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Changes in Job Satisfaction through Time in Two Major New England Fishing Ports

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Abstract

Fishing communities in the U.S. have been the subject of great transformation due to changes in availability of resources and the implementation of different rules and regulations to manage the fisheries and conserve fish stocks. Job satisfaction has been widely regarded as an important component of well-being especially among fishermen because the occupation of fishing includes attributes of 'adventure,' 'challenge,' and 'being outdoors' infrequently found in other employment. It has been previously demonstrated that management driven changes to fishing communities can directly and indirectly affect aspects of fishermen's job satisfaction and, consequently, their well-being. This paper presents a unique through time comparison of job satisfaction among fishermen between three time periods (1977, 2009/10, and 2013/14) in two major New England fishing ports: New Bedford, Massachusetts, and Point Judith, Rhode Island. Results show important differences between the three time-periods analyzed that can be associated with important changes in fisheries management in the last few decades. Differences found between ports also emphasize important socio-cultural aspects influencing job satisfaction and well-being in fishing communities. This study demonstrates that job satisfaction variables are valuable indicators of change in the context of fisheries and therefore provide valuable information for the development of future management plans that take into account important aspects of fishing community well-being.

Changes in Job Satisfaction through Time in Two Major New England Fishing Ports

1. Introduction

Job satisfaction in U.S. fisheries has long been recognized as an important aspect related to fishermen's adaptation to changes in the fishery (Pollnac and Poggie 1988). Although satisfaction with aspects of one's job is important in any occupation, it is especially significant in fishing jobs. In his study of psycho-cultural systems in the island of St. Kitts, Aronoff (1967) provides an excellent illustration: "the fishermen were the only people in the village who spoke of pleasure in their work, and would call me to witness the beauties of their colorful fish [...]" (1967: 50). Among fishermen, the structure of job satisfaction includes attributes of 'adventure,' 'challenge,' and 'being outdoors' infrequently found in other occupations (Apostle et al. 1985; Pollnac and Poggie 1988, 2008; Binkley 1995; Pollnac et al. 2006). Understanding these satisfactions derived from fishing is important because the more attached people are to their jobs, the more difficult it is to either leave or deal with significant changes to the occupation. For example, Freeman (1977), while investigating relationships between individual's behavior and labor market mobility, found satisfaction with one's occupation to be a major determinant of whether or not people would consider quitting their jobs. For people presenting strong occupational attachment, the prospect of losing their jobs may represent not only the loss of income, but of part of their self-identity (Marshall et al. 2007).

Research in industrialized countries demonstrates that, generally, job satisfaction affects individuals' health and productivity and it is related to mental health, longevity, and social illnesses such as family conflict and violence, and substance abuse (Locke 1976; Bruck et al. 2002; Pollnac et al. 2006). Levels of job satisfaction have also been associated with personality traits (Judge et al. 2002; Bruk-Lee et al. 2009). Pollnac and Poggie (2006, 2008) argue that individuals with a personality type characterized as active, adventurous, aggressive, and courageous are attracted by and attached to activities and professions, such as fishing, that enable fulfillment of these needs. Also, for many fishermen, occupational attachment is developed and reinforced by familial traditions and interactions with other fishermen during and outside of working hours (Marshall et al. 2007). It has been demonstrated in the literature that a great deal of fishermen engaged in large- as well as small-scale fisheries across the globe do not see fishing as "just a job" (Pollnac and Poggie 2008; Pollnac et al. 2001; Acheson 1988; Glazier 2007; Smith and Clay 2010; Bavinck 2012; Sweke et al. 2016; Pascoe et al. 2015). For example, Muallil et al. (2011), in a study investigating Filipino fishermen behavior toward exiting the occupation, found that half of the fishermen interviewed would not leave the occupation even if monetary gain from fishing fell to only about 15% of their current income.

The capacity to maintain livelihoods that suit both material and moral needs is extremely important in order to avoid negative cultural transformations in the face of change (Crane 2010). According to Poggie et al. (1995), "commercial fishing is an occupation that has all the prerequisites for being considered an occupational subculture" (1995: 411). Among the reasons for that is the fact that fishermen present distinct ideas and behaviors and are subject to factors and pressures that are unique to their life-style (Poggie et al. 1995). For example, in a comparison between fishermen and millworkers in New England with regard to aspects of deferred gratification, Pollnac et al. (1975) found that characteristics of the occupation of fishermen (e.g. uncertainty of catch and periodicity of income) significantly influenced their attitudes toward financial planning and perception of the future. Other studies comparing fishermen and land workers have similarly concluded that aspects intrinsic to the

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4 fishing activity contribute to its characterization as a unique occupational subculture (Aronoff 1967;
5 Griffith and Valdez-Pizzini 2002). The cultural component of the occupation of fishing reinforces the idea
6 that changes affecting the activity have the potential to impact more than just fishermen's source of
7 income; they can transform the social fabric and undermine the social resilience of entire fishery-
8 dependent communities.
9

10
11 Fishing communities worldwide have been the subject of intense change and transformation,
12 especially in the past couple of decades, mostly due to declining fish stocks and the implementation of
13 different rules and regulations to manage the fisheries and conserve fish populations. In the U.S., since the
14 implementation of the Fishery Conservation and Management Act of 1976 (FCMA)¹, numerous
15 regulations have been implemented that have imposed significant and rapid changes to the fishing activity
16 by, for instance, reducing allowable catch of many important species, restricting gear use, partially and
17 entirely closing different areas, or restricting entry in different fisheries by allocating property rights to
18 fishermen meeting specific criteria (e.g. Individual Fishing Quotas [IFQs]). These measures are put in
19 place with the ultimate goal of reducing effort in order to rebuild fish populations whose status is believed
20 to be below optimal biological levels. However, management strategies that aim at reducing effort in
21 fisheries frequently involve a decrease in the number of fishing boats and consequently of fishermen
22 (Pinkerton and Edwards 2009; Lazrus et al. 2011). Plans that depend on displacing fishermen or reducing
23 their ability to make a living out of fishing may have very important negative effects on their overall well-
24 being and ultimately impact individual and community resilience.
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30 Considerations of individual and community subjective well-being have recently become more
31 prominent in different research fields (Oswald and Wu 2010; Layard 2010; Ballas and Tranmer 2012) and
32 specifically in fisheries research (see Smith and Clay 2010). Job satisfaction is an important component of
33 well-being and, as discussed above, considerably so among fishermen. It has been previously
34 demonstrated that management driven changes to fishing communities can directly and indirectly affect
35 aspects of fishermen's job satisfaction and, consequently, well-being (see Pollnac et al. 2006, 2015). Also,
36 the level of attachment that fishermen present towards their jobs can influence whether management plans
37 will be successful or fail. For example, during a vessel buyback program established in 2000 as an
38 attempt to reduce fishing effort in the Northeast region, thirty percent of the fishermen who were
39 compensated by the program used the money to buy new boats and only four percent actually left the
40 industry (MacDaniel 2000, see Curtis and Squires 2004 for an overview on vessel buyback program
41 impacts). Understanding these intricate relationships between social and managerial aspects in fisheries is
42 essential when developing and projecting possible outcomes of proposed rules and regulations.
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46 Fisheries social science often focuses on the processes through which changes in the natural and
47 social environment affect fishing communities, their culture and livelihood. Job satisfaction variables can
48 be extremely valuable because they provide results that are comparable over time and between different
49 communities or regions. Social scientists have used measures of job satisfaction shaped for specific
50 purposes for many decades (Meng 1990; Clark 1997; Syptak et al. 1999; Smyth et al. 2009). In fisheries,
51 most well-being and job satisfaction studies relate either explicitly or implicitly to Maslow's (1954)
52 hierarchy of needs (e.g. Aronoff 1967), which includes three categories based on the different aspects
53 potentially fulfilled by the occupation of fishing: basic needs, social needs, and needs of self-
54 actualization.
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58 ¹ The Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. 1801-1884) [online URL]:
59 http://www.nmfs.noaa.gov/msa2007/docs/act_draft.pdf
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4 In the mid-1970s anthropologists Pollnac and Poggie developed a list of 22 questions designed to
5 measure job satisfaction among fishermen (see Pollnac and Poggie 1988). Many of the items were
6 adapted from Schletzer's (1965) 62-item scale designed to measure general job satisfaction in U.S.
7 culture. Four items unique to the occupation of fishing were added. Most of the items used were related to
8 high-frequency responses to open-ended interviews with 108 southern New England fishermen who were
9 requested to report what they "liked and disliked about fishing." The list was constructed, uninformed by
10 Maslow's hierarchy of needs (Maslow 1954, 1968); the relationship was purely serendipitous. While
11 some research has developed quality of life indicators based on Maslow's theory (e.g. Sen et al. 2012;
12 Hagerty 1999; Sirgy 1986) Pollnac and Poggie's (1988) job satisfaction indicator development
13 unexpectedly validated Maslow's theoretical hierarchy of needs.
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17 The list of 22 items was factor analyzed using common factor analysis and orthogonal rotation
18 (varimax). Number of factors was determined using the Scree Test (Cattell 1966). While pondering the
19 meaning of the factors, it was noted that most items in the three factors seemed to be clearly related to
20 Maslow's hierarchy of needs—providing unanticipated support for Maslow's theory. The three
21 components of job satisfaction derived—Basic Needs (Maslow's physiological & safety needs), Social
22 and Psychological Needs (Maslow's love & belongingness needs), and Self Actualization (same as
23 Maslow's)—have been demonstrated to be relatively robust (Binkley 1995) and have been consistently
24 used for several decades (e.g. Pollnac et al. 2001, 2006; Pollnac and Poggie 2008; Bavinck 2012;
25 Fernandez 2012). Throughout all the follow-up analyses, although occasionally items might have moved
26 between categories, the structure of the analyses remained remarkably consistent. The time-tested items
27 classified into the three categories related to Maslow's hierarchy of needs can be found in Pollnac and
28 Poggie (1988). One item in the original list "Performance of state and federal officials" was eliminated
29 because it did not manifest a sufficiently high loading in the initial analyses.
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33 By far, the Maslow category that has been most consistent and highly rated in terms of
34 satisfaction across almost all fisheries examined is the Self-Actualization component. Importantly, high
35 levels of self-actualization have been consistently associated with a fisher response that he would go back
36 into the same occupation (fishing) if he had his life to live over, a measure cited as the best single
37 indicator of job satisfaction (Robinson et al. 1969). Lambert et al. (2015), in a brief discussion of
38 Maslow's self-actualization component, note that it entails "peak experiences," a concept used by Glazier
39 (2007) to refer to exceptionally unforgettable experiences (hooking a big fish, dealing with the dangers of
40 the sea, etc.) that the author notes, draw one back into fishing again and again. These could be viewed as
41 hedonic activities, associated with Pollnac and Poggie's (1988) self-actualization items such as adventure,
42 being out on the water and working outdoors, but some researchers have suggested that the pleasures
43 from such hedonic activity are short lived, existing only during the activity, and that those primarily
44 engaged in such activities report lower levels of life satisfaction, or well-being (Huta and Ryan 2010;
45 Waterman et al. 2010). In contrast, our research has found statistically significant positive relationships
46 between levels of self-actualization and well-being (see Pollnac et al. 2015). Lambert et al. (2015: 313),
47 however, categorize self-actualization as being composed of eudiamonic activities, which contribute "[...]
48 to higher life satisfaction, greater meaning in life, increased positive affect, and greater potential to reach
49 one's best self." Lambert (2015: 313) further notes that the peak experiences associated with self-
50 actualization are "[...] events in which individuals feel intense, positive emotions whereby life is
51 reaffirmed"—justifying its critical importance as a component of job satisfaction among fishermen.
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55 For improved time efficiency while conducting surveys, the original 22-item job satisfaction scale
56 (see Pollnac and Poggie 1988) was later reduced to nine items (see Pollnac et al. 2015). Principal
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4 component analysis of several data sets from a wide range of fishery types (Alaska, Dominican Republic,
5 and New England, USA) was used to identify items most representative of the original three components,
6 in other words, those items that account for the most variance in each component (Pollnac et al. 2015).
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8 This paper presents a unique through time comparison of data on job satisfaction among
9 fishermen collected in three time periods: 1977, 2009/10, and 2013/14, using the 9-item job satisfaction
10 scale (Pollnac et al. 2015) in two major New England fishing ports: New Bedford, Massachusetts, and
11 Point Judith, Rhode Island. Analyzing changes through time in job satisfaction among fishermen will
12 increase our understanding of some of the important transformations and resultant impacts that New
13 England ports have experienced in the past few decades. Among such transformations are the more
14 frequent and drastic changes in fishery regulations put in place to manage declining fish stocks. Under the
15 current context of a growing population and demand for fishery resources, coupled with changes in
16 resource distribution and availability as a result of natural and/or man-made environmental and climactic
17 changes, it is predicted that further challenges and transformations involving fishery management will
18 occur. It is critical to understand impacts of these transformations on those who will be directly affected
19 by them – the fishermen – and thus help create policies that will take into account social impacts with the
20 objective of minimizing negative changes in fishing communities.
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26 **2. The Fishing Ports**

27 **2.1. Point Judith, RI**

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31 The port of Point Judith (41°23'59"N 71°30'23"W), also known as Galilee, is located on Point
32 Judith Cape, in the town of Narragansett, Rhode Island. The port is located in the village of Galilee, which
33 borders the village of Point Judith to the east and the village of Jerusalem, home to a small fishing port, to
34 the west across the Point Judith channel (Figure 1).
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54 Figure 1. Location of the port of Point Judith in Narragansett, Rhode Island.
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57 Point Judith has been Rhode Island's largest and most fruitful fishing port for many decades,
58 ranking numerous times among the East Coast's most productive fishery landing sites (cf. Poggie and
59 Gersuny 1974). In 2013 (most recent data available) 54.6 million pounds of catch were landed in Point
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4 Judith with a total value of 46.7 million dollars, ranking the port 23rd in the country in terms of value
5 landed (NOAA 2015). For means of comparison between the time periods analyzed in this study, in 2009
6 a total of 39.9 million pounds of catch were landed in Point Judith worth 32.4 million dollars (35.3
7 million in 2015 dollars), ranking the port 20th in the country in terms of value (NOAA 2015). In 1977 a
8 total of 42.9 million pounds of catch were landed in the port with a total value of 6.7 million dollars (25.9
9 million in 2015 dollars) (NOAA 2015) A country wide ranking including Point Judith is not available for
10 1977².
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13 The port is characterized by diverse fishing activities using different gear types such as trawl nets,
14 scallop and hydraulic dredges, as well as pots and traps to catch lobster, crabs, and finfish. In 2013, the
15 species with the highest total weight landed in Point Judith was Atlantic herring (15.1 million pounds
16 worth 1.7 million dollars) and the species with the highest total value landed was scallops (13.4 million
17 dollars for 1.2 million pounds). Other important resources in the port both in terms of weight and value
18 landed were the species complex³ butterfish/mackerel/squid (10.1 million pounds, worth 10.2 million
19 dollars) and the complex summer flounder/scup/black sea bass (7.6 million pounds, worth 8.6 million
20 dollars). Lobsters also represent an important fishery in Point Judith, especially in terms of value landed
21 (6.5 million dollars for 1.5 million pounds) (NOAA 2015). The diverse Point Judith fleet is currently
22 comprised of about 100 vessels of small, medium, and large size; some fish inshore and make day trips
23 and some fish offshore on trips lasting 2-3 days on average and up to one week or more in duration.
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29 2.2. New Bedford, MA 30 31

32 New Bedford (41°39'06"N 70°56'01"W) is situated in Bristol County, in the southeastern section
33 of the state of Massachusetts. The city is bordered by Dartmouth on the west, Freetown on the north,
34 Fairhaven and Acushnet on the east, and Buzzards Bay on the south. New Bedford Harbor is situated at
35 the mouth of the Acushnet River, which flows south into Buzzards Bay and the Atlantic Ocean (Figure 2).
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55 ² The earliest available ranking is for 1981 and Point Judith was 35th in terms of value landed that year with 13.2
56 million dollars (34.1 million in 2015 dollars) for 41 million pounds of catch landed (NOAA 2015).
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58 ³ A species complex represents a group of species that are managed together through the same Fishery Management
59 Plan (FMP) developed by the appropriate management authority.
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Figure 2. Location of the port of New Bedford, Massachusetts.

Although the range of species landed in New Bedford is diverse, the primary target species are generally groundfish and scallops. Groundfish represented the most important fishery in the port for many years until fish stocks off the coast of New England showed signs of decline in the 1930s contributing to an increase in focus on the market for scallops in New Bedford. By the 1950s the port accounted for 70 percent of all the scallop landings in the U.S. (Hall-Arber et al. 2001). New Bedford has ever since been one of the major scallop ports in the country. Since 2000, the port has maintained its position as number one in the U.S. in terms of value landed due primarily to its large scallop fleet. In 2013, landed value for the port represented a total of 379 million dollars for 129.8 million pounds of catch (NOAA 2015). In 2009 New Bedford also ranked first in terms of value with a total of 170 million pounds worth 249.2 million dollars (271.6 million in 2015 dollars) (NOAA 2015). In 1977 the port ranked 4th (National Fisherman 1978) with 71.6 million pounds landed worth 43.3 million dollars (167.5 million in 2015 dollars) (NOAA 2015).

In 2013, the species with the highest weight landed in the port was Atlantic herring (46.5 million pounds, worth 4.8 million dollars) and the most important species in terms of value was scallops (298.9 million dollars for 26.3 million pounds). Other important species landed in New Bedford in 2013 in terms of weight and value were ocean quahog (14.5 million pounds, worth 10.2 million dollars) and surf clam (13.2 million pounds, worth 9.9 million dollars) (NOAA 2015). The New Bedford fleet is comprised of more than 200 vessels, mostly of large size, targeting mainly groundfish and scallops, but also smaller vessels targeting those and other species such as lobster and crabs. The average trip length in New Bedford is typically about one week in duration with many large vessels spending as long as two weeks offshore.

3. Methods

All data used in the present study were obtained through face-to-face interviews conducted with fishermen from Point Judith and New Bedford as part of three different and unrelated data collection efforts in 1977, 2009/10, and 2013/14. The sampling methods used during the three data collection efforts

were similar and consisted of intercept approaches at the docks at different times of the day and days of the week to minimize potential bias. This sampling method was considered appropriate to obtain a representative sample of fishermen in the ports studied because it maximizes response rates for hard-to-find individuals (Miller et al. 1997), such as crew, for whom no registry or comprehensive lists are available in New England, making it virtually impossible to draw a strictly random sample representing all fishermen in the region (Pollnac et al. 2015). The sample obtained in 1977 consisted of 122 fishermen: 79 from Point Judith and 43 from New Bedford. The 2009/10 sample consisted of 154 fishermen: 78 from Point Judith and 76 from New Bedford. The 2013/14 sample consisted of 92 fishermen: 51 from Point Judith and 41 from New Bedford.

Items included in the 9-item job satisfaction scale described above (Table 1) were consistently used during all three time periods, thus allowing for reliable comparisons. During the surveys, fishermen were asked about their level of satisfaction with each of the nine items and their responses were coded on a Likert scale of one to five, where 1 represents ‘very dissatisfied’ and 5 ‘very satisfied,’ with the mid-point (3) representing ‘neutral,’ i.e. neither dissatisfied or satisfied. The three components of job satisfaction (Basic Needs, Social and Psychological Needs, and Self-actualization) were calculated by summing the scores for the three items that have consistently explained the most variance in each component (the highest factor scores) in multiple analyses (see Pollnac et al. 2015). Potential scores for the components, therefore, range from 3 to 15, with a mid-point of 9. Table 1 shows the nine items in the job satisfaction scale and the grouping for each of the three components.

Table 1. The three job satisfaction components and the items summed to create them. Likert scale range in parenthesis.

BASIC NEEDS (3-15)
Actual earnings from fishing (1-5)
Predictability of earnings from fishing (1-5)
Safety of the job (1-5)
SOCIAL AND PSYCHOLOGICAL NEEDS (3-15)
Fatigue from the job (1-5)
Healthfulness of the job (1-5)
Time spent away from home (1-5)
SELF-ACTUALIZATION (3-15)
Adventure of the job (1-5)
Challenge of the job (1-5)
Opportunity to be own boss (1-5)

Two additional job satisfaction questions were also posed during all three data collection efforts: “Would you advise a young person to enter fishing today?” and “Would you still fish if you had your life to live over?” Responses to these two questions were coded ‘yes’ (2), ‘maybe/depends’ (1), and ‘no’ (0). Background demographic information was also obtained during all three time periods. However, background questions varied slightly between efforts. The four demographic (independent) variables that were consistently collected in similar fashion and, therefore, included in the present study are: age, years of fishing experience, years of formal education, and number of relatives fishing.

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4 **4. Results**
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7 Table 2 shows results of descriptive statistics for all demographic questions comparing the three
8 time periods for Point Judith and New Bedford. Analysis of variance (ANOVA) comparisons between the
9 three time periods were statistically significant for all variables in both ports except for number of
10 relatives (kin) fishing in Point Judith, which showed no difference over time. In the two ports, both age
11 and fishing experience showed a considerable increase between the late 1970s and recent years (Table 2).
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Table 2. Mean values, standard deviation (in parenthesis) of demographic variables for Point Judith and New Bedford samples for each time period and results for analysis of variance (ANOVA) comparing the three time periods.

Variables	Point Judith				New Bedford			
	1977	2009/10	2013/14	F(df)	1977	2009/10	2013/14	F(df)
Age	33.9 (11.6)	43.7 (12.6)	45.2 (10.9)	19.139(2)*	35.1 (9.7)	44.2 (9.4)	46.1 (9.1)	17.579(2)*
Education	11.8 (1.9)	13.0 (1.9)	12.9 (2.0)	8.405(2)*	7.5 (4.3)	11.3 (2.9)	11.8 (2.2)	24.385(2)*
Experience	13.8 (11.3)	24.3 (15.8)	26.5 (11.3)	18.869(2)*	13.9 (12.2)	23.8 (9.3)	27.3 (9.9)	19.682(2)*
Kin Fishing	2.2 (3.2)	2.8 (11.3)	1.3 (1.9)	.645(2)	4.1 (3.1)	3.0 (3.9) ^A	1.9 (2.5)	5.175(2)**
N	79	78^B	51	-	43	76	41	-

* $p < 0.001$; ** $p < 0.01$

^AA total of 8 outliers with values greater than 20 were removed. Mean value before excluding cases was 6.7, sd = 10.9.

^BN=77 for Education in 2009/10 due to missing data.

The three time periods were compared in terms of the three job satisfaction components for each port. Kruskal-Wallis H and Mann-Whitney U non-parametric statistics were used due to the ordinal nature of the variables being tested. In Point Judith, results were statistically significant for two of the three components: Basic Needs and Social and Psychological Needs (see table 3). Basic Needs show a considerable decrease between 1977 and 2009/10 ($U=1,302, p<0.001$), and then a slight but statistically significant increase between 2009/10 and 2013/14 ($U=2,343.5, p<0.05$). Social and Psychological Needs showed a similar trend decreasing between 1977 and 2009/10 ($U=1,976, p<0.001$) but showed no statistically significant difference between 2009/10 and 2013/14 ($U=2,032, p>0.05$). The component Self-Actualization showed relative high scores and no difference through time. Mean values by time period for each component in Point Judith can be seen in Table 3.

Table 3. Mean values and standard deviation (in parenthesis) for the three job satisfaction components by time period and results of Kruskal-Wallis analysis of variance comparing time periods for Point Judith.

Time Period	Basic Needs	Social & Psychological Needs	Self-Actualization	N
1977	11.6 (1.7)	11.3 (2.0)	12.8 (1.7)	79
2009/10	9.0 (2.5)	9.7 (2.8)	12.4 (2.2)	77 ^A
2013/14	9.9 (2.5)	9.9 (2.4)	12.8 (1.7)	51
H ^B	41.146(2), $p<0.001$	18.118(2), $p<0.001$.308(2), $p>0.05$	-

^AN=76 for Basic Needs in 1977 due to missing data

^BKruskall-Wallis

In New Bedford, comparisons between time periods were statistically significant for only one of the three job satisfaction components: Self-Actualization (see table 4). Results show a considerable increase in average satisfaction with this component between 1977 and 2009/10 ($U=2,535, p<0.001$) and no difference between 2009/10 and 2013/14 ($U=1,600, p>0.05$). Scores on all components and results of statistical comparisons for New Bedford can be seen in Table 4. Figure 3 shows scores for both Point Judith and New Bedford for the three job satisfaction components through time plotted in a three dimensional space for comparison.

Table 4. Mean values and standard deviation (in parenthesis) for the three job satisfaction components by time period and results of Kruskal-Wallis analysis of variance comparing time periods for New Bedford.

Time Period	Basic Needs	Social & Psychological Needs	Self-Actualization	N
1977	11.0 (1.8)	9.7 (1.5)	9.6 (2.5)	42
2009/10	10.1 (3.0)	10.0 (2.6)	12.5 (2.6)	76
2013/14	10.7 (2.7)	9.3 (2.6)	12.8 (2.0)	41
H ^A	2.287(2), $p>0.05$	2.578(2), $p>0.05$	35.908(2), $p<0.001$	-

^AKruskall-Wallis

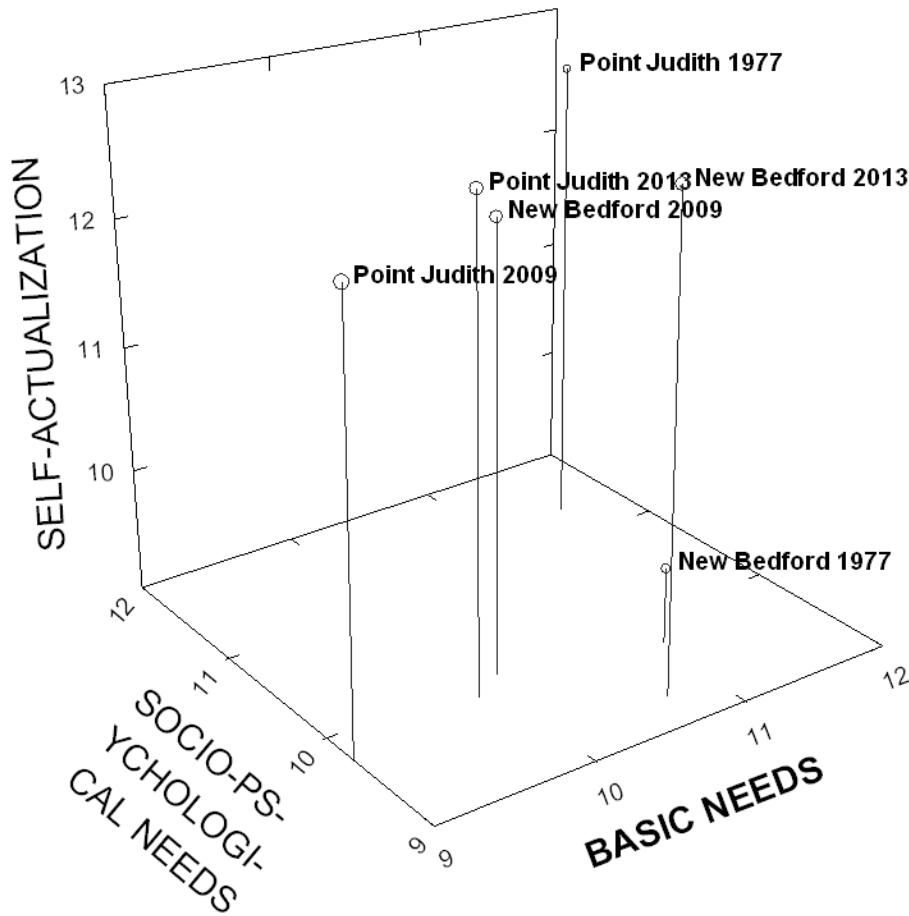


Figure 3. Three-dimensional space composed of the three job satisfaction components showing scores for each time period analyzed by port.

In Point Judith, results of comparisons through time involving the additional job satisfaction questions showed similar trends for both variables. The frequency of positive responses to the questions “Would you advise a young person to enter fishing?” and “Would you still fish if you had your life to live over?” shows a decreasing trend through time that was statistically significant ($\chi^2=44.791(4)$, $p<0.001$ and $\chi^2=14.398(4)$, $p<0.01$, for each question respectively). In New Bedford, the same trend is observed for the question involving advising a young to enter fishing ($\chi^2=14.114(4)$, $p<0.01$) but no statistically significant differences were found with regard to willingness to become a fisherman if one could live life over ($\chi^2=1.507(4)$, $p>0.05$). Figures 4 and 5 show percentage of positive responses in contrast to negative and “maybe” responses combined to both additional job satisfaction questions in Point Judith and New Bedford for the three time periods analyzed.

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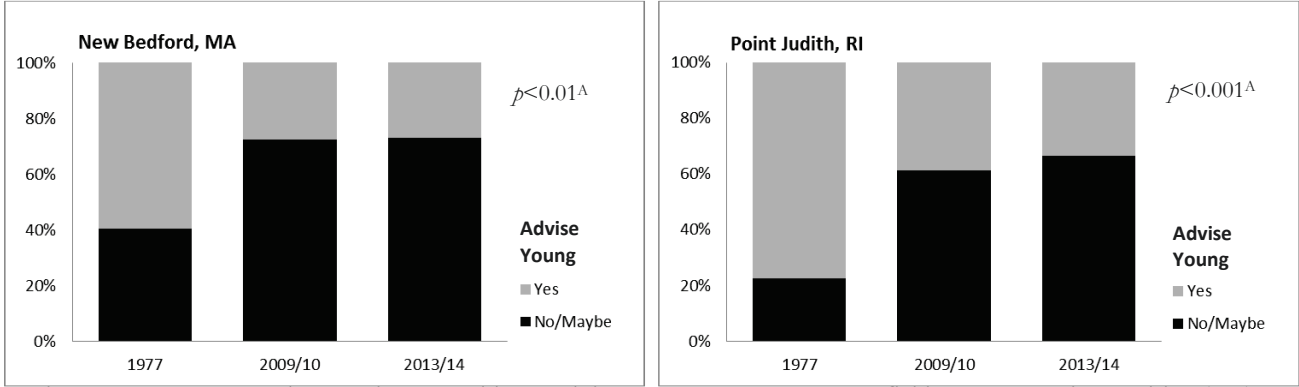


Figure 4. Responses to the question “Would you advise a young person to enter fishing?” comparing positive (yes) and negative (no/maybe) responses between the three time periods analyzed in New Bedford and Point Judith.

^AChi-square

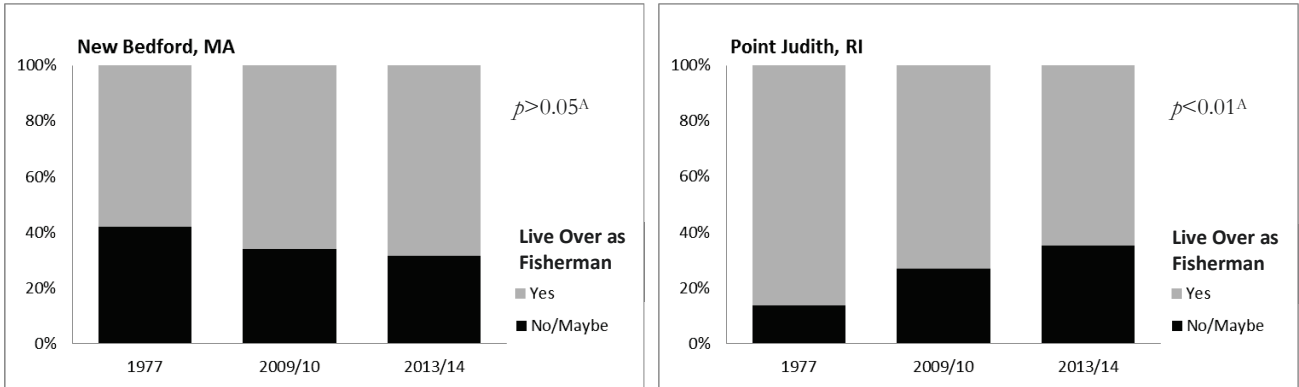


Figure 5. Responses to the question “Would you still fish if you had your life to live over?” comparing positive (yes) and negative (no/maybe) responses between the three time periods analyzed in New Bedford and Point Judith.

^AChi-square

5. Discussion and Conclusions

The objective of this study was to conduct unique comparative analyses of changes through time in aspects of job satisfaction among fishermen in two major and traditional New England ports: Point Judith, RI and New Bedford, MA. The variables used to assess job satisfaction have been extensively tested and used for many decades and their consistent application with successful results makes them suitable for a historic comparison such as the one conducted in the present study.

Overall changes through time regarding the three job satisfaction components differed considerably between the two ports analyzed. While in Point Judith statistically significant changes were observed for the components Basic Needs and Social and Psychological Needs and not for Self-Actualization, in New Bedford the latter was the only component to show statistically significant differences through time. Regarding the Basic Needs component in Point Judith, a statistically significant decrease in satisfaction was observed between 1977 and 2009/10 and a slight but statistically significant increase between 2009/10 and 2013/14. A similar pattern was observed for the component Social and Psychological Needs, although no statistically significant change was observed between 2009/10 and

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4 2013/14. These results suggest that 1977 Point Judith fishermen were generally more satisfied with
5 aspects of the occupation related to earnings, safety, time away from home, healthfulness, and fatigue
6 than their more current counterparts.
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8 Reasons for these changes are multiple. The late 1970s, after the implementation of the FCMA⁴,
9 was a time of optimism in U.S. fisheries. Foreign vessels had been banned from the American Exclusive
10 Economic Zone (EEZ) and considerable investment was taking place to boost the national fishing fleet. It
11 is likely that the higher levels of job satisfaction observed among 1977 Point Judith fishermen are a direct
12 consequence of such optimism. In subsequent years, especially in the 1990s, fish stock decline and the
13 resulting stricter regulations implemented in the fisheries considerably changed the activity, consequently
14 changing the way fishermen operated their business. Scarcity of resources leads to longer trips and more
15 effort to catch a full load while regulations limit total catch and fishermen's flexibility, increasing the
16 uncertainty and, consequently, stress. These changes are reflected in the observed decrease in job
17 satisfaction with Basic Needs and Social and Psychological Needs in Point Judith between 1977 and the
18 more recent years. It is interesting, however, that aspects related to the Self-Actualization component of
19 job satisfaction (challenge, adventure, and opportunity to be one's own boss) were not affected in Point
20 Judith. This finding supports a vast body of literature describing fishermen's unconditional attachment to
21 their occupation as it relates to aspects of independence and excitement of working outdoors "hunting"
22 for fish (see introduction).
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27 On the other hand, patterns observed for New Bedford with regard to the same job satisfaction
28 components were very different. Only the Self-Actualization component showed statistically significant
29 changes through time and levels of satisfaction were lower in 1977 than they were in 2009/10 and in
30 2013/14 (no statistically significant differences existed between the last two time periods). What could
31 have caused levels of satisfaction with Self-Actualization to be so low in New Bedford in 1977, a time of
32 general optimism in American fisheries? One aspect to consider is that as a result of this optimism, the
33 late 1970s saw a significantly rapid increase in the number of fishing boats in New England, especially
34 scallop boats. New Bedford fisheries rely heavily on its scallop industry and no other port in the U.S. –
35 and possibly in the world – lands more scallops. Doeringer et al. (1987: 31) stated: "the number of vessels
36 in the [New England] scallop fishery had increased greatly in response to high incomes around the time
37 the 200-mile limit went into effect [1976]." This rapid increase in the number of people coming into the
38 fisheries in the late 1970s could have negatively affected levels of job satisfaction among New Bedford
39 fishermen with aspects related to independence, freedom, and enjoyment. The rapid influx of newcomers,
40 many foreigners, could have affected Self-Actualization by increasing competition and by attracting to
41 New Bedford people more interested in the promise of high incomes and not necessarily attracted and
42 possibly repelled by the dangers and uncertainty associated with the adventure and challenges offered by
43 the occupation of fishing.
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49 Pollnac and Poggie (1988) analyzed the same 1977 job satisfaction data used in the present paper
50 against other demographic variables and found that, in New Bedford, foreign-born newcomer fishermen,
51 mostly from Portugal, presented lower levels of job satisfaction in general. They associated those results
52 with the potentially difficult transition from short trip fisheries usually practiced in their country of origin
53 to the long trip large vessel fisheries in New Bedford, which were often times described as 'factory-like
54 work' (Pollnac and Poggie 1988). The authors stated that most fishermen in New Bedford were perhaps
55 too challenged by being exposed to factors associated with the Self-Actualization component such as
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59 ⁴ See *fn* 1.
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4 being “out on the water and outdoors in the cold, rough, and dangerous North Atlantic” (1988: 894).
5 Pollnac and Poggie (1988) also pointed out that crewmen on large vessels, such as the ones comprising
6 the majority of the New Bedford fleet, did not own the means of production and had little control over
7 their labor. Those issues were emphasized by the large crews working on scallop vessels at the time. Until
8 1994 there was no limit on scallop crew size⁵ and it was not unusual for more than ten men to work
9 together aboard one vessel. Seara (2010) in a study investigating changes in perceptions of prestige in
10 New Bedford fisheries found that fishermen regarded the scallop fishery in the port in the late 1970s to be
11 of significantly lower prestige than in recent years. In Seara’s study, fishermen often described scallop
12 crew in the late 1970s as “factory workers” (Seara 2010).
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16 All the factors considered above would have been reflected in the 1977 New Bedford sample. At
17 this time, they represent possible explanations that are heavily rooted in the authors’ previous research
18 and vast knowledge of the ports. Nonetheless, further research is needed to better understand factors
19 affecting change through time in levels of satisfaction with the Self-Actualization component in New
20 Bedford.
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22 The other two job satisfaction components, Basic Needs and Social and Psychological Needs, did
23 not show statistically significant changes through time in New Bedford. Basic Needs is the component
24 related mainly to monetary aspects of job satisfaction and relative stability in high levels of satisfaction
25 with this component in New Bedford may reflect the consistently high market value for scallops, the main
26 fishery in the port for the time periods studied. Social and Psychological Needs is mainly influenced by
27 the time fishermen spend at sea and the physical and mental stress associated with the activity.
28 Traditionally, New Bedford vessels engage in long trips that can last for a week or more and this
29 characteristic has been generally unchanged through the time periods analyzed in this study and have not
30 apparently been influenced by changes in resource availability or management.
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33 With regard to the two additional job satisfaction questions on advising a young person to get into
34 fishing and still become a fisherman if one could have their life to live over, different patterns between
35 the two ports were observed only for the latter. While in Point Judith the frequency of negative responses
36 to this question increased, in New Bedford no statistically significant changes were observed through
37 time. The pattern observed in New Bedford as well as differences between the two ports with regard to
38 this variable are difficult to explain at this time and need to be further investigated with the use of more
39 in-depth ethnographic interviews.
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42 Attitudes toward advising a young person to get into fishing showed the same pattern in Point
43 Judith and New Bedford. In both ports, fishermen were gradually less willing to advise a young person to
44 fish in recent years than in 1977. This change is likely related to the increase in stricter regulations in the
45 fisheries in the past few decades, which added more complexity to the activity and created more
46 uncertainty in the future of the occupation in the eyes of many fishermen. Previous research investigating
47 impacts of management on aspects of job satisfaction and well-being among U.S. fishermen have found
48 that changes in the activity as a result of stricter regulations (e.g. limited entry, high price of permits,
49 increase in paperwork) were important factors affecting fishermen’s willingness to advise young people
50 to get into fishing (Pollnac et al. 2011, 2015). In Point Judith, the slight but statistically significant decline
51 in fishermen’s willingness to still become fishermen if they had their lives to live over are also most
52 likely related to these changes in fisheries management as well as changes in the availability of resources.
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59 ⁵ Amendment 4 to the scallop fishery management plan limited crew size to a maximum of seven men (NEFMC
60 1993).
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4 Results of this study suggest that the job satisfaction variables used are good indicators or
5 reflections of historic changes in the context of the fisheries. The findings also strengthen data gathered
6 by the authors and other researchers in previous studies that strongly suggest that substantial changes to
7 fishery management, such as it has been observed in the U.S. in the past few decades, can have significant
8 impacts on socio-economic and cultural factors, including aspects of job satisfaction among fishermen.
9 Further, the analyses conducted show that the consistent use of reliable variables through time can
10 elucidate important socio-economic and cultural transformations and, in particular, that investigating
11 fluctuations in job satisfaction through time can be a valuable tool to understand individual and group
12 reactions to external impacts in fisheries and, potentially, other sectors of society. Specifically in the
13 context of U.S. fisheries, understanding impacts of rapid environmental and managerial changes through
14 time and how they affect resource users is crucial for the development of future policy plans that will
15 mitigate negative impacts on fisheries while at the same time work to safeguard the resilience of
16 fishermen, their families, and ultimately entire communities.
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