Exploratory Review of Socioeconomic Terms & Phrases in SSC Minutes, 2000-2018
An iterative text analysis

Prepared for the Social Science Planning Team
North Pacific Fishery Management Council
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Background: The SSC advises the NPFMC on scientific and other technical matters. The Council's Social Science Planning Team (SSPT) has the opportunity to facilitate and enrich the use of economic and non-economic social science data in the management process. Review of SSC minutes provides a snapshot of the way that social sciences have been discussed over time. This analysis could inform research priorities or highlight issues of concern for the SSC.

Project Goal: Identify and summarize SSC discussions and guidance from 2000-2018 regarding the use of social science in the Council process, including as relates to Limited Access Privilege Programs (LAPPs). The purpose of this analysis is to summarize how the SSC has approached specific terms and themes, including, but not limited to, potential gaps in research topics and methods recommended by SSC members. This is a exploratory text analysis, and offers the potential to shed light on:

- Relative frequency of use across terms and phrases related to social science in the SSC process
- How the SSC perceives strengths and weaknesses of social science in the Council process
- Gaps in social science data collection and use in the Council process
- Potential avenues for future SSPT contribution

Data: SSC meeting minutes from June 2000 through February 2018 (n = 93) were obtained from: https://www.npfmc.org/meeting-minutes/.

Exploratory Text Analysis

- SSC minutes documents (n = 93) were uploaded to software program Atlas.ti 8.2.3 and MAXQDA 12 for analysis
- Specific keywords and phrases were identified for lexicol search of SSC minutes
- The initial keyword/phrase list was composed of non-economic social science words, in anticipation of the gap analysis performed by Kasperski and Szymkowiak. Economic terms were subsequently added, to allow for a richer review of the documents
- Searched each term/phrase to obtain raw number of occurrences
- Searched each phrase using the 'Grep' command, to find the number of times it occurs in the exact order within text.
- Preliminary results suggested that the 'Grep' command does not always catch every time a phrase is used (it is pretty good but worth scanning the raw number to check for other occurrences)
- Reviewed and identify each occurrence (raw and Grep) in context of its sentence string, to determine whether the term/phrase reflects economic or non-economic social science meaning
- Coded each relevant occurrence by 'Term' and 'Topic'

    - Coded each relevant occurrence within the Code Group 'Term' in Atlas
    - Coded each relevant occurrence with a secondary, overarching code group 'Topic' (e.g., sea lion issues)
- Made notes about the content of relevant occurrences for each term/phrase
- Summarized quantified keywords and phrases together with thematic groupings
- Autocoded remaining common and clear terms (e.g., 'Economics' and 'Social')

Results so far:

1) *Relative frequency of use across terms and phrases related to social science in the SSC process*
    a. A total of 35 terms (Appendix A) were coded into 44 topic categories (Appendix B)
    b. Economic terms occur much more frequently than social terms
    c. Terms that we are discussing at this meeting, like **'indigenous,'** 'LTK,' 'TEK,' or 'FEK,' have not been commonly spoken about at the SSC
    d. The most common occurrences of economic terms included **'cost,' 'market,'** and **'revenue'**
    e. The most common occurrences of non-economic terms included 'subsistence' and 'crew'
    f. The ten most common terms were economic/economy, cost, social/society, market, revenue, subsistence, crew, human dimension/human, profit, and qualitative (Table 1).

Table 1. The 10 most common terms

10 *Most* common terms		
	Term	**#**
1	Economic/economy	648
2	Cost	390
3	Social/Society	257
4	Market	217
5	Revenue	160
6	Subsistence	118
7	Crew	89
8	Human dimension/human	88
9	Profit	40
10	Qualitative	39

g. The ten most common topics that all socioeconomic terms arose under were research needs, crab rationalization, salmon bycatch, economic SAFE, ongoing research, SAFE, observer program, IFQ review, SSPT, and the rockfish program (Table 2).

Table 2. The 10 most common topics

10 *Most* common topics that all socioeconomic terms arose under		
1	Research needs	69
2	Crab rationalization	54
3	Salmon bycatch	42
4	Economic SAFE	24
5	Ongoing research	21
6	SAFE	20
7	Observer program	20
8	IFQ review	17
9	SSPT	17
10	Rockfish program	16

h. The ten least common terms were satisfaction, indigenous, local knowledge, equality, well being/well-being, 12898, citizen science, traditional knowledge, lack of information, and culture.

Table 3. The 10 least common terms

10 *Least* common terms		
	Term	**#**
1	Satisfaction	0
2	Indigenous	1
3	Local knowledge	1
4	Equality	1
5	Well being/Well-being	1
6	12898	1
7	Citizen science	1
8	Traditional knowledge	3
9	Lack of information	3
10	Culture	4

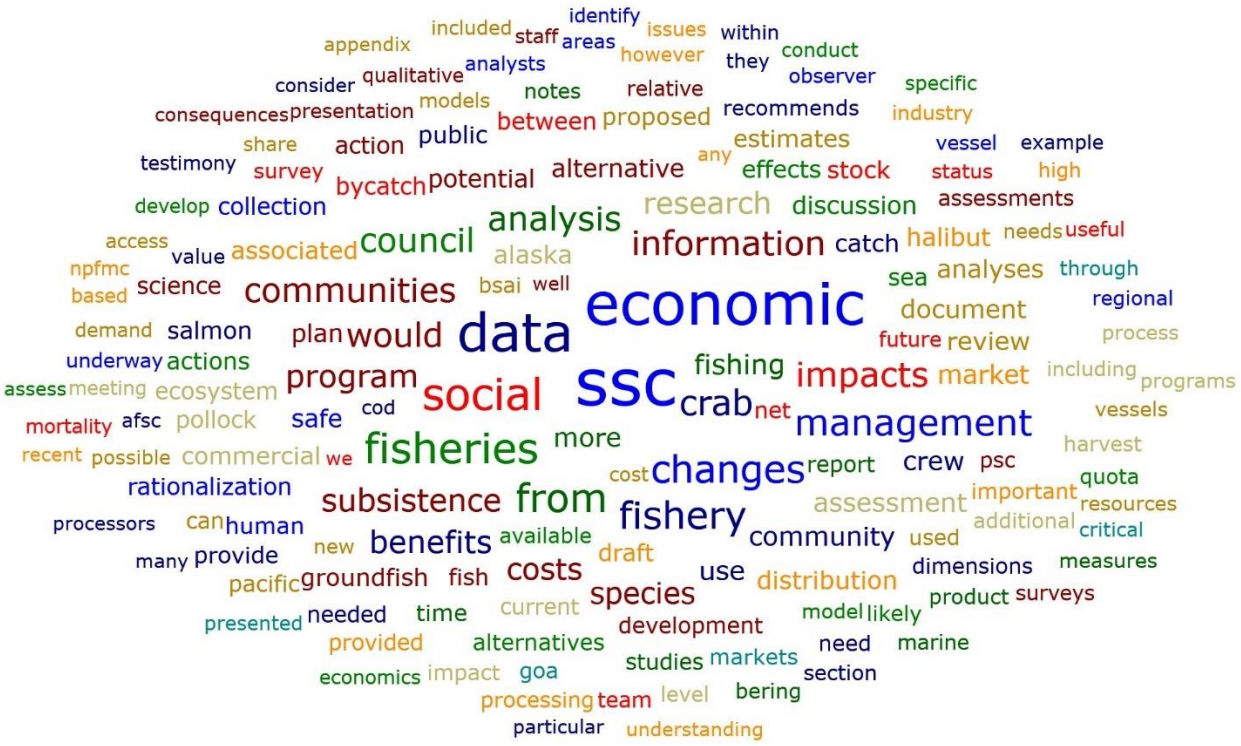

Figure 1. Word cloud presenting relative number of occurrence across all 'term' and 'topic' codes from this project. Image created in Atlas.ti 8.2.3

2) *How the SSC perceives strengths and weaknesses of social science in the Council process*

a. Meeting minutes reflect SSC support for increased use of social science in Council processes.
b. There have been repeated calls for additional social science research, as well as mechanisms for validating alternative forms of knowledge and information for use in council processes.
c. There is some uncertainty in what methods are available to effectively measure non-economic social science issues (e.g., community impacts); however social science topics have commonly been identified as research needs.
d. Systematically documenting SSC perceptions would require further review of content from coded quotes, accounting for a number of caveats (below)

Caveats of the project:

- This work does not quantify a set of gaps in social science
- Negative critique in a given set of SSC minutes may refer to an issue in an analysis that was clarified/resolved at some later date
- Absences in the use a terms or phrases may mean that the SSC finds no gap or fault in the existing use of a term or phrase
- Absence in the use of a term or phrase may mean that the SSC has simply not discussed that topic (which may or may not allude to a gap in itself)

3) Gaps in social science data collection and use in the Council process

a. There is a large difference in the number of occurrences of discussion between economic and non-economic social science information discussed at the SSC
b. The ten least common terms include items that have been discussed recently in the context of the Bering Sea Fishery Ecosystem Plan (BS FEP)
c. The phrase **'data gap'** occurred 32 times throughout the document, but only *13 occurrences were related to socioeconomic data*
d. The phrase **'lack of information'** occurred 12 times throughout the document, but only *3 occurrences were related to socioeconomic data*
e. Codes for **'data gap'** and **'lack of information'** (Appendix C) related to topics of: Amendment 80; the Arctic FMP; Crab rationalization; EDRs; the Economic SAFE; EFH; Halibut PSC; the IFQ Review; Processors; Research needs; the Rockfish program; Sea lions; and, the SSPT
f. The topic **'research needs'** was the most common topic across all socioeconomic terms
g. Codes for **'research needs'** (Appendix D) related to topics of: Community; Cost; Crew; Data gaps; Economics; Employment; Equity; Human dimensions; Income; LAPPs; Markets; Nonconsumptive uses; Profits; Revenue; SIA; Social science; Society; and, Subsistence

4) Potential avenues for future SSPT contribution

a. Code terms for **'SSPT'** (Appendix D) related to topics of: Community; Cost; Data gaps; Economics; Human dimensions; LAPPs; Social science; and, Society
b. The SSPT could consider developing a summary document identifying challenges and potential next steps for using economic and non-economic social science in the Council process, as highlighted by the SSC minutes analysis

Conclusions:

This work used text analysis to explore how the SSC discusses economic and non-economic social science terms, and identifies particular patterns in usage.

The ten least common terms in this analysis were all non-economic terms. This suggests the potential for a low level of understanding or interest about these terms among members of the SSC. These least common terms are relevant to ongoing and future work at the Council, as they are linked closely to the Local and Traditional Knowledge portion of the BS FEP.

The large difference in number of occurrences of economic versus non-economic terms in SSC minutes may be related to multiple things. There appears to be greater capacity within economic fields compared with non-economic social science within the SSC, social scientists, and SSPT, leading to greater familiarity with economic terminology and methods. Additionally, there have been recent efforts to increase/strengthen incorporation of economic data in analyses and regular Council documents (e.g., the Economic SAFE is relatively well developed). Economic terms may be more specialized in their usage and are generally more clearly defined and bounded in their meaning (e.g., income elasticity verses community well-being). This could lead to a decreased likelihood of misinterpretation. Non-economic social science is increasingly used in fisheries management globally, supporting the call for further research. As capacity among SSPT and the Council grows, future text analysis could reflect that shift. The discrepancy between how the SSC makes use of economic versus non-economic terms in their minutes warrants further discussion among the SSPT.

Allowing for iterative coding (adding emerging terms/themes during the coding process) was helpful. This method has potential for future use in exploratory analyses for research questions relevant to the SSPT.

Appendix A.

#	Term	# Occurrences
1	Economic/economy	648
2	Cost	390
3	Social/Society	257
4	Market	217
5	Revenue	160
6	Subsistence	118
7	Crew	89
8	Human dimension/Human	88
9	Profit	40
10	Qualitative	39
11	Employment	36
12	Social science	32
13	Social impact assessment/SIA	28
14	Income	23
15	Equit[able][y][ability]	20
16	Data gap	15
17	Nonconsumptive use	11
18	Entitlement	10
19	Rural	9
20	LAPPs/Limited Access Privilege Program	8
21	New entrant	7
22	Traditional	7
23	Executive Order/E.O.	6
24	standard 8/standard eight	6
25	Leasing/Lease/Leases/Lease rate	5
26	Culture	4
27	Traditional knowledge	3
28	Lack of information	3
29	Indigenous	1
30	Equality	1
31	Well being/Well-being	1
32	12898	1
33	Local knowledge	1
34	Citizen science	1
35	Satisfaction	0

Appendix B.

#	Topic	# Occurrences	#	Topic	# Occurrences
1	Research Needs	69	**26**	GOA Trawl Bycatch	4
2	Crab rationalization	54	**27**	BIOP	3
3	Salmon bycatch	42	**28**	AI FEP	3
4	Economic SAFE	24	**29**	EFH	3
5	Ongoing research	21	**30**	Freezer Longline	3
6	SAFE	20	**31**	Fixed Gear Recency Analysis	3
7	Observer Program	20	**32**	BS FEP	3
8	IFQ Review	17	**33**	Sideboards	2
9	SSPT	17	**34**	Exploratory fishing	2
10	Rockfish Program	16	**35**	SEIS	2
11	Protected species	13	**36**	Bering Sea Habitat	2
12	Halibut PSC	11	**37**	CDQ	1
13	Hailbut subsistence	9	**38**	NMFS Data Collection	1
14	Charter halibut	8	**39**	Halibut Management Framework	1
15	Crab	8	**40**	GOA rationalization	1
16	Arctic FMP	8	**41**	Halibut genetic sampling	1
17	Amendment 80	7	**42**	Processors	1
18	Economic Data Reports	7	**43**	MSA	1
19	Sea lion	7	**44**	Analysis template	1
20	Scallops	5			
21	Pacific cod	5			
22	Climate RAP/Climate	4			
23	Community ownership of H&S IFQs	4			
24	Plan Team	4			
25	Research Paper Review	4			

Appendix C.

#	Topic	Data Gap	Lack of Info.	#	Topic	Data Gap	Lack of Info.
1	AI FEP	0	0	**32**	Plan Team	0	0
2	**Amendment 80**	**1**	0	**33**	**Processors**	0	**1**
3	Analysis template	0	0	**34**	Protected species	0	0
4	**Arctic FMP**	0	**1**	**35**	**Research Needs**	**4**	0
5	Bering Sea Habitat	0	0	**36**	Research Paper Review	0	0
6	BIOP	0	0	**37**	**Rockfish Program**	**3**	0
7	BS FEP	0	0	**38**	SAFE	0	0
8	CDQ	0	0	**39**	Salmon bycatch	0	0
9	Charter halibut	0	0	**40**	Scallops	0	0
10	Climate RAP/Climate	0	0	**41**	**Sea lion**	**1**	0
11	Community ownership of H&S IFQs	0	0	**42**	SEIS	0	0
12	Crab	0	0	**43**	Sideboards	0	0
13	**Crab rationalization**	**1**	**1**	**44**	**SSPT**	**4**	0
14	**Economic Data Reports**	**1**	0				
15	**Economic SAFE**	**1**	**1**				
16	**EFH**	**1**	0				
17	Exploratory fishing	0	0				
18	Fixed Gear Recency Analysis	0	0				
19	Freezer Longline	0	0				
20	GOA rationalization	0	0				
21	GOA Trawl Bycatch	0	0				
22	Hailbut subsistence	0	0				
23	Halibut genetic sampling	0	0				
24	Halibut Management Framework	0	0				
25	**Halibut PSC**	**1**	0				
26	**IFQ Review**	**3**	0				
27	MSA	0	0				
28	NMFS Data Collection	0	0				
29	Observer Program	0	0				
30	Ongoing research	0	0				
31	P cod	0	0				

Appendix D.

#	Term	Ongoing Research	Research Needs	SSPT
1	12898	0	0	0
2	Citizen science	0	0	0
3	**Community/Communities**	**7**	**40**	**2**
4	**Cost**	**3**	**29**	**1**
5	**Crew**	**6**	**11**	0
6	Culture	0	0	0
7	**Data gap**	0	**4**	**4**
8	**Economic/economy**	**8**	**44**	**8**
9	**Employment**	0	**3**	0
10	Entitlement	0	0	0
11	Equality	0	0	0
12	**Equit[able][y][ability]**	0	**6**	0
13	Executive Order/E.O.	0	0	0
14	**Human dimension/Human**	**7**	**13**	**12**
15	**Income**	0	**2**	0
16	Indigenous	0	0	0
17	Lack of information	0	0	0
18	**LAPPs/Limited Access Privilege Program**	**1**	**1**	**1**
19	**Leasing/Lease/Leases/Lease rate**	**1**	0	0
20	Local knowledge	0	0	0
21	**Market**	**1**	**30**	0
22	New entrant	0	0	0
23	**Nonconsumptive use**	0	**8**	0
24	**Profit**	**1**	**2**	0
25	**Qualitative**	**1**	0	0
26	**Revenue**	**1**	**2**	0
27	Rural	0	0	0
28	Satisfaction	0	0	0
29	**Social impact assessment/SIA**	**2**	**8**	0
30	**Social science**	**8**	**7**	**16**
31	**Social/Society**	**18**	**60**	**34**
32	**Subsistence**	**9**	**31**	0
33	Traditional	0	0	0
34	Traditional knowledge	0	0	0