

That Mobile Loaves and Fishes Community First! Statistical Survey



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Introduction

Mobile Loaves and Fishes began when Alan Graham and some of his friends were at church on a Sunday. The pastor called them to “Love your neighbours as yourself”, and these five men wanted to find a way to really play that out in their lives. The organization is called Mobile Loaves and Fishes because they literally started with five men, feeding the homeless, out of a minivan. Ever since that day, the organization has grown exponentially with volunteers and the homeless themselves. Community First! Village is a branch of Mobile Loaves and Fishes where they provide small cottage-looking houses or heavy-duty tents for the homeless. The village is on Capital of Texas Highway just past the airport. Because the main goal is to love these men and women, draw them closer to God, and to raise them out of poverty, the organization requires these people to have jobs and to pay a monthly rent (a very feasible cost). However, having a background of homelessness makes finding jobs very difficult sometimes. So, the village provides many small jobs until the people are hired. For example, they have a garden, art houses, a kitchen, and food trailers for the homeless to work. The purpose of the village is not just to provide homes for the homeless, but the community of the village is the focus of the project. Over many years, they realized that the only way to truly help the homeless is to provide community and friends for them, something they probably never had (Mobile Loaves and Fishes). The Rat Park experiment strengthens Mobile Loaves and Fishes belief that community is key in helping the homeless improve their lives. The Rat Park experiment demonstrated that when one rat was left alone with the choice of water and or liquid drugs the rat would prefer to drink the liquified drug. When a pack/community of rats were put into the same environment the rats for the most part avoided the liquid drug. This experiment shows the effectiveness that a community has on each individual's decisions (Hari). The Community First! village was intended to provide a well suited environment to help people escape the streets. This village has proven as a major blessing for all of the people living there.

Statistical question

We performed a study for this organization to determine:

Is MLF's approach to treating homelessness successfully improving the quality of life of the people it serves, as compared to their life on the streets?

Data Collection

Over the course of a few months, we came up with a survey that addressed the question at hand. Our goal was to create an unbiased survey that addressed the village residents' quality of life on the streets compared to their quality of life in the Community First! Village. In the first draft of the survey, each individual created 18 questions based on information that Mobile Loaves and Fishes gave us and 3 questions that they personally thought would be relevant to the survey (like questions pertaining to the happiness of their childhood for example). Everyone also created a set of multiple answers for each question. Each member of the group used their individual surveys to compile the best questions into one survey, the second draft. During the process of creating the second draft, we really focused on creating a uniformity in the answer choices of the question. This was accomplished using Likert scale. The Likert scale answers improved the survey, not only making the answer choices easier to understand, but making the data uniform so that it would be easier to analyze in the future. We also focused on improving the wording of the questions themselves, making sure they were worded in a clear, concise, unbiased way.

The completed second draft was sent to a sociology expert, Dr. Pam Paxton of the University of Texas, for feedback. She suggested that we split the survey into two parts, with part one addressing quality of life on the street and part two addressing the quality of life in the Community First! Village, with each part having corresponding questions. She also suggested that we start the survey with less personal questions and move toward more personal questions later in the survey. She recommended that we clean up our Likert scale so that we just have numbers or descriptors in our answer but not both. Based this feedback, each group created a

third draft, revising the order of the questions as well as the Likert scale phrasing. The best questions from the third drafts were then compiled into the final draft.

On April 8 we went to the Community First! Village and conducted the survey. The survey was administered at lunch on “Free Burger Friday”. A few days before we went to conduct the survey, MLF informed us that there were not going to be very many residents at “Free Burger Friday” but that some of their future residents were coming and asked us to survey them as well. To accommodate the change, we made a second survey in which the questions about life in Community First! Village were reworded from present tense to future tense. A few days before the survey, our group split up into pairs. The plan was for each pair to orally conduct the survey with one village resident at lunch. However, when we got to “Free Burger Friday” there were not enough residents/future residents for every pair to conduct a survey. Seventeen surveys were given. Out of the seventeen people surveyed, eight were residents while the other 9 were future residents who were moving onto the property soon.

We took a convenience sample, surveying the residents/future residents who were at the lunch. The survey could not be conducted as a random sample because of limitations with timing and getting everyone in the place. However, we believe that the survey captured a sample that represents the whole population of residents who will live at the village. Although we surveyed most of the residents of the village (since they have just recently started moving people in), we took a sample and not a census. The full population includes everyone who will live in Community First! Village when it is full. However, because it is a convenient sample, we know that we should analyze these results with caution.

The fact that we were limited to only surveying people at “Free Hamburger Friday” could have potentially created biased results. We could have ended up with a selection bias because the residents who come to the lunch might have only been the residents who enjoy Community First! Village or they might have been the unemployed residents who do not enjoy Community First! Village very much. To try and eliminate this bias, we asked Mobile Loaves and Fishes to

request that all residents come. However, it is unlikely that all residents came and so we should be wary of skewness in our results. We should also be wary that not all the people surveyed have fully experienced life at Community First! Village. Their responses might be different once they move onto the property. However, there is no way to know this so we must go with the responses we received. The pair of students conducting the survey conducted it in a manner that eliminated as much response bias as possible. The wording and the order of the survey questions were designed so that bias would not be introduced. Our group was taught how to appropriately ask the questions beforehand so that a bias based on the characteristics of the interviewers would be minimized. The one factor the interviewers have no control over is the human nature of the resident they are interviewing. The resident may feel self-conscious and lie. However, in this case, there is no way to know so we must go with the results we received.

The report and results were presented to Mobile Loaves and Fishes on May 5. The circumstances under which the surveys were conducted provided concrete evidence as to whether or not Mobile Loaves and Fishes is improving the lives of the residents at Community First! Village.



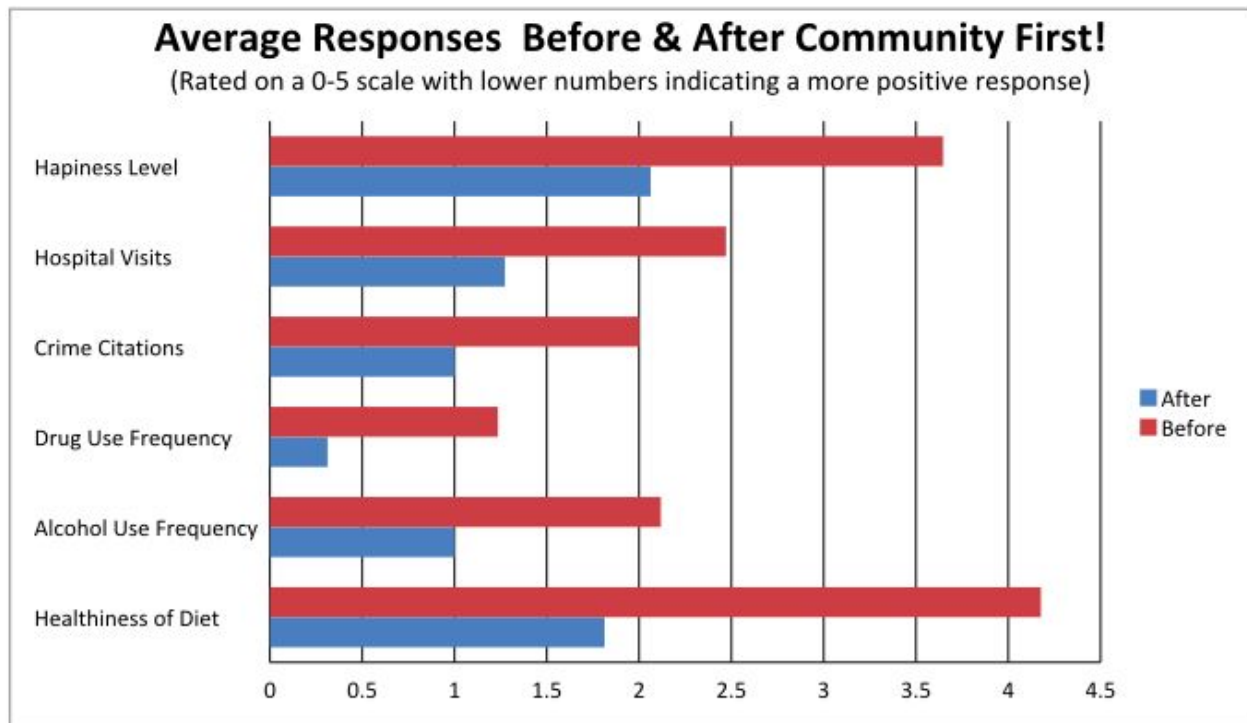
Two of our members conducting a survey

Methods

Seventeen surveys were given by seventeen different pairs of students. Eight of the surveys were given to current residents of Community First! Village. The other nine surveys were given to

future residents of the village. Before each survey, one of the students in the pair read out a script that asked them to answer each question honestly and informed them that they did not have to answer a question if they did not want to. Some of subjects omitted answering certain questions meaning that there is not a consistent number of answers between questions. However, all questions received over 10 answers.

Data Display



Summary of Data

Level of Happiness (1 = most happy)																
Street	3	5	4	5	5	5	3	3	5	2	2	3	4	5	1	3
Community First!	3	3	2	2	2	2	3	1	2	2	1	3	3	1	1	2

Number of Hospital Visits											
Street	3	4	1	2	5	3	2	1	1	1	3
Community First!	1	1	1	2	2	1	1	1	1	1	2

- * 0 times = 1
- * 1-2 times = 2
- * 3-5 times = 3
- * 6-8 times = 4
- * 9+ times = 5

Number of Crime Citations													
Last Year on the Street	2	1	2	2	1	1	2	2	5	1	2	2	2
Community First!	1	1	1	1	1	1	1	1	1	1	1	1	1

- * 0 times = 1
- * 1-2 times = 2
- * 3-5 times = 3
- * 6-8 times = 4
- * 9+ times = 5

Drug Use Frequency																	
Street	0	4	3	3	0	3	0	1	0	2	0	0	0	1	4	0	0
Community First!	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	4	0

- * none = 0
- * less than once a week = 1
- * 1-2 times per week = 2
- * 3-5 times per week = 3
- * once daily = 4
- * multiple times per day = 5

Alcohol Use Frequency																	
Street	0	2	5	4	0	3	0	4	2	0	3	0	4	5	2	1	1
Community First!	3	0	0	0	0	2	0	1	0	0	1	0	2	3	2	1	2

- *none= 0
- *less than once a week= 1
- *1-2 times per week= 2

*3-5 times per week= 3

*once daily= 4

*multiple times per day= 5

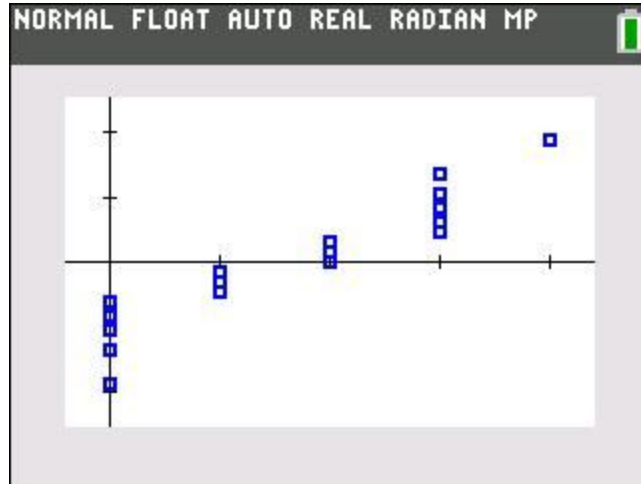
Level of Healthiness (1 = most healthy)																
Street	5	5	5	4	4	3	5	5	5	1	5	3	2	5	4	5
Community First!	2	1	1	2	2	5	1	1	1	1	3	2	1	1	3	2

Overall Quality of Life (all answers for life before the village and after added)																
Street	13	19	22	13	18	12	19	14	17	10	13	12	20	20	9	14
Community First!	9	5	4	5	9	8	7	3	4	5	5	8	8	5	10	8

Data Analysis

2 Sample Matched Pairs t test for the mean happiness on the street versus in the village.

1. At first glance, it appears that the true mean difference between the resident's average happiness while living on streets and their average happiness while living in Community First! (μ_d) is greater than zero since $\bar{x}_d = 1.5625$. However, it is possible that this is incorrect due to sampling variability. We will conduct a matched pairs t-test for μ_d ($\alpha = .05$).
2. $H_o: \mu_d = 0$ $H_a: \mu_d > 0$
3. Conditions
 - a. Random sample? No. Proceed with caution.
 - b. $n < 10\%$ of the population? Yes, since there will be over 160 residence when the village is full.
 - c. Large sample size? Since the normal probability plot of the differences is roughly linear, it is reasonable to assume the population of differences is approximately normal.



4. Calculations

Test statistic: $t = 4.85$

$df = 15$

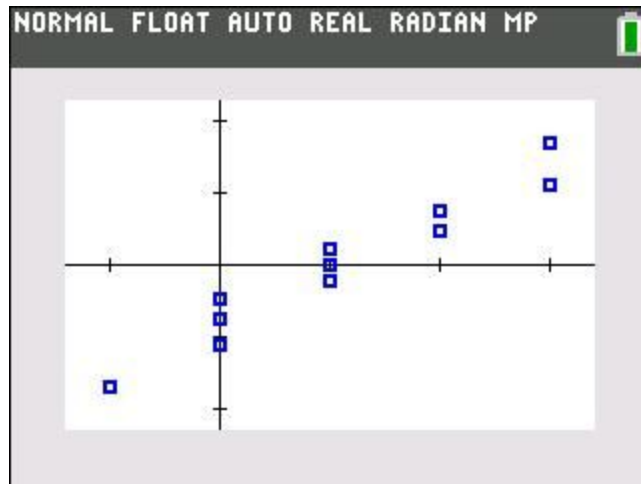
p-value: $P(\bar{x}_d > 1.5625) = P(t > 4.85) = .00018$

5. Since the p-value is less than α , we reject the null hypothesis and conclude that the happiness of the residents in the village is greater than their happiness on the streets.

2 Sample Matched Pairs t-test for the mean number of visits to the hospital on the street versus in the village.

1. At first glance, it appears that the true mean difference between the number of times the residents went to the hospital while on the street versus off the streets (μ_d) is greater than zero since $\bar{x}_d = 1.27$. However, it is possible that this is incorrect due to sampling variability. We will conduct a matched pairs t-test for μ_d ($\alpha = .05$).
2. $H_0: \mu_d = 0$ $H_a: \mu_d > 0$
3. Conditions:
 - a. Random sample? No. Proceed with caution.
 - b. $n < 10\%$ of population? Yes since there will be more than 110 residents when the village is full

- c. Large sample size for both groups? Since the normal probability plot of the differences is roughly linear, it is reasonable to assume the population of differences is approximately normal.



4. Calculations:

Test statistic: $t = 3.13$

$df = 10$

p-value: $P(\bar{x}_d > 1.27) = P(t > 3.13) = .005$

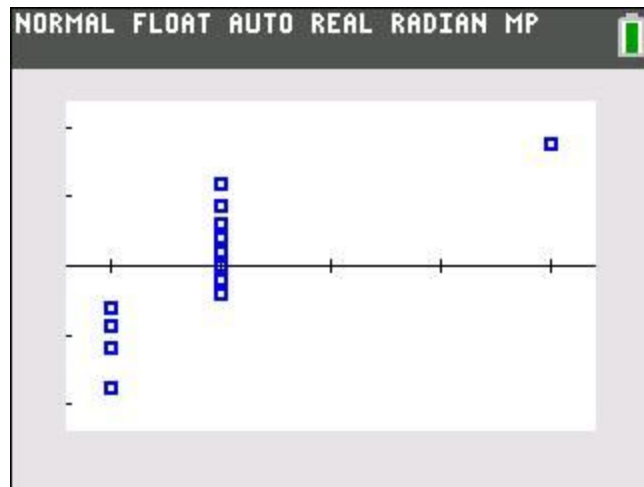
5. Since the p-value is less than α , we reject the null hypothesis and conclude that the number of times the residents went to the hospital while on the street is greater than than the number of times they have gone to the hospital while living in Community First! Village.

2 Sample Matched Pairs t-test for the mean crime citation on the street versus in the village.

- At first glance, it appears that the true mean difference between the number of crime citations while living on the streets and the number of crime citations while living at Community first (μ_d) is greater than zero, since $\bar{x}_d = .9231$. However, this could be incorrect due to sampling variability. We will conduct a matched pairs t-test for μ_d ($\alpha = .05$).
- $H_0: \mu_d = 0$ $H_a: \mu_d > 0$

3. Conditions

- Random sample? No. Proceed with caution.
- $n < 10\%$ of population? Yes, since there will be over 130 residents when the village is full.
- Large sample size? The NPP of the differences is dichotomous with a single outlier, therefore it may not be reasonable to assume that the population of differences is approximately normal so will we proceed with caution.



4. Calculations

Test statistic: $t = 3.207$

$df = 12$

$p\text{-value} = P(\bar{x}_d > .9231) = P(t > 3.207) = .003766$

- Since $p\text{-value}$ is less than α , we reject the null hypothesis and conclude that the number of crime citations the residents received on the street is greater than the number of crime citations the residents have received while living at Community First! Village.

2 Sample Matched Pairs t-test for the mean alcohol consumption on the streets versus in the village.

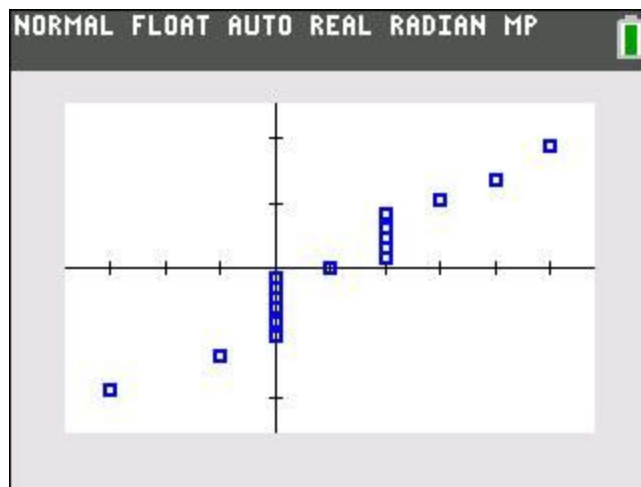
- At first glance, it appears that the true mean difference in alcohol consumption while living on the streets versus alcohol consumption after moving to Community First! (μ_d) is

greater than zero since $\bar{x}_d = 1.117647059$. However, this could be incorrect due to sampling variability. We will conduct a matched pairs t-test for μ_d ($\alpha = .05$).

2. $H_0: \mu_d = 0$ $H_a: \mu_d > 0$

3. Conditions

- a. Random sample? No. Proceed with caution.
- b. $n < 10\%$ of population? Yes, since there will be over 160 residents when the village is full.
- c. Large sample size? Since the normal probability plot of the differences is roughly normal, it is reasonable to assume the population of differences is approximately normal.



4. Calculations

Test statistic: $t = 2.38433$

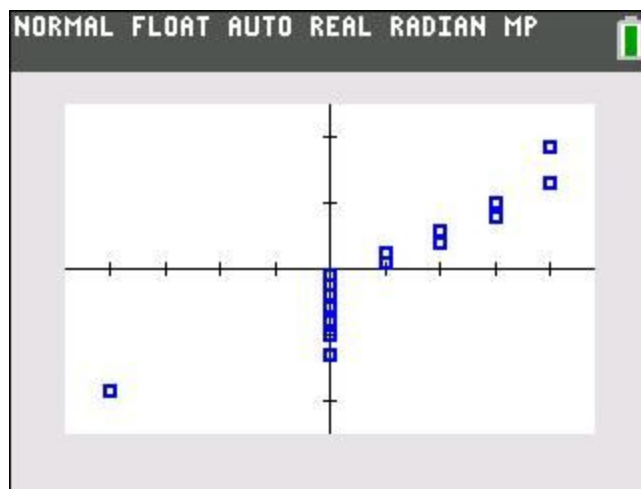
$df = 16$

p-value: $P(\bar{x}_d > 1.117647059) = P(t > 2.38433) = .0149$

5. Since the p-value is less than α , we reject the null hypothesis and conclude that the frequency of the residents' alcohol consumption has decreased since moving to Community First! Village.

2 Sample Matched Pairs t-test for the mean drug consumption on the streets versus in the village.

1. At first glance, it appears that the true mean difference in drug consumption while living on the street versus drug consumption after moving to Community First! (μ_d) is greater than zero since $\bar{x}_d = .88235$. However this could be due to sampling variability. To decide, we will conduct a matched pairs t-test for μ_d ($\alpha = .05$).
2. $H_0: \mu_d = 0$ $H_a: \mu_d > 0$
3. Conditions
 - a. Random sample? No. Proceed with caution.
 - b. $n < 10\%$ of population? Yes, since there will be over 170 residents when the village is full.
 - c. Large sample size? Since the normal probability plot of the differences is roughly normal, it is reasonable to assume the population of differences is approximately normal.



4. Calculations:

Test statistic: $t = 1.9487$

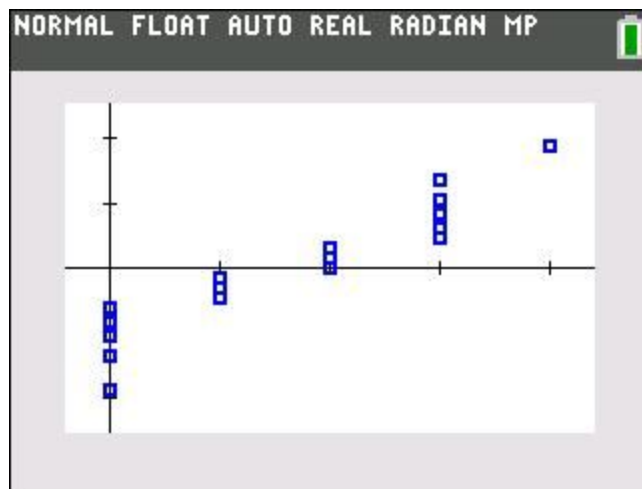
$df = 16$

p-value: $P(\bar{x}_d > .88235) = P(t > 1.9487) = .03454$

5. Since the p-value is less than α , we reject the null and conclude that the frequency of the residents' drug use has decreased since moving to Community First! Village.

2 Sample Matched Pairs t-test for the mean healthiness of food on the street versus in the village.

1. At first glance, it appears that the true mean difference in healthiness of the residents while living on the street versus their healthiness once they have moved into Community First! Village is greater than zero since $\bar{x}_d = 2.3125$. However, this could be incorrect due to sampling variability. We will conduct a matched pairs t-test for μ_d . ($\alpha = .05$)
2. $H_0: \mu_d = 0$ $H_a: \mu_d > 0$
3. Conditions
 - a. Random sample? No. Proceed with caution.
 - b. $n < 10\%$ of population? Yes, since there will be over 160 residence when the village is full.
 - c. Large sample size? Since the normal probability plot of the differences is roughly normal, it is reasonable to assume the population of differences is approximately normal.



4. Calculations

Test stat: $t = 5.2$

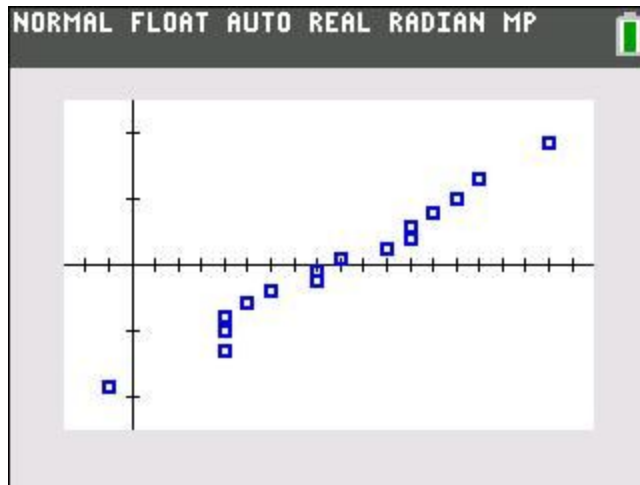
$df = 15$

p-value: $P(\bar{x}_d > 2.315) = P(t > 5.2) = 0$

5. Since the p-value is less than α , we reject the null hypothesis and conclude that the healthiness of the residents in Community First! Village is greater than their healthiness on the streets.

2 Sample Matched Pairs t-test for mean quality of life on the streets versus in the village.

1. At first glance, it appears that the true mean difference between the residents' overall quality of life on the street versus their overall quality of life in the village (μ_d) is greater than zero since $\bar{x}_d=8.875$. However, it is possible that this is incorrect due to sampling variability. We will conduct a matched pairs t-test for μ_d ($\alpha=.05$).
2. $H_0: \mu_d = 0$ $H_a: \mu_d > 0$
3. Conditions:
 - a. Random sample? No. Proceed with caution.
 - b. $n < 10\%$ of population? Yes since there will be more than 160 residents when the village is full
 - c. Large sample size for both groups? Since the normal probability plot of the differences is roughly linear, it is reasonable to assume the population of differences is approximately normal.



4. Calculations

Test stat: $t = 6.8135$

$df = 15$

p-value: $P(\bar{x}_d > 8.875) = P(t > 6.8135) = .000004206$

Effect size (Cohen's d): 1.759

5. Since the p-value is less than α , we reject the null hypothesis and conclude that the overall quality of life of the residents is greater in Community First! Village than streets.

Conclusion

The results indicated that Community First! Village is the improving the happiness, healthiness, drug use frequency, alcohol use frequency, and the number of crime citations and hospital visits of its residents. Based on the data, our response to our statistical question would be yes, Mobile Loaves and Fishes is successfully improving the quality of life of the people it serves through the Community First! Village. However, since we were not able to take a random sample or have a big enough sample size, we would recommend that we do a follow up survey for Mobile Loaves and Fishes when the village has more residents.

Appendix A: Survey Questions

Happiness Level

Rate your happiness level while you were on the street on a scale of 1-5.

- 1 - Extremely happy
- 2 - Very happy
- 3 - Moderately happy
- 4 - Slightly happy
- 5 - Not happy at all

Rate your happiness level now on a scale of 1-5.

- 1 - Extremely happy
- 2 - Very happy
- 3 - Moderately happy
- 4 - Slightly happy
- 5 - Not happy at all

Hospital Visits

How many times did you go to the hospital for an ailment while you were on the street?

- 0 times
- 1-2 times
- 3-5 times
- 6-8 times
- 9+ times

How many times have you been to the hospital for an ailment since you have moved to Community First?

- 0 times
- 1-3 times
- 4-6 times
- 7-9 times
- 10+ times

Crime Citations

How many times were you cited for a crime during your last year on the street?

- 0 times
- 1-2 times

- 3-5 times
- 6-8 times
- 9+ times

How many times have you been cited for a crime after you moved to Community First! Village?

- 0 times
- 1-2 times
- 3-5 times
- 6-8 times
- 9+ times

Drug Use

Did you take drugs while on the streets?

- Yes
- No

If yes, how many times a week would you take drugs while you were living on the street?

- Less than once per week
- 1-2 times per week
- 3-5 times per week
- Once daily
- Multiple times per day

Do you take drugs now that you live in Community First?

- Yes
- No

If yes, how many times a week do you take drugs while you are living at Community First?

- Less than once per week
- 1-2 times per week
- 3-5 times per week
- Once daily
- Multiple times per day

Alcohol Use

Did you consume alcohol while on the streets?

- Yes
- No

If yes, how many times a week would you consume alcohol while you were living on the street?

- Less than once per week

- 1-2 times per week
- 3-5 times per week
- Once daily
- Multiple times per day

Do you consume alcohol now?

- Yes
- No

How many times a week do you consume alcohol now?

- Less than once per week
- 1-2 times per week
- 3-5 times per week
- Once daily
- Multiple times per day

Healthiness of diet

Can you rate the healthiness of your diet, 1-5, when you were on the streets?

- 1 - Excellent
- 2 - Very Good
- 3 - Good
- 4 - Fair
- 5 - Poor

Can you rate the healthiness of your diet, 1-5, now that you live in Community First Village?

- 1 - Excellent
- 2 - Very Good
- 3 - Good
- 4 - Fair
- 5 - Poor

Citations

Hari, Johann. *Chasing the scream: The first and last days of the war on drugs*. Bloomsbury Publishing USA, 2015, p. 170ff.

Mobile Loaves and Fishes- Serving Goodness. MLF.org. 19 May 2016. Web.