



*Media Content Analysis as a Methodological Primer for  
Quality of Life (QoL) Studies: Case of Western North  
Dakota*

**Felix Fernando**

Post-Doctoral Fellow  
University of Dayton

---

**Abstract**

*This article examines the usefulness and efficacy of media content analysis as a methodological primer in quality of life (QoL) studies at the community level. Specifically, the article elucidates how analysis of letters to editor and online responses to opinion articles by visitors to a newspaper's website could be used to build a fundamental understanding of QoL in a rural community, during a period of rapid social and economic transformation. Rapid increase in shale oil drilling activity and the induced secondary and supporting economic activity in other sectors, such as housing, infrastructure construction, and related services, have caused a significant socio-economic transformation in western North Dakota communities, which used to be rural and largely agricultural based. The findings of this article highlight the usefulness and importance of media content analysis as an effective mechanism to initiate an exploratory study to examine the impact of rapid shale oil development on QoL in western North Dakota. The strengths and limitations of the methodological approach and implications for further research are presented and discussed.*

**Keywords:** *Media content analysis, quality of life, shale oil boom*

**Introduction**

Media content analysis is a research method that has gained wide use in studies focusing on social representations, framing, coverage of gender roles, science education, and sociocultural issues. However, the role or potential for media content analysis as a methodological primer in Quality of Life (QoL) studies, especially at the community level, is an issue that hasn't been explored. The aim of this article is to elucidate how an analysis of letters to editor and online responses to opinion articles by visitors to a newspaper's website could be used to build a fundamental understanding of QoL in a rural community during a period of rapid social and economic transformation. This article contributes to literature on community QoL and media content analysis in several ways. Most QoL studies have adopted a survey and/or open ended question based approach. However, QoL is a contextual phenomenon that varies from one community to another or from one social-economic-environmental context to another. As a result, the set of questions applicable to one community or a scenario might not be applicable to another. In such instances, this article shows how media content analysis could be used as a methodological primer to build a fundamental understanding of the QoL of the community being studied.

With the advent of the internet,

many newspapers, even at the local level, have online versions where the audience or readers can express their views, perceptions, and reactions to the news articles, thereby creating a participatory medium (Hoffman 2006) of data that could be used to initiate a research program. Using detailed and descriptive data, this article highlights and outlines the usefulness of media content analysis in the field of QoL studies, at the community level, thereby expanding the potential practical applications of the research method. In addition, the busyness and social chaos during periods of rapid economic and social transformation (such as what a community goes through during the boom period of rapid shale oil development), makes it difficult for attracting, accessing, and engaging community members. This article outlines, as a non-intrusive research method, how media content analysis is useful in such research contexts.

Western North Dakota was once characterized by small rural communities and agricultural based rural way of life. But the 2005-7 oil drilling resurgence in the Bakken shale formation in western North Dakota instigated a full scale oil boom,<sup>1</sup> which significantly changed the nature and context of these rural communities (Bangsund & Leistriz 2011). Shale oil development in western North Dakota typifies the use of horizontal drilling and hydraulic fracturing technology to produce oil and some natural gas in the process (hereafter referred to as shale oil development), in an agricultural based rural setting. Bakken shale play is considered one of

the top three major oil producing shale plays<sup>2</sup> in the United States (Crowe et al. 2015) and the oil drilling resurgence positioned North Dakota as the second largest oil producing state in the United States.

No prior studies have examined the context of QoL in western North Dakota. When a research program began in 2012 to understand and examine the impact of rapid shale oil development on QoL in western North Dakota, the second wave of oil development impact literature had only just begun. There was a small amount of literature addressing QoL issues and/or social and economic impacts of shale oil or gas development (exceptions were Anderson and Theodori 2009; Brasier et al. 2011; Ruddel 2011; Jacquet 2011). These studies were centered around the Marcellus or the Barnett shale, which are predominantly gas producing shale plays. Although several general lessons could be drawn from the first wave of oil development literature in the 1970's and 1980's (see Freudenburg 1984; Krannich and Greider 1984) the underlying technological approaches examined in these studies were fundamentally different from the technologies used in modern shale oil and gas development. As a result, there was a lack of pertinent literature to guide and direct the study efforts. The fact that QoL is a contextual concept bound in the space and nature of the setting exacerbated the need to adopt a suitable methodological approach to build a primary and fundamental understanding of QoL in western North Dakota.

Several news media articles and reports from western North Dakota,

---

<sup>1</sup> An oil boom is defined as a rapid increase in shale oil drilling activity and the induced secondary and supporting economic activity in other sectors such as housing, infrastructure

construction, related services, and the concomitant changes in social landscape.

<sup>2</sup> Which is different to major gas producing shale plays such as the Marcellus.

however, highlighted the numerous social and economic impacts of rapid shale oil development and concomitant rapid influx of people. Within this context the potential for using media content analysis as a methodological primer was examined. The aim of the media content analysis was to: (1) design and develop a set of open ended questions/ survey questions that would guide further study efforts; (2) identify key informants in western North Dakota as potential participants for subsequent studies; and (3) construct a preliminary understanding of QoL in the context of western North Dakota.

The city of Williston, which is located in Williams County, is considered the oil capital of North Dakota. It is colloquially referred to as “boomtown USA.” The Williston Herald is one of the premier and widely read local newspapers in the area. In addition to the print edition, the paper is also made available online ([www.willistonherald.com](http://www.willistonherald.com)), enhancing the paper’s accessibility and audience. Newspapers have a traditional role of educating and informing the public and setting agendas for public action (McAdams et al. 2004). Online visitors to the Williston Herald’s website can express their views, concerns, and reactions to the articles through commenting. As a result, the online version of the newspaper presents a participatory medium (Hoffman 2006) for stakeholders to express their perceptions on the news articles. The opinion articles section comprises of columns, editorials, and letters to editor. As a preliminary study effort, 512 letters to editor, published during the period 01/01/2010 to 12/31/2012 and 3877 online comments made by visitors to the opinion article section of the online

newspaper were manually coded and analyzed. Columns and editorial news pieces were left out from the study, as the number of articles published in these sections from 2010 to 2012 required significant additional effort and time for analysis. The findings section of this article describes the data in detail and how the data guided and directed further study efforts. A qualitative and exploratory study followed the media content analysis effort and the findings are presented in Fernando and Cooley (2015). A quantitative survey was also conducted in 2014, and the findings are presently in the process of publication.

## **Background**

In April of 1951, oil was discovered in western North Dakota in the Clarence Iverson No. 1 well in Williams County (Anderson 2011). The reserves are mainly known as the Bakken, Three Forks formation, and Tyler formation, which spread across western North Dakota, Montana, and Saskatchewan, Canada (Mason 2012). Western North Dakota has experienced booms and busts in the past with the last boom going bust in the 1980’s. The area demographics and the economy have largely followed the boom and bust cycle of the oil industry. The oil industry has brought inflows of people during boom times and sent redundant workers away during its declines (Ondracek, Witwer, and Bertsch 2010).

Once the 1980’s boom busted, western North Dakota became a quiet area of small communities characterized predominantly by agriculture, long cold winters, and decreasing population. But the agriculture industry in the area has been under relentless consolidation for the last few decades. Fewer larger farms mean fewer farm families and fewer

customers for rural businesses. Within this context, Rathge, Clemenson and Danielson (2002) identified issues such as: long-term county viability due to continued rural depopulation; increased travel times and decreased availability of goods and services; school consolidations and adequate healthcare; impact of out-migration of young adults causing loss of human capital; and meeting the needs of a growing elderly population, as the important topics of debate among policy-makers for the foreseeable future. But these foci have taken a dramatic swing since oil drilling in the area began to experience a resurgence during 2005-2007.

### **Review of Literature**

Survey of literature is organized under three sections. The first section discusses content analysis, and more specifically, the use of media content analysis as a research method. The second section briefly summarizes the pertinent QoL literature at the community level. The third section provides a synopsis of oil and gas impact literature that was available when the research program began in 2012.

### **Content Analysis as a Methodological Approach**

Content analysis is a term that represents a methodological approach used to study a broad range of 'text data' obtained from transcripts of interviews and discussions; narratives from films; TV programs and general media; open-ended survey responses; books, manuals, and other literature; and content of newspapers and magazines (Macnamara 2003; Hsieh and Shannon 2005). Content analysis can be used as either a qualitative or quantitative analytical tool. In a quantitative sense, content analysis is

employed where text data are coded into explicit categories and then described using statistics (Hsieh and Shannon 2005). This approach to content analysis is not the primary focus of this article. Hsieh and Shannon (2005) outline qualitative content analysis as a research method for the subjective interpretation of the content of text data through the systematic classification process of coding and identifying themes or patterns or structures. As a result, content analysis involves the systematic reduction of content, reducing it to more relevant and manageable bits of data (Weber 1990). Weber (1990) outlined content analysis as a research method that uses a set of procedures to make valid inferences from text. Content analysis examines data for patterns and structures, singles out the key features, develops categories, and aggregates them into perceptible constructs in order to seize meaning of communications (Gray and Densten 1998).

The development of content analysis is fundamentally connected to the development of mass media (Kohlbacher 2006). Media content analysis is a non-intrusive specialized sub-set of content analysis. Media content analysis examines the relationship between the text and its likely audience while recognizing that media content might imply different meanings to different readers and tries to determine the likely meaning of texts to audiences. The ultimate goal is to understand the deeper meanings and likely interpretations by audiences of media content, focused on popular social and economic discourses (Macnamara 2003). Shoemaker and Reese (1996) contend that understanding media content and the concomitant effects on the audience clarifies the role of mass media

and media impact on society, and helps to understand societal attitudes. Media content is an indicator of many underlying forces. By studying media content, it is possible to make inferences about the people and organizations that produce the content or about the organizational and cultural settings that contribute to its production (Shoemaker and Reese 1996). It can be a useful technique for discovering and describing the focus of individual, group, institutional, or social attention (Stemler 2001). It also allows inferences to be made, which can then be corroborated using other research methods. Additionally, media content analysis provides an empirical basis for monitoring shifts in public opinion (Stemler 2001).

In a number of situations, media content analysis is a suitable research method. Early studies such as Mathews (1910) focused on the coverage of news content: whether newspapers were devoted to coverage of religious, scientific, and literary affairs of the day, or had shifted their attention in favor of sports, gossip, and scandals. During the times of World War II, Harold Lasswell's studies of mass communication, especially propaganda, promulgated the use of media content analysis. These studies adopted a view of reality as a symbolic environment of words, images, and their meanings. These symbols when studied longitudinally are indicative of changes in reality such as shifts in predominant ideologies of society, predispositions with certain issues, and other political and social matters (Lasswell et al. 1952). More recent studies using analysis of newspaper content have focused on issues such as imbalances in coverage of early childhood education (McAdams et al.

2004), about sex and gender roles (Neuendorf 2011), coverage of science in national major daily newspapers (Pellechia 1997), how news media framing of agricultural biotechnology focuses the debate at a local level (Crawley 2007), media framing of individuals, (Amanda Knox), and the impact on positive or negative image (Freyenberger 2013), and public discourse on climate change (Kirilenko and Stepchenkova 2012).

Content analysis of newspaper publications has become a major scientific method of the analysis of public discourse (Kirilenko et al. 2012). One can view news content as the consequence of a number of antecedents. However, with the advent of the internet, channels of news media have changed. The traditional route of receiving news via a newspaper has evolved into a more digital path. An online news page might be conceived as reflecting, or being a consequence of, the news organization's selection from an array of possible stories, graphics, interactive features, and other content (Riffe, Lacy, and Fico 1998). Most news organizations now have a digital version of the newspaper that can be easily accessed from any digital reading device (Sullivan 2012). As a result, media content analysis can effectively utilize vast amounts of material already available on the 'information superhighway' (Stepchenkova 2012).

Rather than being a single method, current applications of qualitative content analysis show three distinct approaches: conventional, directed, or summative. All three approaches are used to interpret meaning from the content of text data. The major differences among the approaches are coding schemes, origins of codes, and

threats to trustworthiness. In conventional content analysis, coding categories are derived directly from the text data, where the researcher avoids using preconceived categories, instead allowing the categories and names for categories to flow from the data. Conventional content analysis is generally used with a study design that aims to describe a phenomenon. This type of design is usually appropriate when existing theory or research literature on a phenomenon is limited. Sometimes, existing theory or prior research exists about a phenomenon, however there are knowledge gaps that would benefit from further exploration and description. In these instances, the directed approach to content analysis might be useful. The aim of a directed approach is to validate or extend conceptually a theoretical framework or theory. Existing theory or research can guide the outlining of the research question, where key concepts or variables are used to construct initial coding categories. Existing literature can provide predictions about the variables of interest or about the relationships among variables there by structuring the initial coding scheme and/or relationships between codes. A summative content analysis involves counting and comparisons, usually of keywords or content, followed by the interpretation of the underlying context. Typically, a study using a summative approach to qualitative content analysis starts with identifying and quantifying certain words or content in text with the purpose of understanding the contextual use of the words or content. This quantification is an attempt not to infer meaning, but, rather to explore usage (Hsieh and Shannon 2005).

Neuendorf (2011) argues that a content analysis effort must be guided by

a theoretical and conceptual backing, a plan for the scope of the investigation, and a review of past research. The researcher should conduct an exhaustive perusal of previous work on the topic when constructing the content analysis protocol, including measures that constitute a coding scheme. Thus, a careful review of past work might provide the key to a more complete research program (Neuendorf 2011). Similarly, Mayring (2000) outlines two central procedures for qualitative text analysis: inductive category development and deductive category application. Mayring's procedures in essence involves a priori design of the categories (they should not be created as the researcher progresses) and matching of a category to a passage of text; not matching of the text to a category. By starting with pre-determined categories, this increases the systematicity of qualitative analysis (Macnamara 2003).

Another major research consideration in content analysis is identifying and outlining a population of textual materials suitable to answer a particular research question. Textual population refers to a set of messages or documents such as newspaper editorials or letters to the editor. When all units in the population are considered equally informative, non-probability samples should be avoided. When units in the population are unequally informative or differ in influence, circulation, or format, the units should be selected based on whether the selected texts are relevant to the research question and help to answer it fairly (Stepchenkova 2012).

### **Theoretical Perspectives of Quality of Life**

QoL is not a static concept that can be represented by, for example, on a

scale of one to zero, where one represents the presence of a good QoL and zero the absence of a good QoL. It's a more dynamic concept that requires a combination of quantitative, qualitative, objective, and subjective measures used to analyze original accounts, social facts, and economic indicators of the people and communities concerned. Michalos et al. (2006) outlined happiness, subjective well-being, life satisfaction, the good life, the good society, economic well-being, family well-being, and quality of work life as important concepts directly related to QoL. Felce and Perry (1995) defined QoL as "an overall general well-being that comprises objective descriptors and subjective evaluations of physical, material, social, and emotional well-being together with the extent of personal development and purposeful activity, all weighted by a personal set of values." This definition highlights the multiplicity and plurality of angles and pathways that could be used to approach and dissect the concept of QoL. As a result, Leitmann (1999) argues that there can be no universal or fully objective measure of QoL for three reasons: (1) different levels of observation (individual and group) can have conflicting outcomes; (2) diversity in the definition of QoL measures can result in different answers; and (3) contextual factors can lead to different definitions of quality. Therefore, it is difficult to construct a universally agreeable definition or a standard form of measurement of QoL (Cummins 1997). However, it is possible to agree on some general features of QoL and an approach to study QoL.

QoL can be studied in three main ways. First, QoL can be based on personal determinants such as health, education, marital status and income (including access and availability) that

represent the respondent's socio-economic status, immediate experience, and well-being. The focus here is on QoL at the individual level. Second, QoL can also be envisaged as relating to places and their characteristics in terms of availability and access to factors that constitute QoL. Third, a selected combination of both individual level and place level characteristics can be employed to construct QoL (Rogerson 1999).

Since this article focuses on QoL at the community level (or as a place based characteristic), it is important to highlight and outline the factors and variables that constitute QoL at the community level. QoL at the community level denotes the livability of an area or the level of attractiveness of a community (Epley and Menon 2008). Epley and Menon (2008) claim that community QoL "represents a group of socio-economic and environmental indicators (indicators are organized around five sectors: crime, health, employment, education, and recreation) that contribute to the livability and desirability of the region." Diener and Suh (1997) contend that economic, subjective, and social indices can all shed light on communities QoL, and how specific factors influence the assessment. Besser et al. (2008) developed a factor scale composed of three items measuring residents' overall satisfaction with government services, non-governmental services, and the community in general (including the community services) to evaluate community QoL. Perdue et al. (1999) contends that primary factors affecting resident QoL are job opportunities, community services, facilities particularly related to safety and congestion, community social opportunities and involvement, and perceived community political influence

(residents influence over local political decisions). These factors highlight the features that need to be considered when studying QoL at the community level.

### **Impacts of Rapid Oil and Gas Development**

This section summarizes the oil and gas development impact literature that was available when the present study started in 2012, to construct a theoretical outline that directed and shaped the coding scheme. Various impacts of rapid energy development have been explicated in a number of articles that fall under fields such as “social impact assessment,” “social disruption hypothesis/theory,” and “boomtown” literature. The basic mechanism underlying the boomtown model is the rapid growth of population that occurs as individuals move into an area to take advantage of employment opportunities (Gramling and Brabant 1986).

Gilmore and Duff (1974) argue that QoL of the entire population in an energy development region depends on two things: tangibles and intangibles. Tangibles refer to the adequacy of the goods and services available and affordable in the local service sector (including government services). The intangibles describe the morale and attitudes of the population depending on such things as adequate leisure activities, responsive government, and a supportive spirit of community. Therefore, a study on QoL during periods of rapid energy development must focus on both tangible and intangible factors. Recker (2009) also found that changes in the subjective measures (norms of reciprocity and trust) explained considerable variation in QoL during periods of economic shocks than structural measures. At the community level most effects of rapid oil and gas

development are centered around: (1) economic impacts, (2) logistical and infrastructural impacts, and (3) social impacts.

Rapid oil and gas development generates positive economic benefits in the form of increased jobs, higher pay, overall economic prosperity, tax revenues, more services, new economic opportunities for local businesses and landowners (mineral and lease rights owners), and influx of young people (Murdock and Leistriz 1979; Anderson and Theodori 2009; Brasier et al. 2011). These economic benefits contribute to an increase in the material QoL of local residents through the alleviation of economic hardship. The economic impacts of energy development derive predominantly from the efforts of interested parties to identify and to respond to the implications of development — whether as “opportunities”(to those who see the changes as positive) and/or as “threats”(to those who feel otherwise) (Freudenburg and Gramling 1992).

Overall measures of economics such as income and job creation imply the more important question of who benefits (Lovejoy and Little 1979). Lease or royalty payments in prime shale development areas of the U.S. amount to several thousand dollars per acre over a term of several years, which can amount to a significant financial payment for mineral rights owners. However, some land owners might not own the minerals under their properties. A GIS analysis undertaken by Kelsey et al. (2012) indicate that ownership of the land in the Marcellus Counties with the most drilling activity is concentrated among a relatively small share of residents and outside owners. As a result, Kelsey et al. (2012) contend that energy development



presents an economic opportunity for some residents while an environmental or QoL concern for other residents, leading to conflict within many communities (Kelsey et al. 2012).

Rapid oil and gas development also leads to several logistical challenges or impacts such as increased strain on local infrastructure including roads and housing; overwhelmed public services including health, education, and emergency services (Anderson and Theodori 2009; Jacquet 2011); traffic issues, accidents, and other safety concerns; increase in cost of living (Jacquet 2011; Brasier et al. 2011); and lack of affordable housing and concomitant outmigration of longtime residents (mostly seniors or others on fixed incomes) living in rental housing (Williamson and Kolb 2011). Small rural communities are often ill-equipped to deal with growth management challenges, as they frequently lack financial resources, professional personnel, and experience in coping with rapid change (Maki and Leistriz 1981).

The social impacts of energy development are centered around increased levels of antisocial behavior, disorder, and crime (Reynolds Jr et al. 1982); impacts to the rural landscape or biophysical environment (Alter et al. 2010); and impacts on social networks and relationships (Murdock and Leistriz 1979). Freudenburg (1986) concludes that additional social impacts can occur if new employment opportunities attract enough job seekers to lower the community's density of acquaintanceship, or the proportion of residents who know one another, thereby lessening the effectiveness of socialization and deviance control.

## **Methodology**

The aim of the QoL research program in western North Dakota was to understand and examine the factors or characteristics that comprise QoL in the area and how a transformative event such as rapid shale oil development affects QoL. The aim of the media content analysis was to generate a fundamental understanding of QoL in western North Dakota and the impact of rapid shale oil development. Following the guidelines of Neuendorf (2011) and Mayring (2000) on how to conduct a content analysis, an extensive review of literature was undertaken to build a coding scheme and identify a set of key words, concepts, and ideas. A two directional review of literature was conducted. The pertinent context specific QoL literature was lacking while a large body of general QoL literature at the community level was available. Similarly, context specific shale oil and gas development impact literature was lacking while oil and gas impact literature was available from the 1980's or from other shale plays.

The review of QoL literature helped to outline the different variables or factors that are associated with, used to describe, or constitute QoL. These factors included monetary factors and non-monetary factors. Monetary factors include income and cost of living considerations while the non-monetary factors included a wide range of factors. The range of non-monetary factors were narrowed down to identify the pertinent QoL factors within the context of rapid shale oil development. The review of boomtown/oil and gas development literature helped to outline both positive and negative social-economic-environmental impacts of rapid shale oil development. As a result, the coding scheme was structured such that there were two broader sections. One section

comprised of key words and concepts that represented QoL variables that were presumed to be negatively affected by rapid shale oil development while the other section comprised of variables that were presumed to be positively affected by rapid shale oil development. Table two provides a summary of the coding scheme. As a result, the methodology adopted represents a directed approach as outlined by Hsieh and Shannon (2005). Subsequently, a 2x2 coding scheme emerged that constituted four different categories:

- A. Monetary factors of QoL positively affected by rapid shale oil development.
- B. Non-monetary factors of QoL positively affected by rapid shale oil development.
- C. Monetary factors of QoL negatively affected by rapid shale oil development.
- D. Non-monetary factors of QoL negatively affected by rapid shale oil development.

Each category comprised of major coding groups that are summarized in table two. Each major group consisted of several sub groups. A tri-hierarchical coding analysis was carried out to analyze the data. Firstly, using the coding scheme as a guideline, the letters to editor and the online comments were analyzed to determine whether they referred to or addressed any aspect of QoL or impacts of oil development. The letters and online comments doing so were selected for further analysis. Out of the 512 letters to the editor, 491 were chosen for further analysis (95%). Out of the 3877 online comments, 3851 were selected for further analysis (99%). Hereafter, the statistics and data in the findings and tables refer to

these 491 letters and 3851 comments.

Secondly, the selected letters and comments were open coded using the coding scheme to sort them into categories. The percentages in table one and two shows the number of letters and comments mentioning the considered QoL factors at least once. For example, economic benefits were one major group under the section of positive impacts of shale oil development. Therefore, any unit of text that referred to benefits to mineral rights owners, business owners, employees, or other parties that benefited from oil development were coded and grouped under economic benefits. Similarly, unequal distribution of economic benefits was one major group under the section of negative impacts of oil development. Hence, any units of text that referred to wage disparity between the oil industry and the rest or units of texts describing why and how certain community members didn't benefit from oil development were coded and grouped under unequal distribution of economic benefits. The groups were matched to the unit of text following the guidelines of Mayring (2000).

Thirdly, a focused coding effort was performed within the major groups and sub-groups to identify major subthemes and sub-patterns. These subthemes and patterns were assimilated across the four categories to build an overall understanding of the impact of rapid oil development on QoL in western North Dakota.

However, during the open coding effort, pieces of content emerged that didn't fit the coding scheme. These content referred to life before oil development. As a result, there was a need to construct another set of codes, which emerged from the data using the constant comparison analysis method

(Glaser and Strauss 1967). These content were separately coded as positive and negative aspects of QoL before oil development. These codes are summarized in Table One below.

### Findings

The letters to editor of Williston *Herald* and the online comments on the opinion articles presented a very interesting medium for analysis. Data analysis and the excerpts of letters and comments quoted in the findings indicate that, although not answers to a set of structured questions, these letters and comments represent the views, perspectives, and ideas of a range of stakeholders. The quotations used in the proceeding sections highlight the nature, detail, and objectivity of perspectives from the data, resulting from the content analysis effort. It is also important to note that letters and/or comments provided details about residency, gender, and age (senior resident or not) etc. there by providing detailed context to the letters and comments. All of the letters provided some details about residency and gender. In addition, most comments also provided these details. For example, an online comment stated:

I grew up here during the first boom. Left for the military when it died out, and returned 21 years later just at the beginning of this boom. Now I work in oil, this is my home and where my family is. My kids go to school here and my wife works in the local grocery store.

Many other comments also provided details about residency, type of employment (oil industry or non-oil), gender etc. Media content analysis also yielded names of several people who

wrote letters and expressed their opinions about pertinent issues that comprised both longtime residents and new comers as well as both male and female. The effort yielded names of 17 people who wrote more than one letter to editor. These people were identified as key informants to start chains in a chain/referral sampling approach in the qualitative open-ended interviews that followed. Five people out of the 17 declined to participate in further studies citing personal reasons or lack of available time. Two could not be contacted as their contact information was not available.

In 11% of letters to editor and 8% of online comments, direct use of the term “quality of life” or other closely associated terms such as well-being, good life, and life satisfaction happened at least once. For example, Ryan Ogaard in a letter to editor, stated:

Nearly 3 years ago I moved to Williston, North Dakota from Minot to pursue a job opportunity that would provide me and my family with a secure quality of life... If it wasn't for living with a sense of community, I'm certain I wouldn't feel as content living in a rapidly changing (aka “booming”) town that I call home. It is my hope that we continue to feel safe and secure in a changing community... There is no magic wand that can instantly improve the quality of life we all desire; however, by giving, advocating and volunteering as a community we can make a difference and give hope to those who live here so that they may look back and know they have also lived a good life.

Many letters and comments

pointed out the rapid pace of activity (generating numerous jobs within a very short time period that attracts people) and status of national economy (triggering a rapid influx of people) as the two main drivers jointly contributing towards the impacts. For example, one of the comments to an editorial noted: “some of us come from areas that have been devastated by the economic crisis...Williston is an oasis of opportunity in an otherwise dismal national crisis.” Another comment from a wife of an oil field worker from Denver described:

My husband took a job up in Williston in January after a year and a half of unemployment here in Denver. There are very few jobs anywhere...I am very grateful that he found a job in your community. This job has stopped our 6 weeks of homelessness, has provided my 3-year-old with new clothes

Another letter to the editor summarized the context of both drivers by stating:

I feel fortunate to live in a prosperous community with a good job, a warm home and plenty to eat. I know many Americans are not as lucky as I am. But growing up in this area all my life, I also know that change can be scary and frustrating to deal with, especially when it happens as quickly as it is.

### **Quality of Life Before Rapid Shale Oil Development**

Many letters to editor and online comments from longtime residents described and explicated the factors, conditions, and context that constituted QoL in western North Dakota before oil

development. Table One summarizes the themes and the percentage of letters and comments referring to each theme at least once. QoL before oil development seemed the lens through which longtime residents perceived the changes created by rapid shale oil development. Therefore, it is important to understand QoL in western North Dakota before rapid oil development.

As Table One indicates, high density of acquaintance, serenity and tranquility of the surrounding environment, and high feeling of safety were the three most frequently mentioned positive non-monetary factors of QoL before shale oil development, while outmigration of young people and consolidation of public/private services were the two most frequently mentioned negative non-monetary factors. Lower pay and lack of job opportunities were the two most frequently mentioned negative monetary QoL factors before oil development.

**Table One: QoL Factors Before Rapid Shale Oil Development**

| <b>QoL factors positive before the boom</b>  | % <sup>3</sup><br>Letters | %<br>Comments | <b>QoL factors negative before the boom</b>                      | %<br>Letters | %<br>Comments |
|--|---------------------------|---------------|--|--------------|---------------|
| <b>Monetary factors</b>  |                           |               | <b>Monetary factors</b>  |              |               |
| Low cost of living   | 6%                        | 9%            | Lack of economic or job opportunities                            | 17%          | 22%           |
|  |                           |               | Lower pay  | 3%           | 13%           |
|  |                           |               | Lack of career advancement potential                             | 1%           | 3%            |
| <b>Non-monetary factors</b>  |                           |               | <b>Non-monetary factors</b>                                      |              |               |
| High density of acquaintance   | 27%                       | 21%           | Out-migration of young people (loss of friendships, family ties) | 14%          | 33%           |
| Good schools and availability of basic community services (retail store, drug store, movie theatre etc.) | 4%                        | 14%           | Consolidation of public services (school closure)                | 8%           | 21%           |
| Serenity and tranquility of the surrounding landscape  | 14%                       | 36%           | Aging population   | 6%           | 18%           |
| Low level of crime and better feeling of safety  | 31%                       | 37%           | Closure of business services and decline in private amenities    | 2%           | 12%           |
| Opportunity to participate in community activities   | 2%                        | 4%            | Lack of new investments or new housing                           | 5%           | 10%           |
| Environment based recreation opportunities (hunting, fishing, and hiking, etc.)                          | 9%                        | 19%           |  |              |               |
| Small country town environment   | 6%                        | 11%           |  |              |               |

**Positive and Negative Monetary QoL Aspects Before Rapid Shale Oil Development**

Positive monetary aspect of QoL before rapid oil development largely comprises of low cost of living as one online comment summarized “this area used to be such a nice area to live, no (sometimes) the

pay wasn't great, but the cost of living was reasonable, and it was a smaller town/community, and a great place to raise a family.” However, monetary aspects of the life before rapid oil development wasn't perfect. As Geene Veeder, a longtime resident and also the Executive Director of the McKenzie County Job Development Authority claims in a letter to editor:

<sup>3</sup> Percentage indicates the number of letters or comments, out of the total analyzed, stating each factor at least once.

Just a few years ago, it was difficult, if not impossible, to attract jobs to western North Dakota. Our population had seen decades of consistent decline and it wasn't a healthy economic climate... Oil development has been a Godsend for our region, but it hasn't come without its challenges.

Another online comment described the income situation as: "During the non-boom years, exactly how much most were people making? Maybe \$25,000 a year if they were lucky." Although there were no higher paying jobs or many jobs, before shale oil development, the low cost of living seems to have balanced the monetary aspects of QoL. As a result, people with established economic ties and jobs remained in the area while others, especially young people continued to leave the area.

### **Positive and Negative Non-Monetary QoL Aspects Before Rapid Shale Oil Development**

In a letter to editor John Heiser, a longtime resident writes:

Most of us longtime Dakotans kind of liked what we had before this extreme "boom," namely the blue sky, good roads with light traffic, an agriculturally driven economy along with modest oil activity, a good school system, relative safety from the afflictions of the rest of America, and the reasonable expectation that our rural, western innocence was a good thing. The most valuable resource this area had is not oil, but peace and quiet...and undisturbed prairie.

In response to that letter another longtime resident commented:

I completely agree! I have lived here my whole life as my parents originally came due to the first oil boom. I've always LOVED it here...until now. I remember when this community cared and reached out to one another. When we cared about how the town looked, and when the biggest news was the community bake sale. If I wanted a city I would have moved years ago.

The data analyzed indicates that the positive non-monetary factors of QoL in western North Dakota before oil development comprised of high feeling of safety, strong close ties that existed in the community where everyone knew each other (high degree of acquaintance), quality of the surrounding environment (serenity, tranquility, and quietness of the small country town environment), and availability of necessary resources (a grocery store, theatre, and good schools etc.). Analysis of letters and comments by people who identified them as newcomers to the area indicate that these factors are shared and considered by newcomers as well. For example, in a letter to editor, Carl Doty, who is a new resident to the area notes:

I like to hunt, fish, camp and go four-wheeling. I do want the environment clean. I don't like traffic, waiting in lines, not being able to get a post office box or high crime rates. I like knowing my neighbors and watching out for each other. I want to go to small and peaceful bars, coffee-shops, bakeries, mechanics and community banks as part of my routine.

In reply an online comment states:

My grandpa built the majority of houses in the Williston area in the 50's-

70's and I spent many a summer in the area. It was always a peaceful farming area with just great people around. I have many good memories. My mom has just decided to leave the town, not due to money but to the fact that she doesn't know her neighbor anymore. Hard to gauge the growth being it isn't the cozy downhome place to live but we are old school and will probably have many oil wells on all the land we own before this boom is done. I feel grateful we have choices and really feel bad for all the locals who aren't as fortunate as we are. I hope Williston will remember all the seniors who have endured through the years. They are wonderful people rooted in character and hard work and I hope they won't get thrown away in this growth.

The negative aspects of QoL in western North Dakota before shale oil development, highlighted in letters and comments include outmigration of young people and concomitant aging population, consolidation of public services, and closure of businesses as one online comment outlines:

Before all this began we didn't have money to update the parks. The equipment were getting really old. Schools were thinking about merging sports teams as we didn't have enough kids. Local businesses were struggling and some of them closed down and you had to go to Minot or somewhere to get what you needed.

Analysis of the letters and comments indicate that residents feel that the QoL in the community is undergoing a period of change or transformation as a result of rapid shale oil development. The excerpt from the letter to

editor by Rena Helberg, who is a longtime resident, exemplifies this point:

I appreciate people like Dan Kalil,<sup>4</sup> who have deep roots in this community and a history of serving the people who have been his neighbors, friends and acquaintances. I empathize with his quote "our quality of life is gone." All of us can agree that our area has experienced phenomenal, enormous, even cataclysmic changes. And these changes have happened in a very short amount of time. It is truthful that the "quality of life" that we enjoyed before the oil boom is gone... People who experience a death are told there are five stages of grief: denial, anger, bargaining, depression and acceptance. If our previous "quality of life" has died, it's actually a good thing to acknowledge and not deny that. For those of us who have to stay, who choose to stay, we will have to eventually get to that "acceptance" stage. To an optimist like me, that stage will usher in a better Williston. Think of the first and second oil booms? The people here adjusted.

### **Impact of Rapid Shale Oil Development on QoL**

As Table Two indicates, economic benefits to different stakeholder groups was the most frequently mentioned positive monetary impact of shale oil development on QoL, while escalation in cost of living, lack of housing affordability, and wage disparity were the three most frequently mentioned negative monetary impacts of shale oil development on QoL. Additions to community amenities was the most frequently mentioned positive non-monetary impact of shale oil development on QoL, while concerns of safety, disruption to local

---

<sup>4</sup> A Williams County Commissioner

social networks, and impacts on rural landscape were the three most frequently

mentioned negative non-monetary impacts of shale oil development on QoL.<sup>5</sup>

**Table Two: QoL Factors Impacted by Rapid Shale Oil Development**

| <b>Positive impacts on QoL</b>                                       | <b>% Letters</b> | <b>% Comments</b> | <b>Negative impacts on QoL</b>                           | <b>% Letters</b> | <b>% Comments</b> |
|--|------------------|-------------------|--|------------------|-------------------|
| <b>Monetary impacts</b>  |                  |                   | <b>Monetary impacts</b>                                  |                  |                   |
| <b>Economic benefits to stakeholders</b>                             |                  |                   | <b>Inequality in distribution of economic benefits</b>   |                  |                   |
| Benefits to mineral and other lease rights holders                   | 8%               | 23%               | Wage disparity (Oil compared to non-oil)                 | 31%              | 38%               |
| Direct or indirect job opportunities generated by increased activity | 11%              | 27%               | Lack of benefits to land owners who don't own minerals   | 3%               | 24%               |
| Higher wages in the oil industry                                     | 2%               | 8%                | Other community members (seniors etc.) who don't benefit | 4%               | 17%               |
| Enhanced business opportunities and revenue for business owners      | 4%               | 9%                | <b>Other monetary costs</b>                              |                  |                   |
| <b>Economic benefits to community</b>                                |                  |                   | Escalation in cost of living                             | 36%              | 57%               |
| Tax revenue for communities  | 14%              | 2%                | Lack of housing affordability                            | 28%              | 78%               |
| Investments in community infrastructure, services, and new housing   | 3%               | 6%                |  |                  |                   |
|  |                  |                   |  |                  |                   |
| <b>Non-monetary impacts</b>  |                  |                   | <b>Non-monetary impacts</b>                              |                  |                   |
| <b>Influx of young and new residents</b>                             |                  |                   | <b>Rapid influx of mostly male workers</b>               |                  |                   |
| Opportunities for new friends and social connections                 | 2%               | 8%                | Change in male-female ratio                              | 1%               | 6%                |
| In-migration of people with local roots (who                         | 3%               | 14%               | Impacts due to transient nature of workers and           | 15%              | 31%               |

<sup>5</sup> Percentage indicates the number of letters or comments, out of the total analyzed, stating each factor at least once.



|  |     |     |  |     |     |
|--|-----|-----|--|-----|-----|
| grew up in the area, moved away, came back)  |     |     | lack of local integration (garbage, lack of care)  |     |     |
| <b>Addition to community services</b>  |     |     | <b>Rapid growth in population</b>  |     |     |
| New businesses and private amenities in the community (retail, recreation, restaurants, medical) | 16% | 21% | Increase in crime and concerns of safety (including road safety concerns)  | 34% | 71% |
| Better parks and recreational opportunities  | 9%  | 37% | Overwhelmed public services and business services (healthcare, emergency services, law enforcement, and retail etc.) | 26% | 43% |
| New schools and other public services  | 8%  | 6%  | Congested or busy community environment  | 6%  | 12% |
|  |     |     | Disruption to local social networks and relationships (density of acquaintance)                                      | 28% | 61% |
|  |     |     | <b>Impacts due to increased industrial activity</b>  |     |     |
|  |     |     | Noise, dust, and disturbance to peacefulness   | 26% | 14% |
|  |     |     | Impacts on land, rural landscape, or biophysical environment, and concerns of pollution                              | 15% | 22% |
|  |     |     | Impacts on environment based recreation (hiking, hunting, fishing)   | 7%  | 9%  |
|  |     |     | <b>Other Impacts</b>   |     |     |
|  |     |     | Outmigration of longtime residents   | 5%  | 19% |

**Positive Monetary Impacts of Rapid Shale Oil Development**

Analyzing the contents of letters and online comments indicate that the major

positive monetary impact of oil development is the economic opportunity for those stakeholders who are in a position to benefit from increased industry activity, such as

mineral and other lease rights holders, landlords, business owners, and oil industry employees. For example, an online comment states: “I am from North Dakota and have a few oil wells so I LOVE it. Apparently, the ones that complain are not in any way profiting from the oil.” Rapid shale oil development represents an economic opportunity that has been lacking in western North Dakota for the past few decades to attract investments, businesses, and new residents. For example, As Lloyd Omdahl, a former North Dakota lieutenant governor notes:

We welcome the new development in the North Dakota oil patch and celebrate the benefits that will enrich mineral owners, landlords, community businesses, oil companies and the state treasury...However, the negative unexpected consequences of the rapid development are becoming too serious to ignore...The development is overtaxing the infrastructure throughout the oil patch; public services are being stretched beyond capacity; highways are being destroyed faster than they can be rebuilt; heavy oil traffic is shoving other users off the roads; schools are rushing to accommodate over-enrollment; housing, much of it inadequate, is in short supply.

Another online comment states:

I am from this state. I have a long family history here. And I am proud to say I also have a long family history of being Oil Field Trash; yes, I am proud, proud, proud of it. Yes, the oil companies pay good wages; however, most of those working on a rig or many of the jobs that support them, are from out of state, with families or loved ones

to feed and care for...and quit complaining about the oil boom!

However, the positive monetary aspects are not entirely sufficient to improve the overall QoL in western North Dakota, as described in an online comment by an oil industry worker:

Everybody, including all oil workers in our area like me, want the roads safe for our children, the schools adequately funded so the kids have teachers, cooks, supporting staff and room for all the kids. Our hospital and clinics need to have the staff and the buildings to provide proper care to all of us.

### **Negative Monetary Impacts of Rapid Shale Oil Development**

Although monetary benefits positively impact the QoL of those stakeholders who are in a position to benefit from rapid shale oil development, not all stakeholders enjoy such benefits. Many stakeholders such as non-oil industry workers, seniors, and those that don't own mineral rights express concerns about the inequality of economic benefits generated by shale oil development and rapid increase in cost of living. For example, an online comment by a longtime resident notes:

I have seen full time workers leaving this town as they can't afford the rising rents, which non-oil jobs don't keep up with. I have lived here for over 50 years and have always been fully employed, but despite raises, they just don't keep up. People wonder why they can't find workers in the food service or retail stores around here. Bottom line is with rapidly rising cost of living here, this town needs to take an aggressive approach to increasing wages here in non-oil jobs or face many more people

leaving and smaller business shutting down. You should hear the horror stories I hear from full time workers as to what financial lengths they have to do to survive here. You could devote an entire column to that problem. I'll bet 75% of the city population is not gaining wealth from this boom.

Another online comment notes:

Why does the oil industry with all its billions of dollars matter more than those of us that have lived in this town most of our lives? So very many of us are suffering with the increase in the cost of living such as rent increases, food prices, fuel prices and even day care price increases. All our city governing body seems to be interested in is the flow of oil money that is being brought to this city but for all the dollars the city gets none of it finds its way into my pocket or those in the same predicament as I am. I have lived in this town for over 50 years but I guess that counts for nothing when I am up against the oil companies that will be here for only as long as the oil lasts. What then?

Analyzing the letters and comments indicate the escalation in cost of housing is the main driver contributing towards the increase in cost of living, especially for those living in rented housing. In a letter to editor Joy Rasmussen notes:

[P]eople who do service jobs just can't afford to live in Williston or the surrounding area anymore. Lots of folks are not willing or ABLE to work the long, hot, cold, tiring hours required in the oil patch. And let us face it: We need waitresses, gas station attendants, clerks, CNA's, janitors, stock people

and other service workers. And they need places they can afford to live and wages that will allow them to pay the upped prices.

In another letter to editor Amy Murdock from Florida, that is a wife of an oil field worker notes:

[T]he cost of rent is crazy! I recently read an ad for a five-bedroom mobile home for \$8,500 per month!!! Who can afford this? No one can afford to pay these astronomical prices without compromising their family's welfare. Most could not afford to bring their families to Williston due to the cost of living. It is really sad. I appreciate North Dakota for making a better life for my family, I just wish we could be together.

In reply a long term resident noted:

Over the last year I have helped 6 friends and their families pack up and move...Because they cannot afford to live here. 17 people who worked at Walmart, grocery stores, day cares, and schools and hospitals. These families were an asset to us. Little by little we are losing what we love about this place OUR PEOPLE. I've always thought of us as a resourceful people. But how can we raise our children, work our jobs and pay day care and \$2000.00 rent? How do we do this?

Analysis of letters and comments clearly indicates that increase in cost of living is having a considerable negative impact on the monetary aspects of those community members who are not in a position to benefit from oil development.

### **Positive Non-Monetary Impacts of Rapid Shale Oil Development**

Analysis of letters and online comments indicate the positive non-monetary factors of rapid oil development include investments in community infrastructure (roads, schools, parks and recreation), incoming new businesses (retail, restaurants, and other services), and in-migration of young families. For example, an online comment states:

When we complain about all the negatives that this boom has brought we forget what it has also done for our communities. We had two grocery stores here and one closed down about five years ago. Our school population were going down and they were talking about closing and merging the middle school. This boom has given us an opportunity.

As Jim Yockim, a long term resident of Williston describes:

The many new people coming to town with their families will be part of the next generation of North Dakotans. They will pay taxes, shop in our stores and invest time and money in the future of our community. They have new energy and new ideas. They have a right and a responsibility to use those ideas to try to make this community better.

Lisa Newson, a new resident to the area notes in a letter to editor:

Williston still has its problems and there are still things that will frustrate me, but this is my home now. I may not be a local, but I've met a lot of really great people both from Williston and not from Williston. This area has some

great traditions that are family oriented, the parks are getting a much needed face lift and look excellent now, and there are still a lot of really good things about living here. I think sometimes we just need to step back and remember that there are nice things about Williston!

### **Negative Non-Monetary Impacts of Rapid Shale Oil Development**

Analysis of the letters and comments show that the negative non-monetary factors consist of increased crime and concerns of safety; increased traffic; inaccessible or overwhelmed public (law enforcement) and business services (healthcare, retail, restaurants etc.); impacts on the land and surrounding environment; and change in the community nature and context. For example, an online comment notes: "if I wanted to sit in traffic, stand in line, look at empty store shelves, hear friends and relatives complain about ridiculously high rent, I would have stayed in a big city". Another new resident notes in a comment: "All we want is a stable life for our families, some close friends to hang out with, great schools for our kids, and a community to be proud of...we are here to stay." Rapid influx of people has swiftly increased the demand for public services (law enforcement and other city services) creating concerns of safety and one online comment describes:

The only reason I still feel relatively safe around here is the fact that me and all of my friends, relatives and neighbors are armed and not afraid to defend ourselves. I am certainly not going to depend upon law enforcement to keep me safe, they are totally swamped and overextended just like all of the other infrastructure around here.

The QoL characteristics of the community and/or the surrounding environment for which the area was known for before rapid shale oil development, does not characterize the present busy boom town as one comment notes:

I have been a resident of North Dakota all my life and Williston for the past 30 years. I am also saddened by all the construction and changes in our landscape. I miss seeing the livestock running in the pastures, fields of growing crops, the quiet Sunday drives and evening walks with family and friends.

Another online comment notes:

There is a ton of our tax money, earned by all of us -the landowners, the oil field workers, the truck drivers, the police department, the sheriff's department, the restaurant owners and servers, the cna's the nurses, doctors and I could keep going. We all need to work together to get the infrastructure we need and deserve. The craziness of the oil boom is exhausting all the workers in this area. Once we feel safe on our roads with four lane hi-ways, well placed stop lights and children not living in campers with no heat we can concentrate on being a community undivided. We deserve that, all of us, the ones that are away from their families and the ones who are from the Williston area.

The letters and comments exemplify that the non-monetary characteristics of QoL in western North Dakota are changing with rapid shale oil development. These changes were highlighted by an online comment as: "In Williston we can see it every day in our busy streets, crowded parking lots, packed stores, overcrowded schools, newly-

emerging neighborhoods and the many new faces that appear in town month after month." Neighbors knowing each other in a small community setting (high degree of acquaintance) was identified as a major positive non-monetary characteristic of QoL before oil development. Analysis of letters and comments show that due to the rapid influx of people many of the social interactions and the important social aspect of "knowing my neighbor" has been significantly affected as outlined by an online comment:

The thing is you can't always separate out the 'good' people from the 'bad' people when you are in a crowd or don't know them. They just all become 'bad' by default -- The problem is in the sheer numbers. This town was never designed nor meant to support this kind of population explosion. The unrestrained growth is what has DESTROYED Williston... Then lastly the mayor said "Williston will be a better town." I really don't think anyone who was here pre-boom believes that. My take is that Williston will just be an entirely different, much larger, and extremely poorly laid out town occupied by entirely different individuals.

The sub-themes described in the above sections helped construct several open-ended questions and development of an interview guide that was used in further study efforts. Assimilation of the themes and patterns across the four major categories and comparing them with the themes about QoL before rapid shale oil development leads to two general conclusions:

- A. The nature of (whether its positive or negative) the impact of rapid shale oil development on the monetary

QoL aspects of a community member depends on their positioning in the economic/income structure and level of exposure to local inflation.

- B. Rapid shale oil development has created several non-monetary positive QoL aspects (new business choices, better parks, etc.), which were believed to be lacking before oil development. However, in the process, several positive non-monetary QoL aspects (knowing their neighbor, feeling of safety, quiet environment etc.) that were valued before rapid shale oil development has been lost.

These two main points drawn from the media content analysis were examined further in the qualitative interviews that followed and are discussed in detail in Fernando and Cooley (2015).

### **Discussion and Future Research Implications**

The detailed and descriptive data presented in the findings show that media content analysis is capable of producing outcomes and data that are comparable with other qualitative research methods such as open-ended interviews or focus groups, if the source of media is very thoughtfully selected. The findings of this study is comparable and yielded similar results to other studies that are summarized in the literature review. Concerns of crime and safety, impacts to surrounding landscape, and disruption to local social networks were the most frequently mentioned negative impacts of shale oil development. These were common major themes in other oil and gas development impact studies such as Anderson and Theodori (2009) and Brasier et al. (2011). For example, during a study by Alter et al. (2010) participants expressed

concern about the impacts on the landscape, and relatedly, their desire to live in the area. For many, the rural nature of these areas is the reason they live where they do and they feared that energy development would permanently degrade the amenities and rural QoL they've come to value (Alter et al. 2010). Therefore, the case of western North Dakota demonstrates the usefulness of media content analysis as a methodological primer in QoL studies. With many newspapers even at the local level, having an online version, which provides a participatory medium, media content analysis has the potential to be a useful methodological primer in studies focusing on QoL in other oil and gas impacted areas. The usability of this methodological approach needs to be further examined in future QoL studies, at the community level.

The directed approach used in coding the media content needs to be further discussed. Constructing a coding scheme based on literature helped guide and organize the analysis effort. However, the analysis showed that some codes that were generated through the literature were not applicable within the specific context of western North Dakota. For example, many studies focusing on the Marcellus shale highlighted concerns of ground water pollution, fresh water use, and public health. None of the letters or online comments described concerns of ground water pollution. When concerns pertaining to impacts on the land and the surrounding environment were expressed, they were based on the impacts to aesthetic nature and recreational uses. In addition, another set of codes emerged during the data analysis process. These are highlighted in the QoL before rapid shale oil development section. Hsieh and Shannon (2005) argue that one challenge of the directed approach is failing to develop a complete understanding of the context, thus failing to identify key categories. This can result in findings that do

not accurately represent the data. As a result, future research that uses media content analysis based on a directed approach needs to be adequately flexible to allow codes to emerge from the data if there is sufficient evidence to indicate that the existing coding scheme is not adequate to accommodate certain content. This can especially occur if there is lack of context specific research on the particular social-economic-environmental situation considered, such as in the case of western North Dakota.

The coding approach used in this study involved a single researcher manually coding the content. Although this approach proved sufficient within the role of media content analysis as a methodological primer, there are several ways to improve the efficiency, reliability, and validity of the approach. The reliability and internal validity of the analysis can be improved by using multiple coders and triangulation. Manually coding the content also required a lot of time and effort, and as a result, the columns and editorial articles were left out from the analysis. The content selected for analysis requires a balance between considerations of adequacy to answer the pertinent research aims and questions and the time required for analysis. Neuendorf (2011) compares human coding and computer assisted coding (computer assisted text analysis- CATA) and argues that the efficiency of the analysis can be greatly improved by using computer assisted coding, if the designing of the coding scheme is carefully constructed.

The proposed role for media content analysis in a QoL study is as a methodological primer. The aim of the media content analysis described in this article was to build a fundamental understanding of QoL in western North Dakota to direct further study efforts. The role of media content analysis can be limited in both theory development and description of the lived experience, because both sampling and

analysis procedures make the theoretical relationship between concepts difficult to infer from findings. At most, the result is concept development or model abstraction (Hsieh and Shannon 2005).

As a methodological primer, however, media content analysis has the potential to play a contributory role in a comprehensive research program. As outlined in the findings, media content analysis helps to conceptualize the primary concepts, identify key informants, and develop questioners, which are vital in directing further study efforts.

Although the Williston Herald represents one of the most widely read local newspapers in the area, the sample of people who write letters to editor and comment online is limited and can be biased based on their specific interests and viewpoints. In addition, newspapers can act as gatekeepers of media messages. Not all the letters sent to the editor get published (Shoemaker and Reese 1996).

The blatancy of the content of some of the comments outlined in the findings, however, indicate that the anonymity allows for commenters to freely express their views and perspectives. This fact needs to be further clarified in future research by collating similar views or ideas and how they are expressed when other methodological approaches such as open ended interviews are used. Visual analysis of the answers to the open-ended questioner based qualitative study that followed the content analysis indicates that the views expressed during the interviews were not as direct as the online comments. However, a comparative analysis of the two texts were not carried out to verify this point and this is proposed for future study efforts.

## **Conclusion**

This article examines the usefulness and efficacy of media content analysis as a

methodological primer in QoL studies, at the community level. Specifically, the article elucidates how analysis of letters to editor and online responses to opinion articles by visitors to a newspaper's website could be used to build a fundamental understanding of QoL, in a rural community, during a period of rapid social and economic transformation. The detailed and descriptive data presented shows that media content analysis is capable of producing outcomes and data that are comparable with other qualitative research methods. The proposed role of media content analysis in a QoL study is as a methodological primer. The role of media content analysis can be limited in both theory development and description of the lived experience, because both sampling and analysis procedures make the theoretical relationship between concepts difficult to infer from findings. However, as a methodological primer, media content analysis has the potential to play a contributory role in a comprehensive research program as demonstrated by the case of western North Dakota.

## References

- Alter, T., Brasier, K., McLaughlin, D., and Willits, K. A. 2010. "Baseline Socioeconomic Analysis for the Marcellus Shale Development in Pennsylvania." Online. The Institute for Public Policy & Economic Development at Wilkes University.
- Anderson, B. J. and Theodori, G. L. 2009. "Local Leaders' Perceptions of Energy Development in the Barnett Shale." *Southern Rural Sociology*, 24 (1): 113-129.
- Anderson, O. L. 2011. "North Dakota's Energy Landscape." *North Dakota Law Review*, 85(1): 715-722.
- Bangsund, D. A. and Leistriz, F. L. 2011. "Economic Contribution of the Petroleum Industry to North Dakota." Agribusiness & Applied Economics Report 676S, North Dakota State University, Department of Agribusiness and Applied Economics.
- Besser, T. L., Recker, N., and Agnitsch, K. 2008. "The Impact of Economic Shocks on Quality of Life and Social Capital in Small Towns." *Rural Sociology*, 73(4): 580-604.
- Brasier, K. J., Filteau, M. R., McLaughlin, D. K., Jacquet, J., Stedman, R. C., Kelsey, T. W., Goetz, S. J. 2011. "Residents' Perceptions of Community and Environmental Impacts from Development of Natural Gas in the Marcellus Shale: A Comparison of Pennsylvania and New York Cases." *Journal of Social Sciences*, 26(1): 32-61.
- Crawley, C. E. 2007. "Localized Debates of Agricultural Biotechnology in Community Newspapers: A Quantitative Content Analysis of Media Frames and Sources." *Science Communication*, 28(3): 314-346.
- Crowe, J., Ceresola, R., and Silva, T. 2015. "The Influence of Value Orientations, Personal Beliefs, and Knowledge about Resource Extraction on Local Leaders' Positions on Shale Development." *Rural Sociology*. Early view published online. DOI: 10.1111/ruso.12071.
- Cummins, R. A. 1997. *Comprehensive Quality of Life Scale- School Version*. 5<sup>th</sup> ed. Victoria, Australia: School of Psychology, Deakin University.
- Diener, E. and Suh, E. 1997. "Measuring Quality of Life: Economic, Social, and Subjective Indicators." *Social Indicators Research*, 40:189- 216.
- Epley, E. and Menon, M. 2008. "A Method of Assembling Cross-sectional Indicators into a Community Quality of Life." *Social Indicator Research*, 88: 281-296.
- Felce, D. and Perry, J. 1995. "Quality of Life: Its Definition and Measurement." *Research in Developmental Disabilities*, 16(1): 51-74.
- Fernando, F. N. and Cooley, D. R. 2015. "An Oil Boom's Effect on Quality



- of Life (QoL): Lessons from Western North Dakota.” *Applied Research in Quality of Life*. Early view published online. DOI: 10.1007/s11482-015-9422-y
- Freudenberg, W. R. 1984. “Boomtown's Youth: The Differential Impacts of Rapid Community Growth on Adolescents and Adults.” *American Sociological Review*, 49(5): 697-705.
- \_\_\_\_\_, W. R. 1986. “The Density of Acquaintanceship: An Overlooked Variable in Community Research?” *American Journal of Sociology*, 92(1):27-63.
- \_\_\_\_\_, W. R., and Gramling, R. 1992. “Community Impacts of Technological Change: Toward a Longitudinal Perspective.” *Social Forces*, 70(4): 937-955.
- Freyenberger, D. 2013. “Amanda Knox: A Content Analysis of Media Framing in Newspapers Around the World.” *Electronic Theses and Dissertations*. Thesis. Department of Communication. East Tennessee State University. Paper 1117. <http://dc.etsu.edu/etd/1117>.
- Glaser, B. G. and Strauss, A. L. 1967. *The Discovery of Grounded Theory: Strategies for Qualitative Research*. New York: Aldine De Gruyter.
- Gray, J. H. and Densten, I. L. 1998. “Integrating Quantitative and Qualitative Analysis Using Latent and Manifest Variables.” *Quality & Quantity*, 32: 419-431.
- Gilmore, J. S. and Duff, M. K. 1974. *A Growth Management Case Study: Sweetwater County*. Wyoming: Denver Research Inst., Univ. Denver, Denver, CO.
- Gramling, B. and Brabant, S. 1986. “Boomtowns and Offshore Energy Impact Assessment: The Development of a Comprehensive Model.” *Sociological Perspectives*, 29(2): 177-201.
- Hsieh, H. F. and Shannon, S. 2005. “Three Approaches to Qualitative Content Analysis.” *Qualitative Health Research*. 15: 1277- 1288.
- Hoffman, H. L. 2006. “Is Internet Content Different After All? A Content Analysis of Mobilizing Information in Online and Paper Newspapers.” *Journalism and Mass Communication Quarterly*, 83 (1): 58-76.
- Jacquet, J. B. 2011. “Workforce Development Challenges in the Natural Gas Industry.” Working Paper Series for a Comprehensive Economic Impact Analysis of Natural Gas Extraction in the Marcellus Shale, Cornell University Department of City and Regional Planning.
- McAdams, K. C., Henry, T.M., Guensburg, C., and Moeller, S.D. 2004. “An Analysis of US Newspaper Coverage of Early Childhood Education.” Online. Philip Merrill College of Journalism.
- Kelsey, T. W., Metcalf, A., and Salcedo, R. 2012. “*Marcellus Shale: Land Ownership, Local Voice, and the Distribution of Lease and Royalty Dollars*.” Pennsylvania State Center for Economic and Community Development Research Paper Series.
- Kirilenko, A. P. and Stepchenkova, S.O. 2012. “Climate Change Discourse in Mass Media: Application of Computer-Assisted Content Analysis.” *Journal of Environment Studies and Science*. Online. DOI: 10.1007/s13412-012-0074-z.
- Kirilenko, A. P., Stepchenkova, S.O., Romsdahl, R., and Mattis, K. 2012. “Computer-Assisted Analysis of Public Discourse: a Case Study of the Precautionary Principle in the US and UK press.” *Quality and Quantity*, 46:501-522.
- Kohlbacher, F. 2006. “The Use of Qualitative Content Analysis in Case Study Research.” *Qualitative Social Research*, 7 (1). Online.
- Krannich, R. S. and Greider, T. 1984. “Personal Well-Being in Rapid Growth and Stable Communities: Multiple Indicators and Contrasting Results.” *Rural Sociology*, 49(4): 541-552.
- Lasswell, H. D., Lerner, D., and Pool, I. de

- S. 1952. *The Comparative Study of Symbols*, Stanford, CA: Stanford University Press.
- Leitmann, J. 1999. "Can City QOL Indicators be Objective and Relevant? Towards a Participatory Tool for Sustaining Urban Development." *Local Environment*, 4(2): 169-180.
- Lovejoy, S. B., Little, R. L. 1979. "Energy Development and Local Employment." *The Social Science Journal*. 16(2):169-190.
- Maki, K. C., and Leistriz, F. L. 1981. "Socioeconomic Effects of Large-Scale Resource Development Projects in Rural Areas: The Case of McClean County." North Dakota. Department of Agricultural Economics. North Dakota State University.
- Mason, J. 2012. "Oil Production Potential of the North Dakota Bakken." *Oil & Gas Journal*. 110 (4). Online.
- Macnamara, J. R. 2003. "Media Content Analysis—Its Uses, Benefits and Best Practice Methodology." *Asia Pacific Public Relations Journal*, 6(1): 1–34.
- Mathews, B. C. 1910. "A study of a New York daily." *Independent*, 68: 82–86.
- Mayring, P. 2000. *Qualitative Inhaltsanalyse. Grundlagen und Techniken* (7<sup>th</sup> ed.). Weinheim: Psychologie Verlags Union.
- Michalos, A. C., Sirgy, M. J., and Estes, R. J. 2006. "Introducing the Official Journal of the International Society for Quality-of-Life Studies: Applied Research in Quality of Life (ARQOL)." *Applied Research in Quality of Life*, 1:1–3.
- Murdock, S. H. and Leistriz, F. L. 1979. *Energy Development in the Western United States: Impact on Rural Areas*. New York: Praeger.
- Neuendorf, K. A. 2011. "Content Analysis: A Methodological Primer for Gender Research." *Sex Roles*. 64:276–289.
- Ondracek, Witwer, & Bertsch (OWB). 2010. "North Dakota Communities Acutely Impacted by Oil and Gas Development: Williston Housing Demand Analysis," Online.
- Pellechia, M. G. 1997. "Trends in Science Coverage: a Content analysis of Three US Newspapers: Public Understand." *Science*, 6: 49–68.
- Perdue, R. R., Long, P. T., and Kang, Y. S. 1999. "Boomtown Tourism and Resident Quality of Life: The Marketing of Gaming to Host Community Residents." *Journal of Business Research*, (44): 165-177.
- Rathge, R., Clemenson, M. & Danielson, R. 2002. "North Dakota Population Projections: 2005 to 2020." North Dakota State Data Center.
- Recker, N. L. 2009. "Resilience in Small Towns: An Analysis of Economic Shocks, Social Capital, and Quality of Life." Graduate Theses and Dissertations. Iowa State University. Paper 10983.
- Reynolds, R. R. Jr., Wilkinson, K. P., Thompson, J. G., and Ostresh, L. M. 1982. "Problems in the Social Impact Assessment Literature Base for Western Energy Development Communities." *Impact Assessment*, 1(4): 44-59.
- Riffe, D., Lacy, S., and Fico, F. 1998. *Analyzing Media Messages: Using Quantitative Content Analysis in Research*. Mahwah, NJ: Erlbaum.
- Rogerson, R. J. 1999. "Quality of Life and City Competitiveness." *Urban Studies*, 36 (5-6): 969-985.
- Ruddell, R. 2011. "Boomtown Policing: Responding to the Dark Side of Resource Development." *Policing*, 5 (4): 328–342.
- Shoemaker, P. J. and Reese, S. D. 1996. *Mediating the Message: Theories of Influences on Mass Media Content*. (2nd ed.). White Plains, NY: Longman.
- Stemler, S. 2001. "An Overview of Content Analysis." *Practical Assessment, Research and Evaluation*. 7 (17), Online.
- Stepchenkova, S. 2012. "Content Analysis." In L. Dwyer, A. Gill, and N. Seetaram (Eds.), *Handbook of Research Methods in Tourism: Quantitative and*

- Qualitative Approaches*. UK: Edward Elgar Publishing.
- Sullivan, A. 2012. "Media Convergence of Newspapers: A Content Analysis of the Houston Chronicle's Print and Web based Content." Thesis. School of Communication Studies. Liberty University
- Weber, R. P. 1990. *Basic Content Analysis*. Beverly Hills, CA: Sage.
- Williamson, J., and Kolb, B. 2011. "Marcellus Natural Gas Development's Effect on Housing in Pennsylvania." Center for the Study of Community and the Economy.

---

**Felix Fernando** was born and raised in Sri Lanka. He received a B.S. in Forestry and Environmental Science with a minor in Management from University of Sri Jayawardenapura. He received his MBA and Ph.D. in Natural Resources Management from North Dakota State University. In March 2016, Felix started his work at the Hanley Sustainability Institute at University of Dayton as a Post-Doctoral Assistant in Sustainability. Felix is also a scholar at the Northern Plains Ethics Institute. His research interests include Ethics of Community Development, Quality of Life, Environmental Ethics, and Distributional Justice.