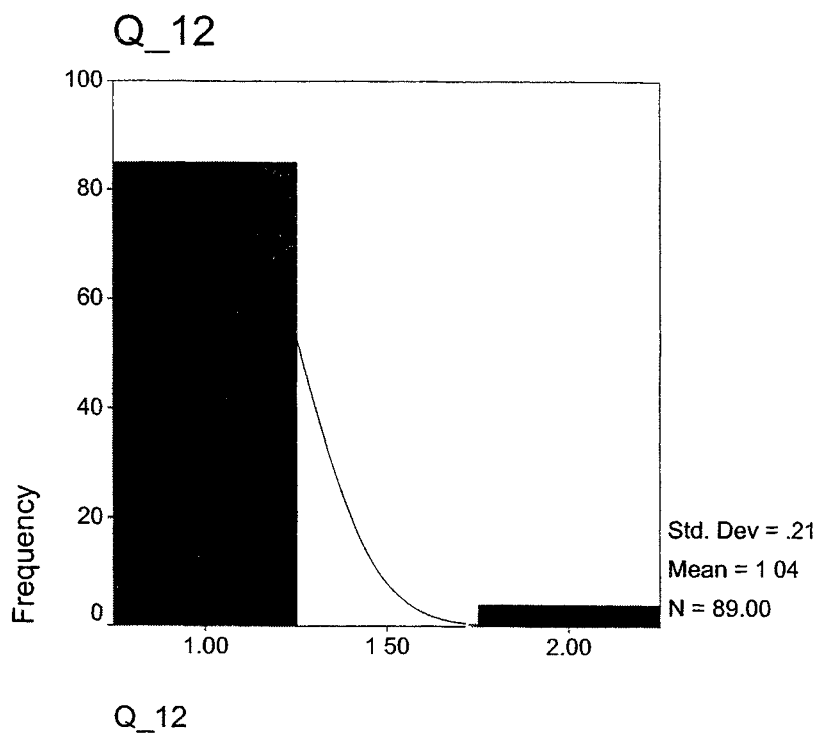
Q_8

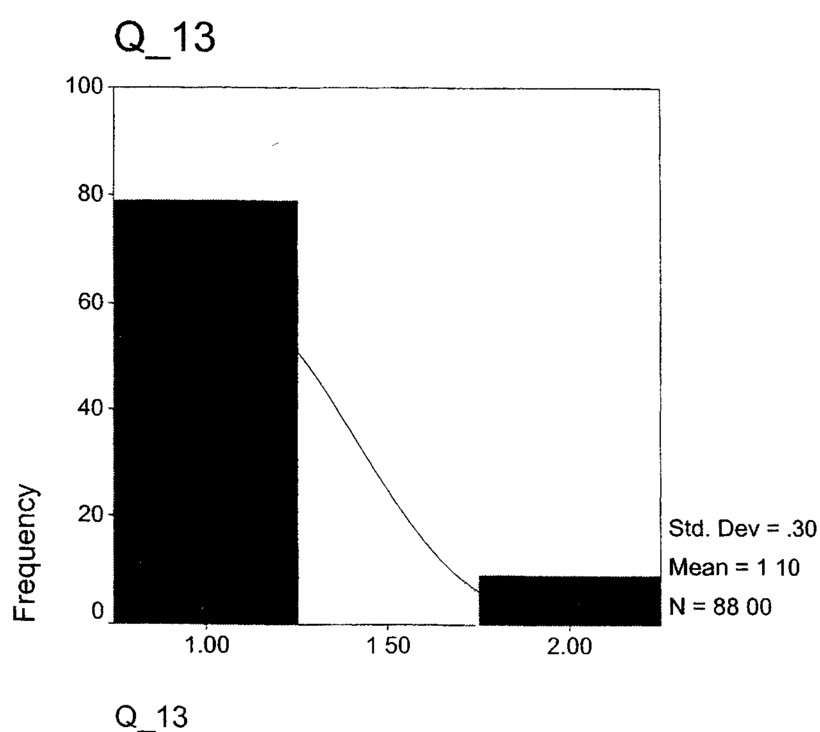

Q_9
70
60
50
40
30
20
10
0
Frequency
Std. Dev = .31
Mean = 1 11
N = 74.00
1 00
1.50
2 00
Q_9

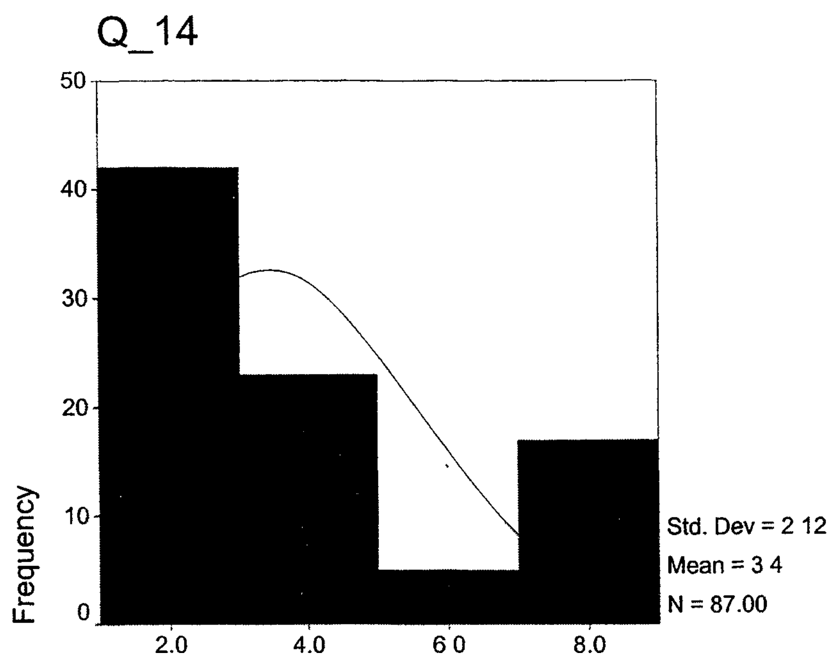

Q_10
80
60
40
20
0
Frequency
Std Dev = .29
Mean = 1 09
N = 78 00
1 00
1 50
2 00
Q_10


Q_11A
70
60
50
40
30
20
10
0
Frequency
Std Dev = .38
Mean = 1.83
N = 80 00
1 00
1.50
2 00
Q_11A

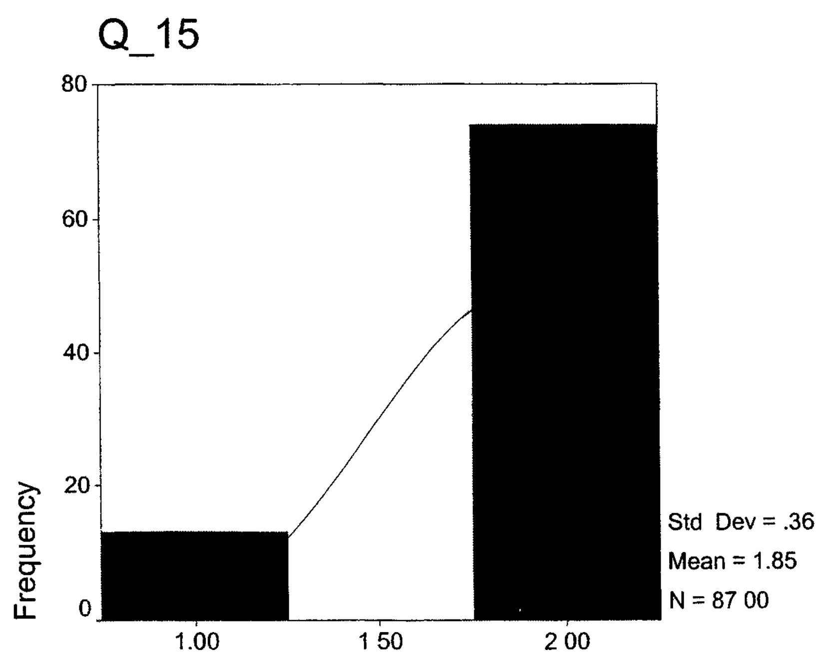

Q_11B
80
60
40
20
0
Frequency
Std Dev = 1 37
Mean = 5 7
N = 79 00
2 0
4 0
6.0
8 0
Q_11B


Q_12
100
80
60
40
20
0
Frequency
1.00
1 50
2.00
Std. Dev = .21
Mean = 1 04
N = 89.00
Q_12


Q_13
100
80
60
40
20
0
Frequency
1.00
1 50
2.00
Std. Dev = .30
Mean = 1 10
N = 88 00
Q_13

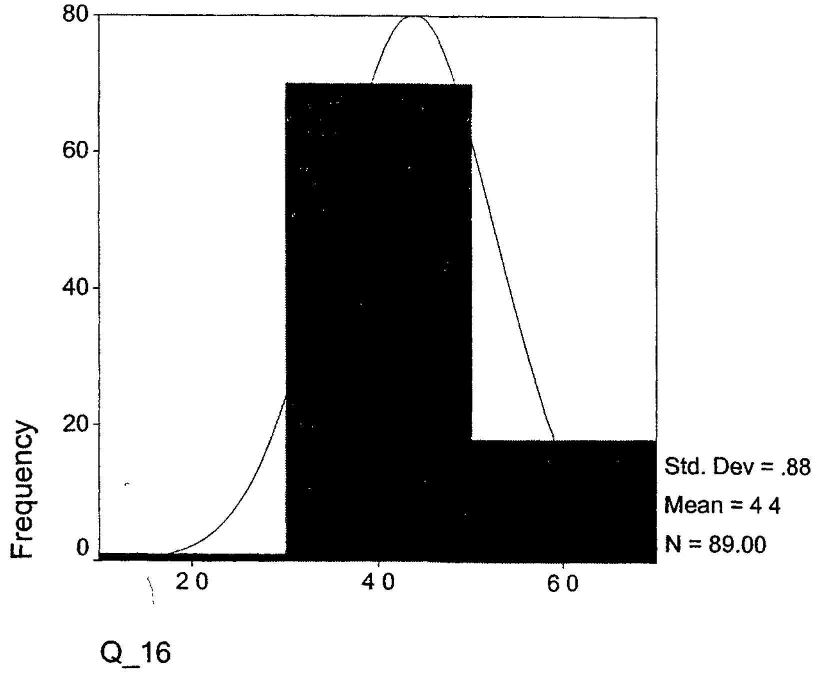

Q_14
50
40
30
20
10
0
Frequency
2.0
4.0
6 0
8.0
Std. Dev = 2 12
Mean = 3 4
N = 87.00

Q_14

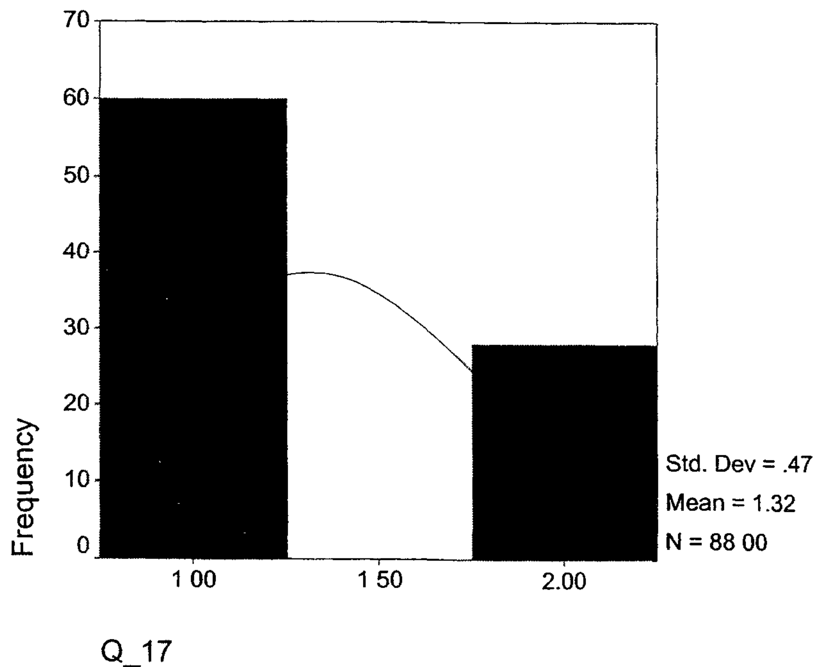

Q_15
80
60
40
20
0
Frequency
1.00
1 50
2 00
Std Dev = .36
Mean = 1.85
N = 87 00

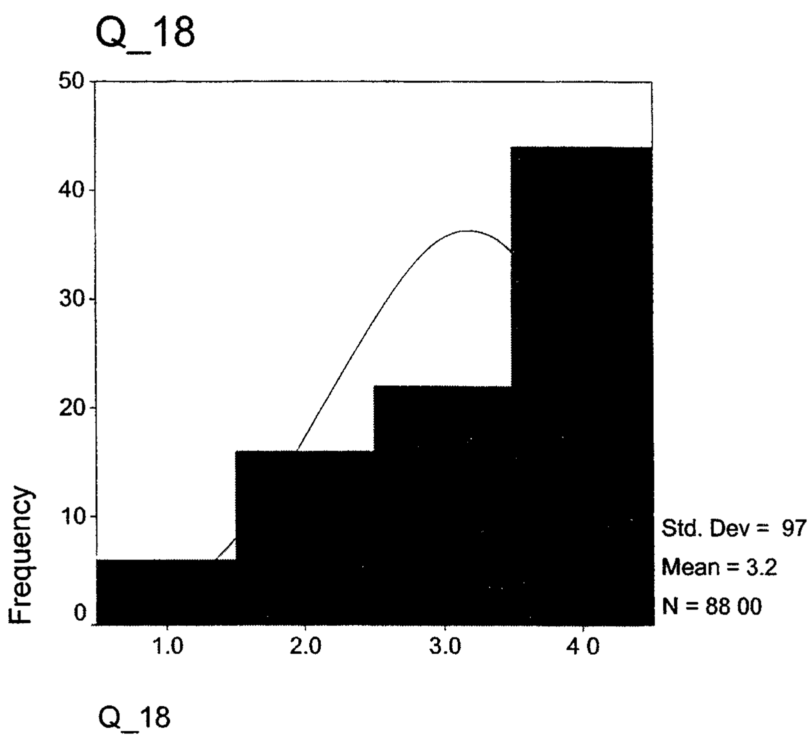
Q_15

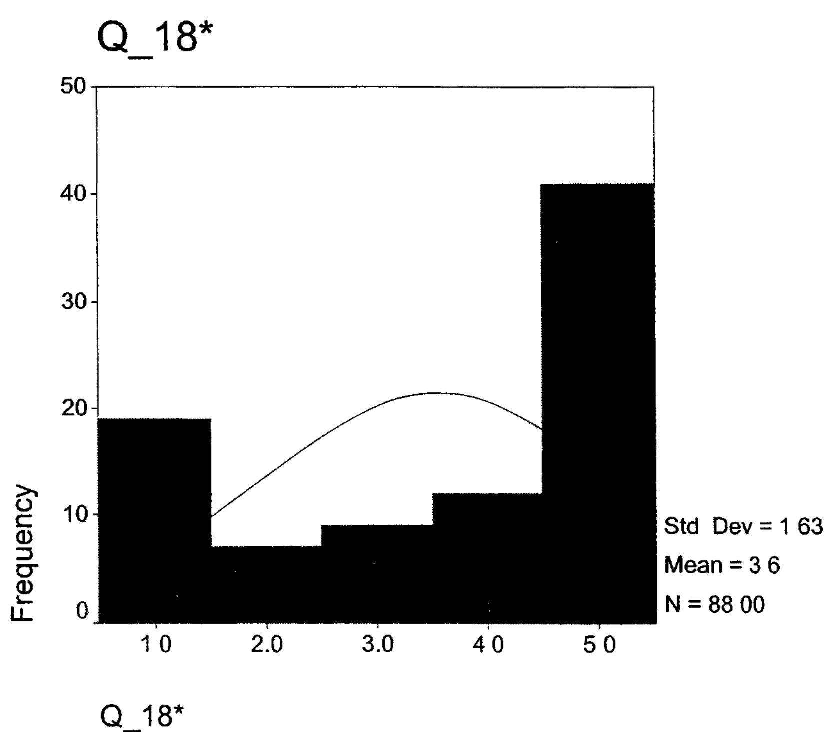
Q_16

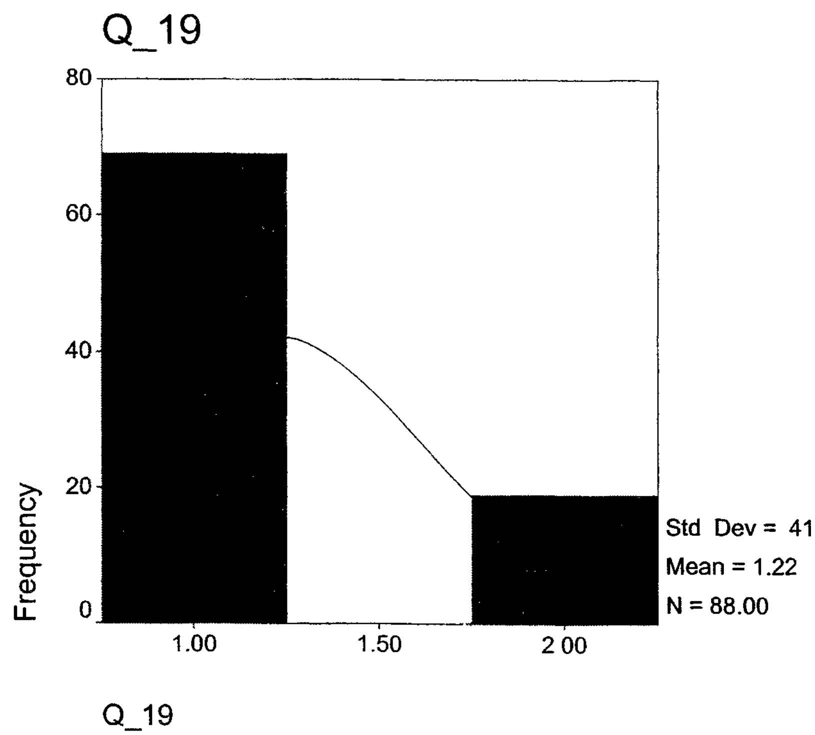

80
60
40
20
0
Frequency
2 0
4 0
6 0
Q_16
Std. Dev = .88
Mean = 4 4
N = 89.00

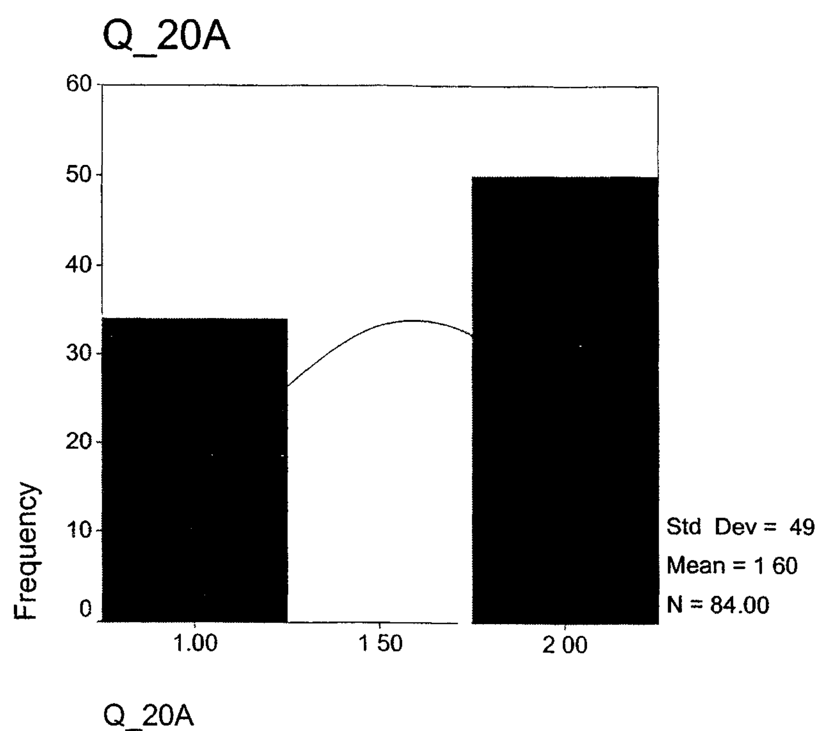
Q_17

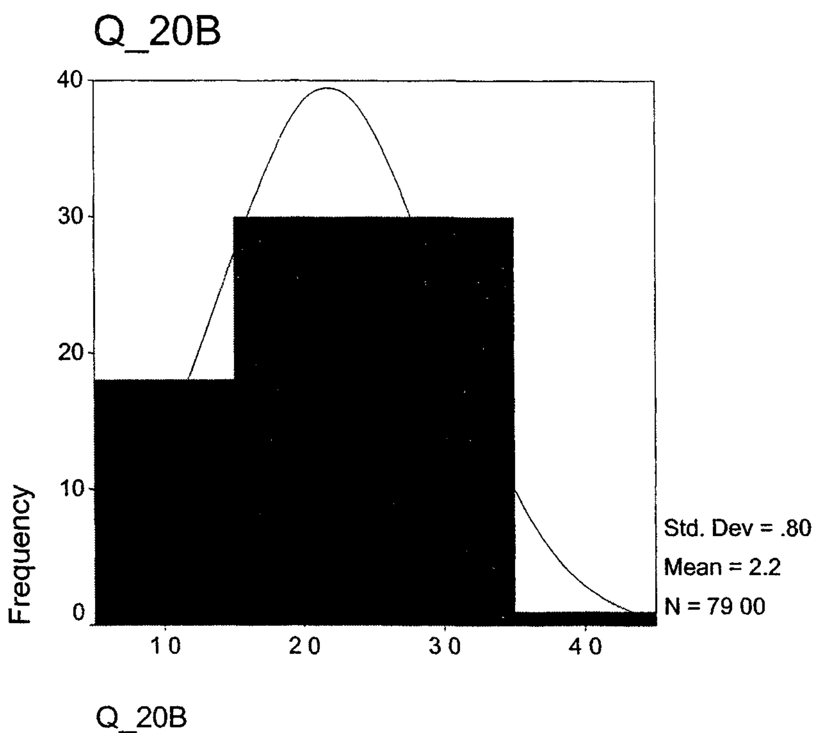

70
60
50
40
30
20
10
0
Frequency
1 00
1 50
2.00
Q_17
Std. Dev = .47
Mean = 1.32
N = 88 00

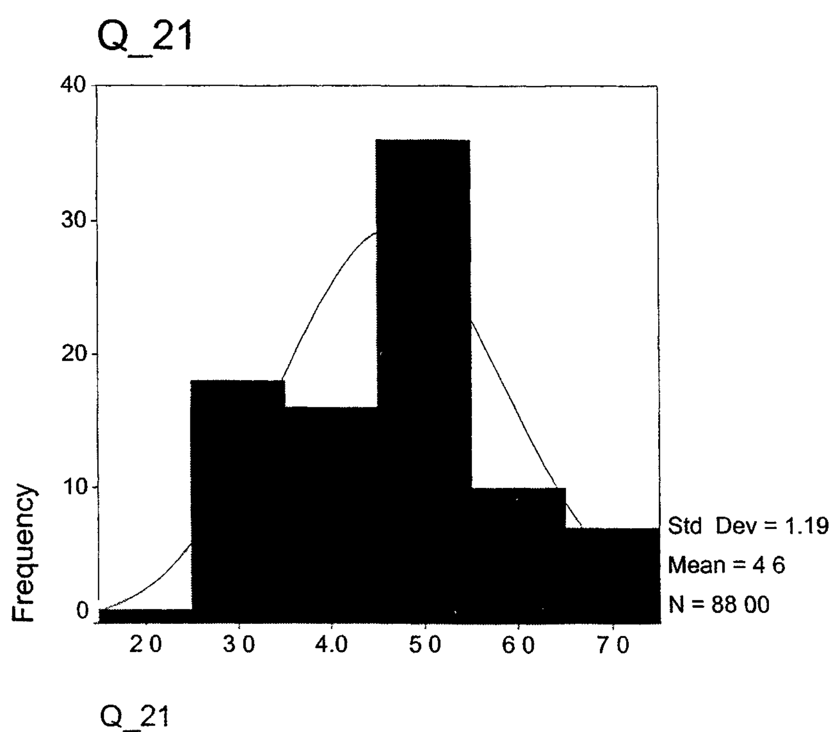

Q_18
50
40
30
20
10
0
Frequency
1.0
2.0
3.0
4 0
Std. Dev = 97
Mean = 3.2
N = 88 00
Q_18


Q_18*
50
40
30
20
10
0
Frequency
1 0
2.0
3.0
4 0
5 0
Std Dev = 1 63
Mean = 3 6
N = 88 00
Q_18*

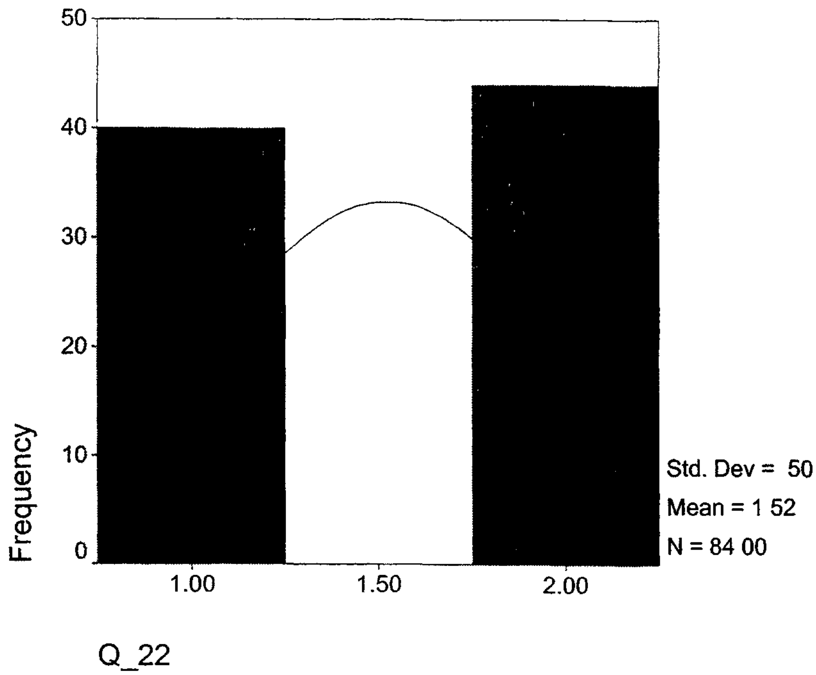

Q_19
80
60
40
20
0
Frequency
1.00
1.50
2 00
Std Dev = 41
Mean = 1.22
N = 88.00
Q_19


Q_20A
60
50
40
30
20
10
0
Frequency
1.00
1 50
2 00
Std Dev = 49
Mean = 1 60
N = 84.00
Q_20A

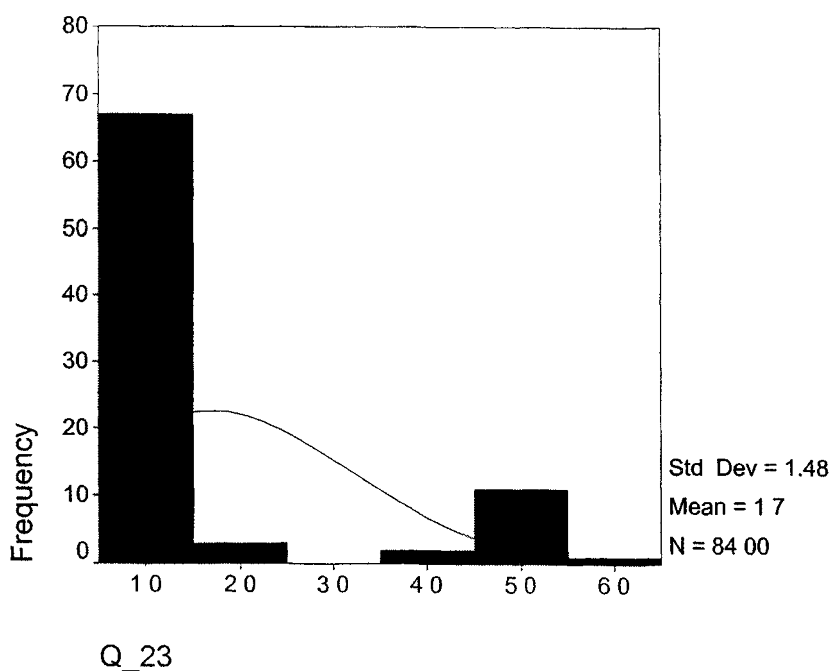

Q_20B
40
30
20
10
0
Frequency
Std. Dev = .80
Mean = 2.2
N = 79 00
1 0
2 0
3 0
4 0
Q_20B


Q_21
40
30
20
10
0
Frequency
Std Dev = 1.19
Mean = 4 6
N = 88 00
2 0
3 0
4.0
5 0
6 0
7 0
Q_21

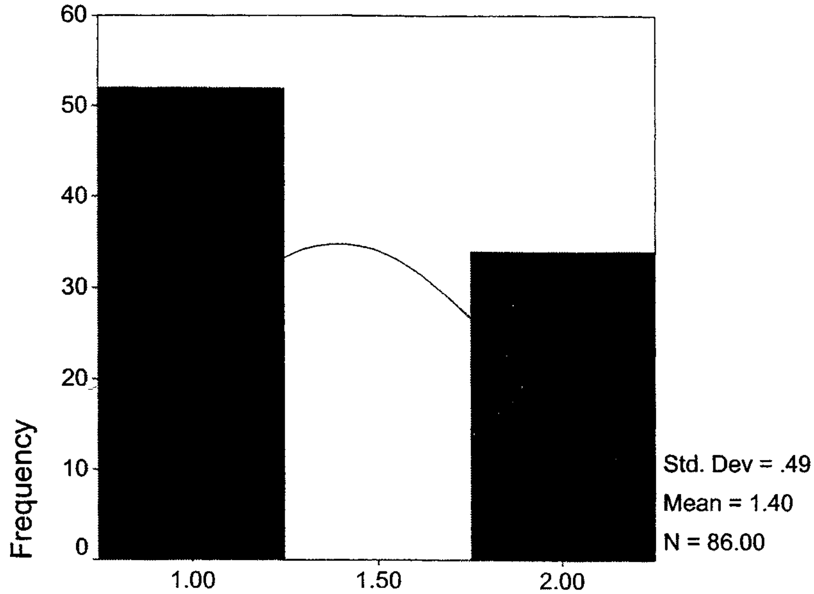
Q_22


50
40
30
20
10
0
Frequency
1.00
1.50
2.00
Std. Dev = 50
Mean = 1 52
N = 84 00
Q_22

Q_23

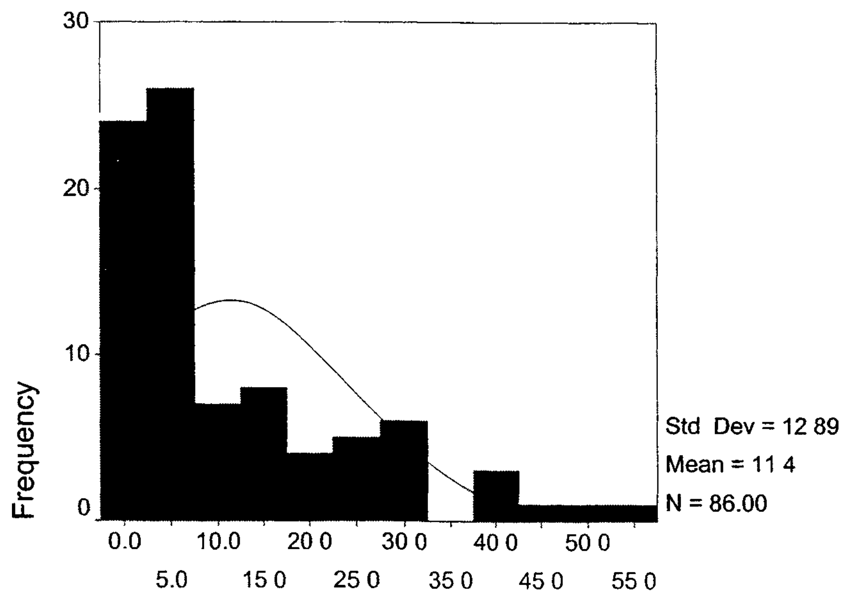

80
70
60
50
40
30
20
10
0
Frequency
1 0
2 0
3 0
4 0
5 0
6 0
Std Dev = 1.48
Mean = 1 7
N = 84 00
Q_23

Q_24

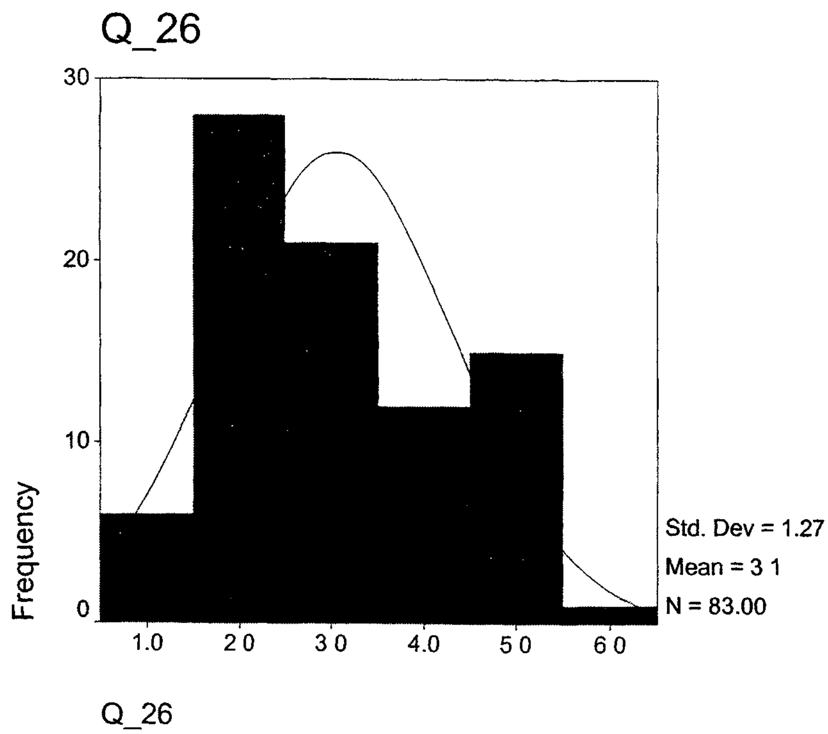


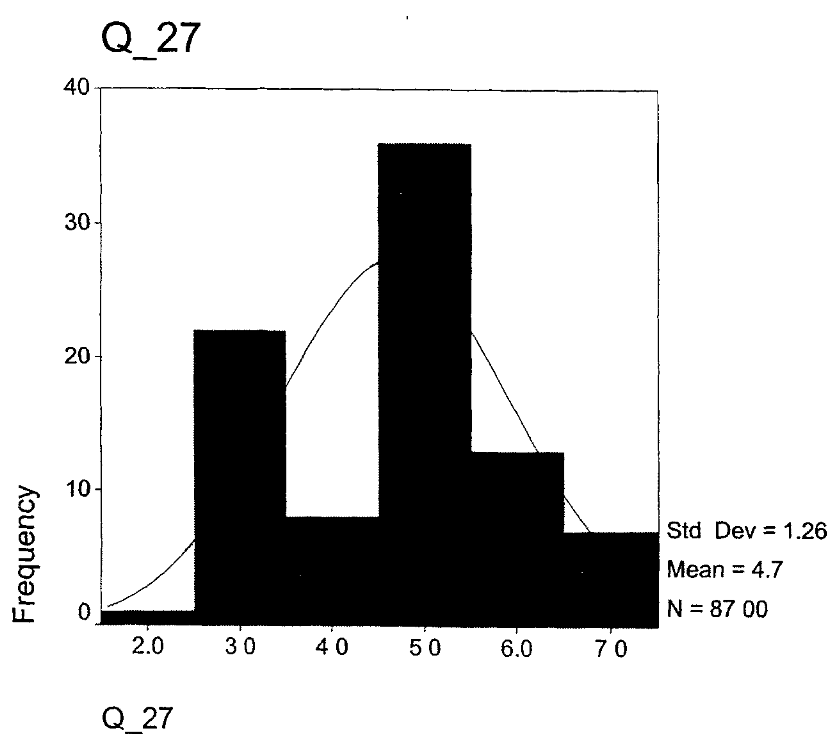
Q_24

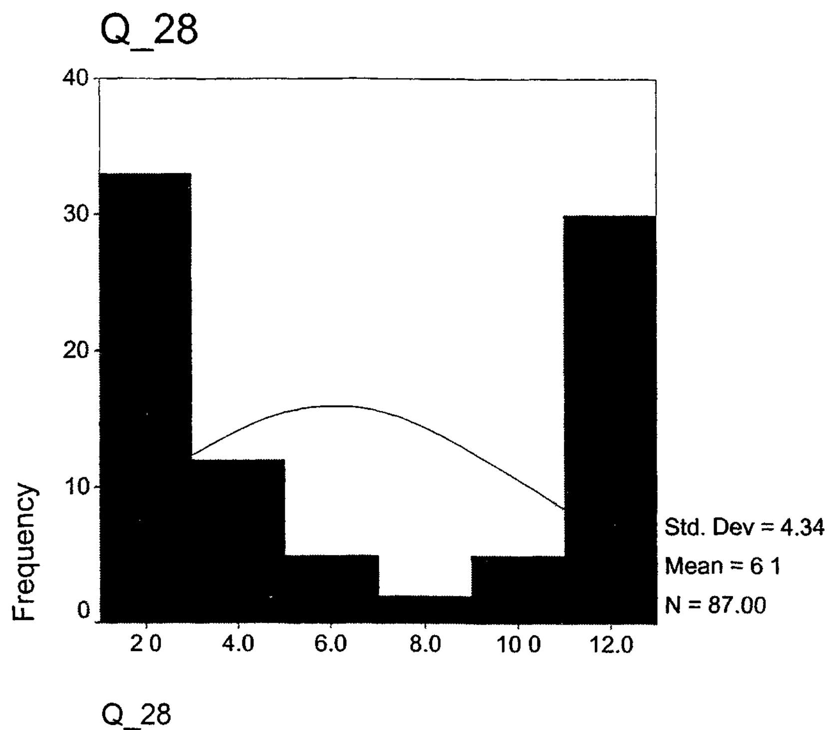
Q_25



Q_25


Q_26
30
20
10
0
Frequency
1.0
2 0
3 0
4.0
5 0
6 0
Std. Dev = 1.27
Mean = 3 1
N = 83.00
Q_26


Q_27
40
30
20
10
0
Frequency
2.0
3 0
4 0
5 0
6.0
7 0
Std Dev = 1.26
Mean = 4.7
N = 87 00
Q_27


Q_28
40
30
20
10
0
Frequency
Std. Dev = 4.34
Mean = 6 1
N = 87.00
2 0
4.0
6.0
8.0
10 0
12.0
Q_28

Multiple Regression: Perception

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	Q_28, Q_2, Q_13, Q_19, Q_15, Q_17, Q_27[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: Q_3A

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.536[a]	.288	.210	.905	1.988

a. Predictors: (Constant), Q_28, Q_2, Q_13, Q_19, Q_15, Q_17, Q_27

b. Dependent Variable: Q_3A

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	21.137	7	3.020	3.691	.002[a]
	Residual	52.363	64	.818		
	Total	73.500	71			

a. Predictors: (Constant), Q_28, Q_2, Q_13, Q_19, Q_15, Q_17, Q_27

b. Dependent Variable. Q_3A

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.154	1.127		-.137	.892
	Q_2	-.122	.069	- 199	-1.770	.082
	Q_13	.836	.369	.260	2.267	.027
	Q_15	.331	.326	.118	1 016	.314
	Q_17	8.817E-02	.256	.042	344	.732
	Q_19	555	.293	.223	1.896	.062
	Q_27	-5.760E-02	.107	-.066	-.539	.592
	Q_28	4.057E-02	.025	174	1.601	114

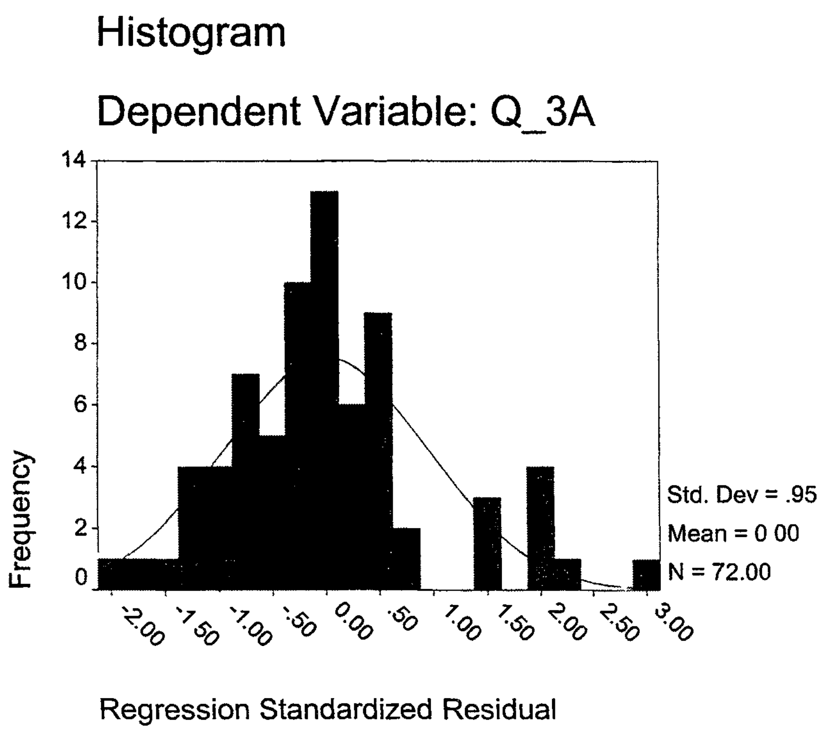
a. Dependent Variable: Q_3A

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	.62	2.95	1.75	.546	72
Residual	-1.70	2.62	.00	.859	72
Std. Predicted Value	-2.076	2.194	.000	1.000	72
Std. Residual	-1.879	2.897	.000	.949	72

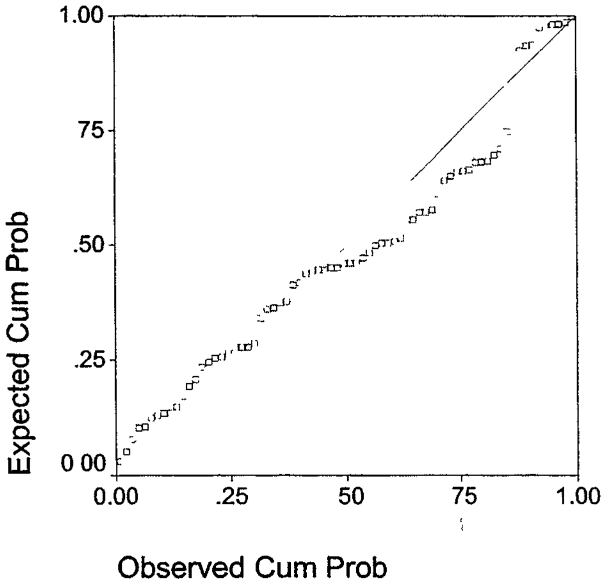
a. Dependent Variable: Q_3A

Charts



Normal P-P Plot of Regression Sta

Dependent Variable: Q_3A



Multiple Regression: Perception of Risk

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	Q_28, Q_14, Q_19, Q_27[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable· Q_5A

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	486[a]	.237	191	417	1 588

a. Predictors (Constant), Q_28, Q_14, Q_19, Q_27

b. Dependent Variable· Q_5A

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3 614	4	903	5 190	.001[a]
	Residual	11 664	67	.174		
	Total	15.278	71			

a Predictors. (Constant), Q_28, Q_14, Q_19, Q_27

b Dependent Variable: Q_5A

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig
		B	Std. Error	Beta		
1	(Constant)	1.231	.355		3.467	.001
	Q_14	-3.973E-02	.024	-.181	-1.657	.102
	Q_19	280	133	.247	2.108	039
	Q_27	-6.230E-02	.046	-.162	-1.340	185
	Q 28	2 701E-02	012	.255	2.321	023

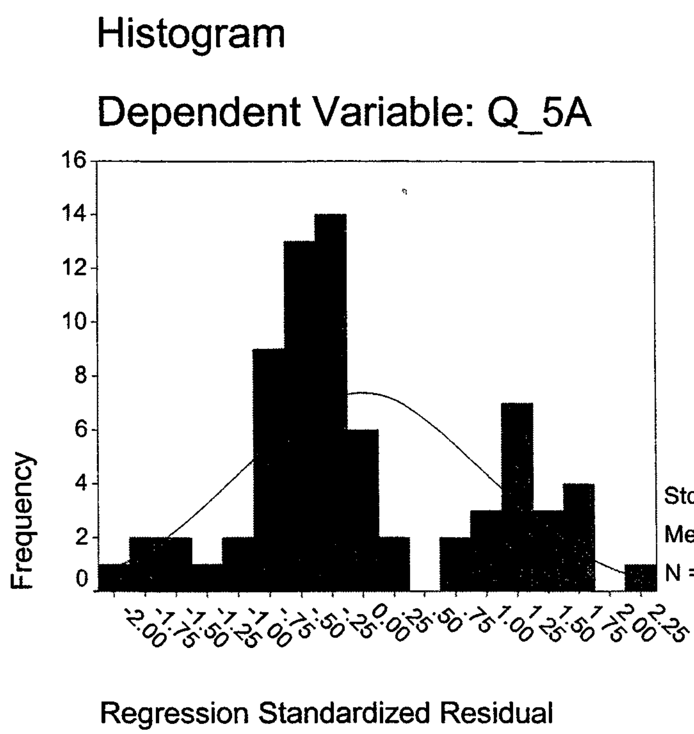
a Dependent Variable· Q_5A

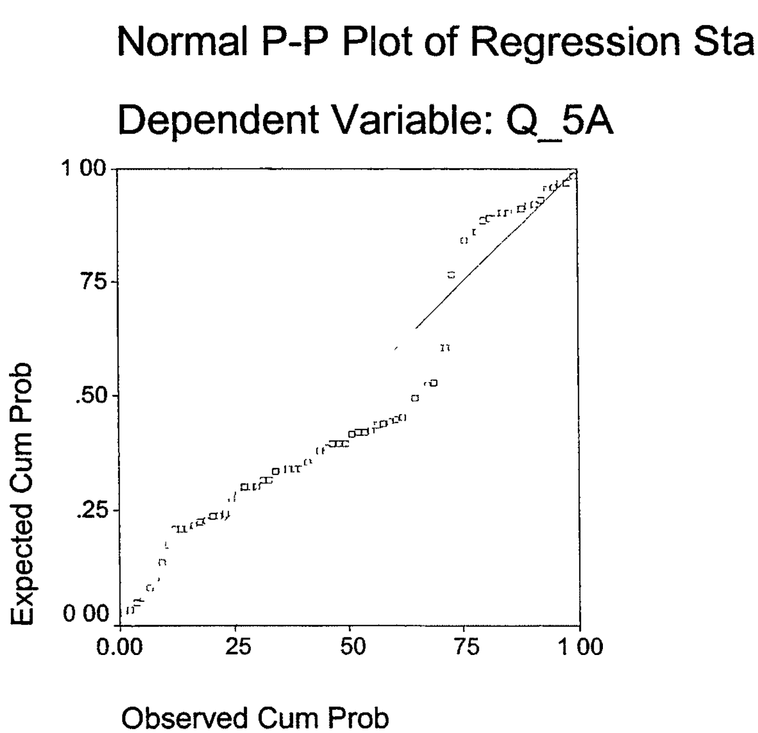
Residuals Statistics[a]

	Minimum	Maximum	Mean	Std Deviation	N
Predicted Value	97	1 89	1.31	226	72
Residual	- 80	90	.00	405	72
Std Predicted Value	-1 485	2.588	000	1 000	72
Std Residual	-1 917	2.169	000	971	72

a Dependent Variable. Q_5A

Charts


Histogram
Dependent Variable: Q_5A
16
14
12
10
8
6
4
2
0
Frequency
Std Dev = .97
Mean = 0.00
N = 72 00
-2.00
-1.75
-1.50
-1.25
-1.00
-.75
-.50
-.25
0.00
.25
.50
.75
1.00
1.25
1.50
1.75
2.00
2.25
Regression Standardized Residual


Normal P-P Plot of Regression Sta
Dependent Variable: Q_5A
1 00
75
.50
.25
0 00
Expected Cum Prob
0.00
25
50
75
1 00
Observed Cum Prob

Multiple Regression: Participation in EIA

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	Q_27, Q_12, Q_9, Q_5A, Q_6A, Q_3A, Q_13[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: Q_10

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.731[a]	.535	482	.187	2.271

a. Predictors: (Constant), Q_27, Q_12, Q_9, Q_5A, Q_6A, Q_3A, Q_13

b. Dependent Variable: Q_10

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.483	7	.355	10.179	.000[a]
	Residual	2.160	62	.035		
	Total	4.643	69			

a. Predictors: (Constant), Q_27, Q_12, Q_9, Q_5A, Q_6A, Q_3A, Q_13

b. Dependent Variable: Q_10

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.288	.187		1.545	.127
	Q_3A	-2 751E-02	.032	-.110	-.854	.396
	Q_5A	.128	.062	.230	2.044	.045
	Q_6A	2.025E-02	.112	.022	181	.857
	Q_9	.276	.084	.322	3.306	.002
	Q_12	-4.890E-02	146	-.044	-.336	.738
	Q_13	.427	.105	.527	4.076	.000
	Q_27	-1.851E-02	.020	-.087	- 932	.355

a. Dependent Variable: Q_10

Casewise Diagnostics[a]

Case Number	Std. Residual	Q_10
74	3.450	2

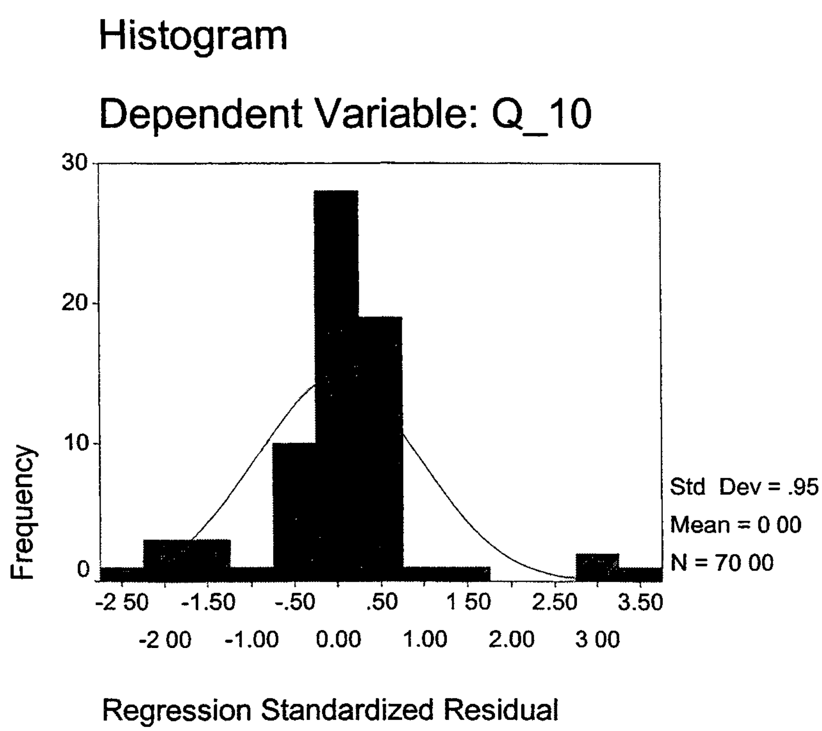
a. Dependent Variable: Q_10

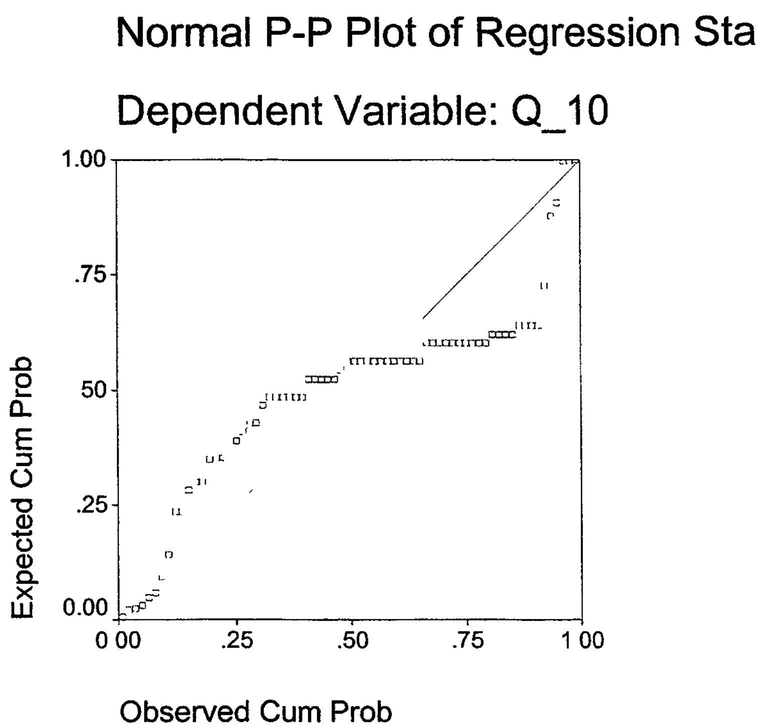
Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	.89	1.78	1.07	.190	70
Residual	-.48	.64	.00	.177	70
Std. Predicted Value	-.969	3.750	.000	1.000	70
Std. Residual	-2.547	3 450	.000	.948	70

a. Dependent Variable: Q_10

Charts




Normal P-P Plot of Regression Sta
Dependent Variable: Q_10
1.00
.75
50
.25
0.00
Expected Cum Prob
0 00
.25
.50
.75
1 00
Observed Cum Prob

Multiple Regression: Participation in Pipeline Monitoring Program

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	Q_21, Q_3A, Q_11A, Q_18, Q_15, Q_20B, Q_6A, Q_5A, Q_19[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: Q_20A

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std Error of the Estimate	Durbin-Watson
1	.591[a]	349	.246	.431	1.838

a. Predictors: (Constant), Q_21, Q_3A, Q_11A, Q_18, Q_15, Q_20B, Q_6A, Q_5A, Q_19

b. Dependent Variable: Q_20A

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5.689	9	.632	3.396	.002[a]
	Residual	10.610	57	.186		
	Total	16.299	66			

a. Predictors· (Constant), Q_21, Q_3A, Q_11A, Q_18, Q_15, Q_20B, Q_6A, Q_5A, Q_19

b. Dependent Variable: Q_20A

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig
		B	Std. Error	Beta		
1	(Constant)	8.724E-02	.505		173	.864
	Q_3A	-6.809E-02	.074	-.138	-.923	.360
	Q_5A	2.118E-02	.147	020	144	.886
	Q_6A	.304	.257	162	1.183	.242
	Q_11A	165	158	.124	1.045	.301
	Q_15	372	153	.289	2.430	.018
	Q_18	- 102	061	-.199	-1 685	.097
	Q_19	6.053E-02	.180	.049	.337	.737
	Q_20B	153	074	.247	2.063	044
	Q_21	4.687E-02	052	.112	.906	.369

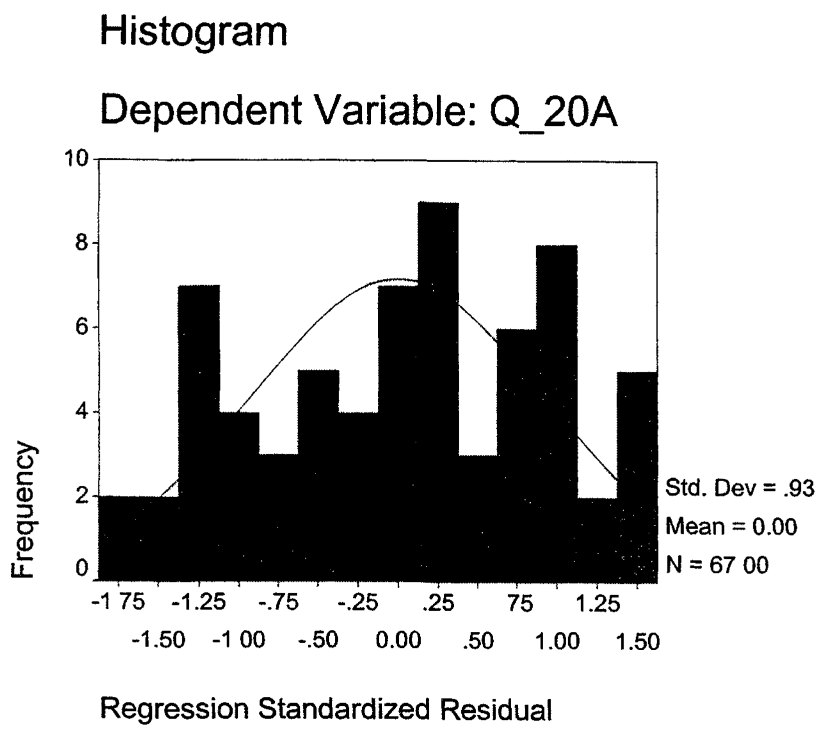
a. Dependent Variable: Q_20A

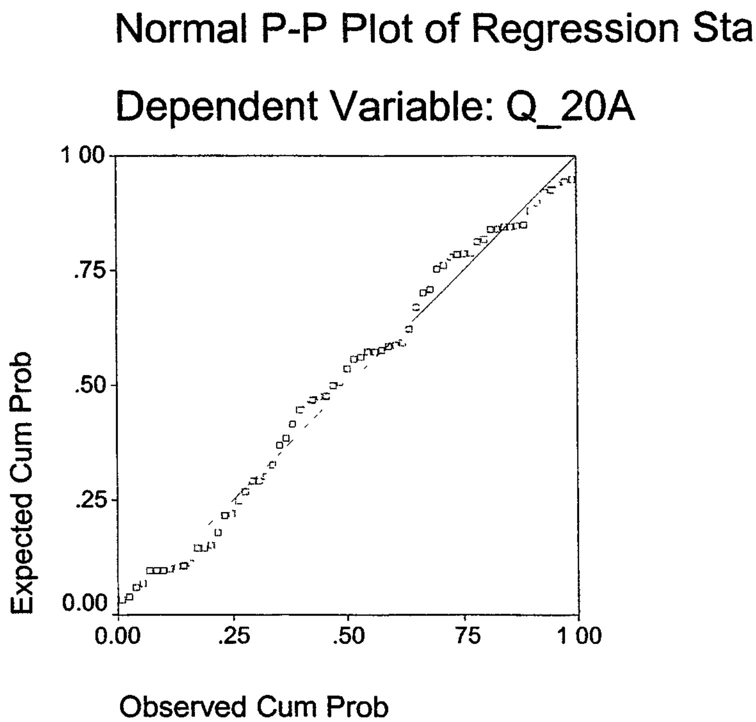
Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	.92	2.20	1.58	.294	67
Residual	-.80	.70	.00	.401	67
Std. Predicted Value	-2.255	2.088	.000	1.000	67
Std. Residual	-1.850	1.623	.000	.929	67

a. Dependent Variable: Q_20A

Charts




Normal P-P Plot of Regression Sta
Dependent Variable: Q_20A
Expected Cum Prob
Observed Cum Prob
0.00
.25
.50
75
1 00
.75

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VITA

Kristi Lynn Westphal was born on February 19, 1973 in Houston, Texas, the daughter of Betty Jo Westphal and James Harold Westphal. Upon completion of her secondary education at South Houston High School in 1991, she attended the University of Texas at Austin, completing a Bachelor of Arts in Geography with a concentration in Environmental Resource Management in May, 1996. She then pursued work in environmental advocacy with a statewide non-profit organization, Keep Texas Beautiful. In 1999, she entered the Graduate School of Southwest Texas State University, San Marcos, Texas. While pursuing a Master of Applied Geography with a concentration in Cartography and Geographic Information Systems, she was offered a graduate assistantship within the Department of Geography and worked with a statewide volunteer water quality monitoring program, Texas Watch, until July 2001. In August 2001, she completed a field mapping internship in Colorado with the Western Slope Environmental Resource Council and presently works as a Cartographic Technician with the U.S. Geological Survey. Kristi is a member of the Association of American Geographers, Supporting Women in Geography, and Gamma Theta Upsilon, and she serves as a volunteer water quality monitor for Texas Watch.

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