September 19, 2021

ANALYSIS OF CORVALLIS CHAMBER OF COMMERCE DATA

USED IN THE CHAMBER'S PRESENTATION ON HOMELESSNESS

TO THE CORVALLIS, OREGON, CITY COUNCIL

By

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The Corvallis Chamber of Commerce conducted a survey of the people on their email list and the people who visit their Facebook page to determine the perceived effects of homelessness on the business community. The presentation of the results is dated July 23, 2021 and was made to the City Council on August 2, 2021. It can be found in the 08-02-2021 Council packet. I took advantage of the Corvallis Chamber of Commerce offer to share the unfiltered data with everyone and did some more analysis with the raw data. The purpose of my analysis, and this report, is not to duplicate the work of the Chamber, but to gauge the intensity of the perceptions of the Corvallis business community. By business community, I mean both business owners and their customers – both buyers and sellers being required to make a market. A secondary purpose was to address some of the notions that came up when the Chamber presented their findings to the City Council.

DISCUSSION

SCIENTIFIC SURVEY

In the Chamber's presentation to the Council, the notion that this survey was not "scientific" came up several times. I looked through my statistics dictionary[1] and several of my texts on sampling and could not find a definition of "scientific survey". I suspect that what is really meant was that the sample was not random – which is true.

The population that the Chamber wanted to sample was their email list and friends on Facebook[2]. The sample was self-selected. In my opinion, it can be assumed that the population consists of people who are interested in Corvallis business, and that the sample consists of people who have an interest in, or are exercised by, the homeless issue.

By the way, I am on the Chamber's email list and I completed the survey.

IP ADDRESSES

There were duplicate addresses coinciding with Facebook posts. I found that the only duplication was the IP addresses. After removing IP addresses, completion times, and datum serial numbers, there were no duplicates.

[1] Everitt, B.S. The Cambridge Dictionary of Statistics. (2ed) Cambridge University Press. 2002.
[2] As per the minutes of the Council meeting, the population is 7000 plus.

NEGATIVENESS

At the Chamber's presentation, there was concern that the questions were negative and designed to produce negative results. I disagree. Perusing the questions and the detailed answers, it appears to me that the questions were designed to solicit honest answers. And, it appears to me, honest answers were given. Some answers were positive, many were negative.

FINDINGS

1. People who primarily shop in Corvallis have a 75% probability of having a negative or very negative impression of homeless peoples' behavior.
2. The probability of any respondent being very unsatisfied or unsatisfied with the job government is doing locally is less than 42%.
3. The probability of people who primarily shop in Corvallis supporting action up and to including expulsion from an area is 70%. The probability of business owners supporting action up and to including expulsion from an area is 48%.
4. The probability of people who primarily shop in Corvallis feeling the businesses in Corvallis are not at all or not very considered is 70%. The probabilities of business owners and people living in Corvallis feeling the businesses in Corvallis are not at all or not very considered are 49% and 50% respectively.
5. The probability of business owners, people living in Corvallis, and people who primarily shop in Corvallis wanting homeless camps as far away from business as is possible are all 69%.
6. The probability of business owners and people who primarily shop in Corvallis wanting homeless camps as far away from their homes as is possible are 70% and 69% respectively.
7. The probability of business owners and those living in Corvallis feeling that the impact of the camping locations are impacting their ability to do business within the city limits are 48% and 52% respectively. The probability of people primarily shopping in Corvallis feeling that the impact of the camping locations are impacting their ability to do business within the city limits is 73%.
8. The probability of consumer habits (where/when you shop) of those who primarily shop in Corvallis changing a little to significantly changed based on managed camping in Corvallis is 72%.
9. The probability of those who primarily shop in Corvallis feeling that the city of Corvallis is viewed by the houseless members of the state who do not currently reside here as welcoming or very welcoming is 66%.

CONCLUSIONS

We really don't know if these results can be inferred to the entire population. I think they can be inferred to the part of the population that is interested in, or exercised by, the homeless issue; we just don't know how large that part of the population is.

Looking at the findings as a whole, it appears to me that business owners are surly but not mutinous but the people who primarily shop in Corvallis are mutinous. Business owners have a large investment in their businesses. I doubt many will close unless forced to close by Covid-19 or something else such as retirement. People who primarily shop in Corvallis don't have a large investment. They can just as easily shop online, in Albany, in Eugene, or anyplace else; and, they will, if pushed past a tipping point by the homeless situation.

The Corvallis City Council, and the Benton County Board of Commissioners, have a multi-objective programming and planning problem, subject to constraints on their hands. Two objectives are 1) to maximize the assistance to the

homeless, and 2) minimize the economic damage to Corvallis business. A constraint is the money available to deal with the homeless problem.

At the very least, the City Council, and the Board of Commissioners, need to consider the health of Corvallis business when making decisions about the homeless.

METHODS

I divided the variables into two classes. The first was explanatory variables, which describe the respondent. These variables are: own a business (yes or no), business location (Corvallis or not), home location (Corvallis or not), where primarily shop most regularly (Corvallis or not)[3]. In the design matrix of explanatory variables, yes and Corvallis were represented by a one. I did not include interactions between these variables in the design matrix.

The second class of variables was the response variables. Those variables are the answers to questions that displayed the respondents' perception of the homeless problem. Those questions are[4]:

1. What has been your overall impression of behaviors as the houseless population has grown? If the respondent's answer was negative or very negative, the variable was represented by a one. Otherwise, the variable was represented by a zero.
2. On the following scale, very satisfied to very unsatisfied, please indicate your satisfaction with the job that the government is doing here locally, to help with the houseless situation. If the respondent answered unsatisfied or very unsatisfied, the variable was represented by a one. Otherwise, the variable was represented by a zero.
3. Would you support action from the City of Corvallis up to, and including, expulsion from a specific area or pre-determined zone that specifically targeted people exhibiting negative behaviors? A yes answer was represented by a one; a no answer was represented by a zero.
4. How much do you feel the businesses of Corvallis are considered, not considered at all to heavily considered, when the City Council is determining when and when camping is allowed in Corvallis? Not considered at all to not very considered was represented by a one. Otherwise, the variable was represented by a zero.
5. Using the scale listed, how do you feel about the camping issue, as it relates to its proximity to your BUSINESS? (leave blank if you don't own a business) As far away as possible was represented by a one. Otherwise, the variable was represented by a zero.
6. Using the scale listed, how do you feel about the camping issue, as it relates to its proximity to your HOME?) As far away as possible was represented by a one. Otherwise, the variable was represented by a zero.
7. Using the following scale, how do you feel the impact of the camping locations are impacting your ability to do business within the city limits? Answers ranging from changing a little to a significant change were represented by a one. Otherwise, the answer was represented by a zero.
8. Have your consumer habits (where/when you shop) changed in anyway based on the managed camping in Corvallis? Answers ranging from changing a little to a significant change were represented by a one. Otherwise, the answer was represented by a zero.
9. How do you feel the city of Corvallis is viewed by the houseless members of the state who do not currently reside here? If the respondent answered welcoming or very welcoming, the variable was represented by a one. Otherwise, the variable was represented by a zero.

[3] There were other variables that could be used as explanatory variables. However, I thought these were the best for this analysis.
[4] There were other variables that could be used as response variables. However, I thought these were the best for this analysis.

The analytical technique I used was "logistics regression"[5] where the response (dependent) variable is binary – one or zero. For those who want to see the analytical details, the logistic regression computer[6] printout is the appendix.

[5] A reference is Myers R.H. Classical and Modern Regression with Applications. (2ed) PWS-KENT Publishing Company 1990.
[6] Most computations were done with Gauss 19.1, a math-statistics system which is a product of Aptech Inc. Some computations were made with Excel.

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Explanatory Variables

001expl Are you a Chamber member?
002expl Do you own a business?
003expl Where is your business located?
004expl What is the zip code of your HOME
005expl Where would you describe you primarily shop most regularly?

xxxresp are the response variables

6 001resp What has been your overall impression of behaviors as the houseless population has grown?

001resp	002expl	003expl	004expl	005expl
1= Negative or Very Negative Response				
sum of 1's =				
238.00000	162.00000	176.00000	321.00000	306.00000

Category Name	Assigned category
0	0
1	1

Explanatory variable	Parameter	t-value	Alfa	Prob of resp var.
002expl	0.1858	0.7060	0.2403	0.4537
003expl	1.2167	4.5416	0.0000	0.2285
004expl	0.4506	2.1976	0.0142	0.3892
005expl	-1.0832	5.1481	0.0000	0.7471

parameter correlation coefficients

1.0000	-0.6238	-0.0275	-0.0895
-0.6238	1.0000	-0.1224	-0.1469
-0.0275	-0.1224	1.0000	-0.7084
-0.0895	-0.1469	-0.7084	1.0000

Z statistic

176.1173	15.3218	0.5754	1.8799
15.3218	176.1173	2.5768	3.0998
0.5754	2.5768	384.8607	18.5191
1.8799	3.0998	18.5191	392.1222

H0 is r = 0; H1 is r /= 0
Alfa

0.0000	0.0000	0.1413	0.0150
0.0000	0.0000	0.0025	0.0005
0.1413	0.0025	0.0000	0.0000
0.0150	0.0005	0.0000	0.0000

7 002resp On the following scale, please indicate your satisfaction with the job that the government is doing here locally, to help with the houseless situation.

002resp	002expl	003expl	004expl	005expl
1= Unsatisfied or Very Unsatisfied Response				
sum of 1's =				
359.00000	160.00000	177.00000	322.00000	305.00000

Category Name	Assigned category
0	0
1	1

Explanatory variable	Parameter	t-value	Alfa	Prob of resp var.
002expl	0.6883	2.2222	0.0134	0.3344
003expl	0.3334	1.0961	0.1368	0.4174
004expl	0.7954	3.6963	0.0001	0.3110
005expl	0.3620	1.6991	0.0450	0.4105

parameter correlation coefficients

1.0000	-0.6251	-0.0169	-0.0584
-0.6251	1.0000	-0.1749	-0.0904
-0.0169	-0.1749	1.0000	-0.6635
-0.0584	-0.0904	-0.6635	1.0000

Z statistic

384.9433	15.3133	0.3524	1.2201
15.3133	383.5435	3.6891	1.8924
0.3524	3.6891	175.5145	16.6838
1.2201	1.8924	16.6838	175.5145

H0 is r = 0; H1 is r /= 0
Alfa

0.0000	0.0000	0.1811	0.0556
0.0000	0.0000	0.0001	0.0146
0.1811	0.0001	0.0000	0.0000
0.0556	0.0146	0.0000	0.0000

8 003resp Would you support action from the City of Corvallis up to, and including, expulsion from a specific area or pre-determined zone that specifically targeted people exhibiting negative behaviors?

003resp	002expl	003expl	004expl	005expl
1= Yes				
sum of 1's =				
220.00000	158.00000	171.00000	318.00000	300.00000

Category Name	Assigned category
0	0
1	1

Explanatory variable	Parameter	t-value	Alfa	Prob of resp var.
002expl	0.0747	0.2942	0.3844	0.4813
003expl	1.1283	4.3233	0.0000	0.2445
004expl	0.1225	0.6203	0.2677	0.4694
005expl	-0.8402	4.1840	0.0000	0.6985

parameter correlation coefficients

1.0000	-0.6180	-0.0410	-0.0764
-0.6180	1.0000	-0.1736	-0.1312
-0.0410	-0.1736	1.0000	-0.6741
-0.0764	-0.1312	-0.6741	1.0000

Z statistic

175.9166	15.1068	0.8589	1.6025
15.1068	175.9166	3.6713	2.7617
0.8589	3.6713	175.9166	17.1253
1.6025	2.7617	17.1253	175.9166

H0 is r = 0; H1 is r /= 0
Alfa

0.0000	0.0000	0.0976	0.0273
0.0000	0.0000	0.0001	0.0014
0.0976	0.0001	0.0000	0.0000
0.0273	0.0014	0.0000	0.0000

```
             20          015resp How much do you feel the businesses of Corvallis
are considered when the City Council is determining when and when camping is allowed
in Corvallis?
         015resp          002expl          003expl          004expl          005expl
1= Not at all or Not very considered
sum of 1's =
       194.00000        155.00000        173.00000        311.00000        292.00000

        Category         Assigned
            Name         category
               0                0
               1                1
Explanatory variable      Parameter         t-value            Alfa          Prob of
resp var.

         002expl           0.0392           0.1510           0.4400           0.4902
         003expl           0.8909           3.3829           0.0004           0.2909
         004expl           0.0070           0.0354           0.4859           0.4982
         005expl          -0.8627           4.3029           0.0000           0.7032


parameter correlation coefficients

          1.0000          -0.6478          -0.0427          -0.0590
         -0.6478           1.0000          -0.2005          -0.1239
         -0.0427          -0.2005           1.0000          -0.6560
         -0.0590          -0.1239          -0.6560           1.0000

Z statistic

        172.2640          15.8105           0.8751           1.2104
         15.8105         172.2640           4.1646           2.5519
          0.8751           4.1646         376.4402          16.1043
          1.2104           2.5519          16.1043         172.2640

H0 is r = 0; H1 is r /= 0
Alfa

          0.0000           0.0000           0.0954           0.0565
          0.0000           0.0000           0.0000           0.0027
          0.0954           0.0000           0.0000           0.0000
          0.0565           0.0027           0.0000           0.0000
```

21 016resp Using the scale listed, how do you feel about the camping issue, as it relates to its proximity to your BUSINESS? (leave blank if you don't own a business)

016resp	002expl	003expl	004expl	005expl
1= As far away as possible				
sum of 1's =				
45.000000	147.00000	164.00000	215.00000	198.00000

Category Name	Assigned category
0	0
1	1

Explanatory variable	Parameter	t-value	Alfa	Prob of resp var.
002expl	-0.8118	2.4702	0.0070	0.6925
003expl	0.2615	0.7659	0.2222	0.4350
004expl	-0.8198	2.9933	0.0015	0.6942
005expl	-0.7994	2.9579	0.0017	0.6898

parameter correlation coefficients

1.0000	-0.6085	-0.0379	-0.0049
-0.6085	1.0000	-0.3085	-0.1856
-0.0379	-0.3085	1.0000	-0.4944
-0.0049	-0.1856	-0.4944	1.0000

Z statistic

143.8811	12.0937	0.6493	0.0831
12.0937	314.4164	5.4580	3.2151
0.6493	5.4580	143.8811	9.2748
0.0831	3.2151	9.2748	143.8811

H0 is r = 0; H1 is r /= 0
Alfa

0.0000	0.0000	0.1290	0.2334
0.0000	0.0000	0.0000	0.0003
0.1290	0.0000	0.0000	0.0000
0.2334	0.0003	0.0000	0.0000

```
             22          017resp Using the scale listed, how do you feel about the
camping issue, as it relates to its proximity to your HOME?
         017resp          002expl          003expl          004expl          005expl
1= As far away as possible
sum of 1's =
       79.000000        155.00000        173.00000        317.00000        296.00000

        Category         Assigned
            Name         category
               0                0
               1                1
Explanatory variable      Parameter         t-value            Alfa          Prob of
resp var.

         002expl          -0.8238           2.6145           0.0046           0.6950
         003expl          -0.0773           0.2546           0.3996           0.5193
         004expl          -0.4311           1.9909           0.0236           0.6061
         005expl          -0.8106           3.7025           0.0001           0.6922


parameter correlation coefficients

          1.0000          -0.6336          -0.0592           0.0065
         -0.6336           1.0000          -0.2055          -0.0878
         -0.0592          -0.2055           1.0000          -0.6557
          0.0065          -0.0878          -0.6557           1.0000

Z statistic

        172.4689          15.3349           1.2155           0.1327
         15.3349         376.8881           4.2780           1.8062
          1.2155           4.2780         378.2636          16.1110
          0.1327           1.8062          16.1110         172.4689

H0 is r = 0; H1 is r /= 0
Alfa

          0.0000           0.0000           0.0560           0.2236
          0.0000           0.0000           0.0000           0.0177
          0.0560           0.0000           0.0000           0.0000
          0.2236           0.0177           0.0000           0.0000
```

23 018resp Using the following scale, how do you feel the impact of the camping locations are impacting your ability to do business within the city limits?

018resp	002expl	003expl	004expl	005expl
1= Negative or Very Negative				
sum of 1's =				
183.00000	155.00000	174.00000	298.00000	276.00000

Category Name	Assigned category
0	0
1	1

Explanatory variable	Parameter	t-value	Alfa	Prob of resp var.
002expl	0.0793	0.2998	0.3823	0.4802
003expl	1.0840	4.0001	0.0000	0.2528
004expl	-0.0600	0.2933	0.3847	0.5150
005expl	-1.0080	4.8040	0.0000	0.7326

parameter correlation coefficients

1.0000	-0.6337	-0.0531	-0.0556
-0.6337	1.0000	-0.2014	-0.1676
-0.0531	-0.2014	1.0000	-0.6223
-0.0556	-0.1676	-0.6223	1.0000

Z statistic

366.9085	14.9340	1.0616	1.1109
14.9340	366.9085	4.0791	3.3801
1.0616	4.0791	167.9022	14.5576
1.1109	3.3801	14.5576	373.8313

H0 is r = 0; H1 is r /= 0
Alfa

0.0000	0.0000	0.0721	0.0667
0.0000	0.0000	0.0000	0.0002
0.0721	0.0000	0.0000	0.0000
0.0667	0.0002	0.0000	0.0000

```
             25          020resp Have your consumer habits (where/when you shop)
changed in anyway based on the managed camping in Corvallis?
         020resp          002expl          003expl          004expl          005expl
1= Changed from  a little to significant
sum of 1's =
       189.00000        160.00000        177.00000        322.00000        307.00000

        Category         Assigned
            Name         category
               0                0
               1                1
Explanatory variable      Parameter         t-value            Alfa          Prob of
resp var.

         002expl           0.1517           0.5903           0.2776           0.4621
         003expl           0.7572           2.9137           0.0019           0.3193
         004expl           0.0180           0.0921           0.4633           0.4955
         005expl          -0.9428           4.8033           0.0000           0.7197


parameter correlation coefficients

          1.0000          -0.6510          -0.0500          -0.0617
         -0.6510           1.0000          -0.1925          -0.1217
         -0.0500          -0.1925           1.0000          -0.6539
         -0.0617          -0.1217          -0.6539           1.0000

Z statistic

        383.9830          16.2436           1.0468           1.2910
         16.2436         385.3845           4.0760           2.5578
          1.0468           4.0760         175.7157          16.3489
          1.2910           2.5578          16.3489         175.7157

H0 is r = 0; H1 is r /= 0
Alfa

          0.0000           0.0000           0.0738           0.0492
          0.0000           0.0000           0.0000           0.0026
          0.0738           0.0000           0.0000           0.0000
          0.0492           0.0026           0.0000           0.0000
```

```
             27          022resp How do you feel the city of Corvallis is viewed by
the houseless members of the state who do not currently reside here?
         022resp          002expl          003expl          004expl          005expl
1= Welcoming or Very Welcoming
sum of 1's =
       226.00000        148.00000        167.00000        294.00000        273.00000

        Category         Assigned
            Name         category
               0                0
               1                1
Explanatory variable      Parameter         t-value            Alfa          Prob of
resp var.

         002expl           0.3693           1.3861           0.0833           0.4087
         003expl           0.7200           2.7084           0.0035           0.3274
         004expl           0.3256           1.5970           0.0555           0.4193
         005expl          -0.6582           3.1878           0.0008           0.6588


parameter correlation coefficients

          1.0000          -0.6256          -0.0307          -0.0797
         -0.6256           1.0000          -0.1720          -0.1136
         -0.0307          -0.1720           1.0000          -0.6875
         -0.0797          -0.1136          -0.6875           1.0000

Z statistic

        166.8468          14.5722           0.6094           1.5853
         14.5722         364.6023           3.4491           2.2649
          0.6094           3.4491         364.6023          16.7365
          1.5853           2.2649          16.7365         371.4816

H0 is r = 0; H1 is r /= 0
Alfa

          0.0000           0.0000           0.1356           0.0282
          0.0000           0.0000           0.0001           0.0059
          0.1356           0.0001           0.0000           0.0000
          0.0282           0.0059           0.0000           0.0000
```