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The Relationship Between Viewing Time and Sexual Attraction Ratings

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ABSTRACT

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The LOOK is an iPad-based application that measures sexual interest. It does this by recording the amount of time individuals take to view and rate the attractiveness of images of fully clothed people from differing age, gender, and racial demographics. Viewing-time measures, such as the LOOK, operate under the assumption that individuals view sexually attractive images longer than they view images that they deem unattractive or sexually non-preferred. Although there is research to show the efficacy of these kinds of tests, there is a lack of research supporting the assumption that viewing-time correlates strongly with reported ratings of sexual preferences. This study analyzed existing data from the LOOK to assess the nature of this correlation and how it varies across gender groups. The results of this analysis found that a moderately sized correlation did exist between time spent rating the image (Rate-time) and the subsequent rating of sexual attraction (Ratings) in most age and gender categories. However, for both men and women, these correlations were significantly weaker or were negative in target categories (those categories in which they rated the highest amount of sexual attraction). Additionally, cluster analysis indicated two clusters within both the male and female participant groups that had significantly different mean Rate-time, mean Ratings, and correlation coefficients. Given these results, the viewing-time theory that Rate-time is strongly associated with sexual attraction is questionable. A greater understanding of what viewing-time measures truly assess will require additional research.

Keywords: psychosexual behavior, test validity, sexual attraction

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Thank you, Lane, for your kindness and support throughout this process.

Fer, you taught me to dream bigger and work harder; I am so grateful I have you as a partner.

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CHAPTER 1

Introduction

Scientists and researchers have long attempted to accurately measure sexual arousal for a variety of reasons (e.g., determining the risk of sexual-reoffending from an individual up for parole). Historically, those interested measured sexual arousal by objectively measuring changes in physiology. Penile plethysmography (a machine with a strap that measures the changes in tumescence of the penis) or vaginal photo-plethysmography (a device inserted into the vagina that measures changes in blood flow) are such instruments. However, the use of these instruments is extremely invasive and without question alters the state of the subject who is being studied. There is also evidence that these measures do not accurately portray the subjective state of sexual arousal.

Theories of sexual arousal have developed over the years to become more complicated and nuanced. Older theories of sexual arousal tended to be stepwise and linear (Barlow, 1986), whereas newer models introduce concepts like excitatory and inhibitory responses to sexual stimuli (Bancroft, Graham, Janssen, & Sanders, 2009), subliminal sexual stimuli (Janssen, Everaerd, Spiering, & Janssen, 2000), differences in subjective and genital arousal (Spiering, Evaraerd, & Janssen, 2003), and gender difference in sexual arousal responses (Carvalho et al., 2013; Chivers, Seto, Lalumière, Laan, & Grimbos, 2010; Hagerman, Woolard, Anderson, Tatler, & Moore, 2017; Murnen & Stockton, 1997; Petersen & Hyde, 2011; Spape, Timmers, Yoon, Ponseti, & Chivers, 2014). With such a diversity of theory and research around sexual arousal, many researchers have attempted to construct less invasive and more reliable means by which to measure sexual preference and attraction.

The LOOK is an iPad-based application which attempts to measure sexual interests through the analysis of viewing-time. Viewing-time has been used in a number of other computerized sexual interest tests, the reasoning being that an individual will view the image of a sexually attractive person longer than that of an unattractive one (Bourke & Gormley, 2012; Gress, 2005; Israel & Strassberg, 2009; Laws & Gress, 2004; Mokros et al., 2013; Sneed, 2006). Tests using this reasoning go back to the early 1940's when the first viewing-time measure was introduced (Fischer, 2000; Rosenzweig, 1942). Despite research that shows the effective nature of using viewing-time to distinguish sexual orientation (Bourke & Gormley, 2012; Ebsworth & Lalumière, 2012; Rönspies et al., 2015), types of sexual offending (with male child victims; Worling, 2006), and the sexual preference of non-offending heterosexual and homosexual adults (Baird, 2015; Boardman, 2010; Worsham, 2010), little research has addressed the core assumption of the viewing-time test. The following study proposes to do just that by correlating the recorded viewing-time and reported sexual preference ratings of participants who have previously used the LOOK. The following section will cover theories of sexual arousal, reasons for measuring sexual arousal and preference, ways in which sexual offending is connected to this discussion, and the types of sexual interest measures in use today and historically.

CHAPTER 2

Review of Literature

Sexual Arousal Theories

The basic concept behind viewing-time sexual interest measures (like the LOOK and Affinity) is that they are able to detect and measure, within the subject, responses which indicate the level of sexual arousal. Numerous theories of sexual arousal posit that attention to the erotic subject is needed for the arousal to occur (Barlow, 1986; Janssen, 2011). Barlow (1986) even suggests that sexual dysfunction is caused (in part) by inattention to the sexual stimulus, and that in healthy sexually functioning individuals, greater attention paid to the sexual stimulus results in stronger arousal. This arousal leads the individual to give even more intense attention to the sexual stimulus, followed by a genital response, and a sexual approach behavior. In this case it is interesting to note that the genital response, which is often measured by plethysmography (a device which measures the changing tumescence of the penis), follows and is dependent on the attention given the sexual stimulus. This may suggest that attention is an earlier, and perhaps better predictor of arousal.

Further, research on sexual arousal has shown that both men and women are able to have genital responses (indicative of sexual arousal) while simultaneously showing no subjective signs of arousal (Basson, 2002; Janssen, McBride, Yarber, Hill, & Butler, 2008). The antithesis is also true, men and women can experience sexual arousal while not showing physical responses in the genitalia (Basson, 2002; Janssen et al., 2008). Sexual arousal should not be defined by only one of its aspects (i.e., genital response), but it should be seen as a complex multi-composite construct. Creating a narrow definition of sexual arousal will only impede our understanding of it and our ability to do research around it (Janssen, 2011).

Although there have been many studies on the topic of sexual arousal, there is not, of yet, a consensus on what actually constitutes this construct. Although human sexuality is seen as a primary motivation and drive in life according to many social psychologists, it seems to be as mysterious and complicated as it is enticing. In fact, Sachs (2007) lists 19 separate and distinct definitions of sexual arousal used in scientific literature. With such a number of convoluted definitions, there is some confusion over the matter of what sexual arousal actually is, not to mention how it can be measured. To avoid this topic would wrongly imply that the following theories of sexual arousal are the only ones in use today. While there are discrepancies and differences between these theories, there are also many similarities. In order to explain the possible benefits of a sexual interest measure, this review of the literature will focus on the similarities between these theories and the assumptions which make up the theoretical support for sexual interest measures.

Sexual arousal has been shown to include conscious and unconscious elements, and physical, subjective, emotional, and behavioral responses (Bancroft et al., 2009). Although earlier models of sexual arousal propose a stepwise model that starts with a sexual stimulus and ends with a genital response (Barlow, 1986), contemporary models explore more complex relationships between stimulus and response. Bancroft and associates' dual control model illustrates both excitatory and inhibitory responses to sexual stimuli (Bancroft et al., 2009). They have shown through their research that a person's sexual excitatory and inhibitory characteristics are associated with the individual's level of sexual arousal (both genital and subjective) and the ability to inhibit genital response.

Studies on subliminal messages have yielded further knowledge pertaining to sexual arousal in men and women. For example, multiple studies have recorded physical genital response even after exposure to subliminal sexual stimuli (Janssen et al., 2000; Ponseti & Bosinski, 2010). In these studies, however, subjective arousal was not necessarily experienced by the subjects. In fact, later studies found that in order for subjective sexual arousal to occur, participants had to be cognizant of the sexual content. In other words, subjective sexual arousal depends upon a conscious appraisal of sexual stimulus (Spiering et al., 2003). In the end, it may very well be that subjective sexual arousal (one's own perception of their own arousal) and genital response are two separate constructs controlled or influenced by completely separate processes. It may be that viewing-time is an unconscious measure of sexual arousal while the actual ratings may be the conscious aspect of the same arousal.

Historically sexual arousal has been understood as a linear model (Barlow, 1986) with sexual stimuli eventually leading to genital response and sexual behavior. However, more contemporary models have found that this type of linear model is overly simplistic and does not accurately represent the complexities of sexuality. Newer models of sexual arousal, such as the dual control model of sexual arousal (Bancroft et al., 2009) introduced new ways of thinking of sexual behavior. According to this model, sexual inhibition and excitation are ways in which individuals take and process sexual stimulus thereby exercising some amount of control on the outcome.

In addition, men and women differ in the amount that their self-reported subjective sexual arousal and genital responses correlate. According to a 2010 meta-analysis, men's subjective (self-reported) sexual arousal and genital response correlated more strongly (r=.66) than women's (r=.26; Chivers et al., 2010). The findings of this meta-analysis suggest that, at least for men, measurements of physical sexual arousal are a significant clue as to the individual's sexual preferences and subjective sexual arousal. Another review of meta-analytic data has shown that while women seem to experience subjective arousal to a wider variety of stimuli, men appear to report a larger degree of sexual arousal (Petersen & Hyde, 2011).

Further research has found that women's subjective experience of sexual attraction does not seem to correlate strongly with objective measures of physiological response (Hagerman et al., 2017). Could it be that viewing-time measures are more suited to a male sexuality than to that of women? What remains to be seen, and what will be explored in the next section, is how useful such measurements would be. We also hope to see whether the use of non-invasive indirect measures (such as the LOOK) would yield similar correlations.

Reasons for Measuring Arousal/Attraction

Measurements of sexual preference are often ordered by the court to assess the likelihood that an individual charged as a sex offender will reoffend. This question might arise in criminal and/or parole case hearings. Recidivism rates of sexual offenders have been studied through longitudinal designs. One such study found that of 9,603 sex offenders against children, 13% reoffended after a period of 5-6 years (Hanson & Bussière, 1998). A separate study found that after 3 years from release, 5% of 4,295 sex offenders against children were again arrested for committing a sex crime against a child (Langan, Schmitt, & Durose, 2003). Studies that examine offenders over longer periods of time have shown higher rates of recidivism, as would be expected. For example, 197 child molesters were followed for an average of 21 years and had a recidivism rate of 42% over this time period (Hanson, Steffy, & Gauthier, 1993). It could be hypothesized that these estimates are in fact an underestimation of actual recidivism rates as they only show those who were caught and convicted for their crimes. However high the rates are, the fact remains that not all sexual offenders against children will reoffend. It is therefore imperative that decision makers (such as judges) have accurate information and resources to best understand which offenders are at the highest risk for reoffending.

An example of this is the results of a recent meta-analysis on the differences between child pornography offenders, typical sexual offenders against children, and mixed offenders (both pornography and sexual offenders). The results indicated large differences between the groups. In particular, and in reference to sexual recidivism (with physical contact), after a period of 5 years, child pornography users showed re-offense rates of 0.2%, mixed (online and offline) offenders had rates of 6%, and contact offline offenders had rates of 13% (Babchishin, Hanson, & VanZuylen, 2015). This type of differentiating information can be very useful for decision makers.

In such cases, decision makers want to know what characteristics best predict risk for recidivism. A meta-analysis by Hanson and Morton-Bourgon attempted to answer that question. They found that deviant sexual preferences and antisocial orientation were the largest predictors of recidivism (Hanson & Morton-Bourgon, 2005). It is important to note that deviant sexual interests, as defined by the study, included any interest that was illegal or unusual (rape, incest, pedophilia, paraphilia, fetishism, etc.). In addition, antisocial orientation referred to antisocial personality disorder or traits, as well as a general history of breaking rules (Hanson & Morton-Bourgon, 2005). Hanson and Morton-Bourgon summed up their results as follows:

> The prototypic sexual recidivist is not upset or lonely; instead, he leads an unstable, antisocial lifestyle and ruminates on sexually deviant themes. There is some evidence, however, that sexual offenders are more likely than other groups to respond to stress through sexual acts and fantasies … thereby creating discrete time periods where they are at increased risk of sexual recidivism. (Hanson & Morton-Bourgon, 2005, p. 1158)

Accurately measuring the amount of deviant sexual interests and antisocial orientation is therefore the best (known) methods of predicting of sexual offending recidivism. However, even though these are the best-known predictors, this does not necessarily mean that they are inherently strong predictors. The strongest predictor of sexual recidivism (sexual deviancy) only had a strength of *d*. = .30, closely followed by antisocial orientation (*d* = .23), meaning these predictors are far from perfect (Hanson & Morton-Bourgon, 2005). They are, however, the best we have.

It is a common misconception that any sexual offense by an adult on a child is a marker of pedophilia. In reality, many sex crimes against children by adults are committed for reasons other than pedophilia (only 30-50% of those who commit sexual crimes meet criteria for a diagnosis of pedophilia; Seto, 2008). In addition, an individual who meets the criteria for pedophilia has not necessarily committed a sex crime against a child. These misconceptions probably come from the public's misunderstanding of what actually meets the criteria of pedophilia. According to the *Diagnostic and Statistical Manual of Mental Disorders*, 5th edition, a diagnosis of "pedophilic disorder" must meet the following conditions: (a) Over a period of at least 6 months, recurrent, intense sexually arousing fantasies, sexual urges, or behaviors involving sexual activity with a prepubescent child or children (generally age 13 years or younger); (b) The individual has acted on these sexual urges, or the sexual urges or fantasies cause marked distress or interpersonal difficulty; (c). The individual is at least age 16 years and at least 5 years older than the child or children in Criterion A (American Psychiatric Association, 2013, p. 697).

In addition, a person who meets this requirement may be either exclusive (exclusively attracted to young children) or nonexclusive with the paraphilia (attracted to both young children and sexually mature individuals). This caveat makes identifying true pedophilia even more difficult, as the individual may show what is considered normal sexual preferences in conjunction with the deviant ones.

In conclusion, there is a theoretically supported reason to attempt to measure deviant sexual interest in those convicted of sexual crimes. Doing so may enable a decision maker to have more information about the possible risks of recidivism. However, it must be kept in mind that pedophilia is only one of many possible “deviant sexual interests” and its predictive power for recidivism is not extremely high. Decision makers need to know the limits of this kind of information.

Measures of Sexual Interest

In order to ascertain the sexual interests of an individual, past methods often measured the physical response of the individual’s genitals through the use of penile plethysmography or vaginal photoplethysmography. As can be imagined, this process is highly invasive. In addition, there is still a question as to how strongly genital response correlates to actual sexual arousal and preference, this is especially true with women (Spape et al., 2014).

Banse, Schmidt, & Clarbour (2010) list five main criticisms of penile plethysmography that have been raised by researchers: “(a) A lack of standardization of the procedures and stimulus materials, (b) low retest reliability, (c) low specificity or discriminant validity, (d) low response rates, and (e) high fakeability.” Alternative methods of measuring sexual attraction and arousal by measuring visual attention have been developed and may address these concerns. The premise of viewing-time measures is that the longer visual attention is sustained (by free choice) with an image, the greater the sexual interests the user has in that image. The LOOK is one such application that shows promise in this field.

Although there are different theories about why difference in viewing-time occurs, one common theory postulates that the very act of rating attractive images takes more cognitive work, and therefore more time:

> If the person in the image does not fit the individual's category of preferred sexual partners, the decision is made and viewing stops. However, if the image does fit this individual's conception of sexual attractiveness, new categories are activated based on specific traits that make the person in the image a category exemplar or a good fit in that schema. This process of category activation requires more cognitive work and thus takes more time. (Worsham, 2010, p. 11)

Banse and colleagues (2010) study found that relying solely on phallometric measures (such as plethysmography) and self-report for evidence of deviant sexual interest is "problematic." This study found that combined report using both explicit (self-report) measures in conjunction with implicit (viewing-time and implicit association tests) measures offered the strongest discriminative power. Implicit association tests are based on the assumption that certain categories of people (age and gender) are more associated with sexual arousal than others. In this same study, the authors found viewing-time measures to be more reliable and valid than the implicit association tests. A recent meta-analysis supported this finding. "[Viewing-time] measures can be considered the best validated indirect latency-based measure of sexual interests in children and thus, have to be preferred over corresponding IATs (implicit association tests)" (Schmidt, Babchishin, & Lehmann, 2016, p. 297).

Viewing-time measures, in contrast to implicit association tests, are based on the notion that sexually attractive images of people attract more attention (over more time) than images of individuals that are not found as sexually attractive. These types of tests date back as early as

1942, when Rosenzweig found that the time patients suffering form schizophrenia spent looking at different images (sexual and non-sexual) could differentiate between those exhibiting high and low “spontaneous sexual behavior” (Rosenzweig, 1942).

Since that time, viewing-time measures have progressed to the point that they can successfully distinguish child sex offenders from non-offenders in laboratory settings. Harris, Quinsey, and Chaplin (1996) were able to differentiate between a group of child molesters and non-offenders using viewing-time. The accuracy of the viewing-time measure in this study rose close to reported accuracy scores of phallometric tests. However, the individuals in this study also rated the sexual attractiveness of the images they viewed; the authors were unsuccessful at differentiating the two groups based on these self-reported scores.

Fischer (2000) created a concise timeline of the progression of viewing-time measures (citations are as cited in the author’s work):

- Viewing-time discriminated between high and low sexual interest or perhaps between low and high inhibition of sexual interest (Rosenzweig, 1942).
- Viewing-time discriminated between heterosexual and homosexual males (Zamansky, 1956).
- Viewing-time increased with degree of sexually explicit content and when people were alone rather than in the presence of others (Brown, Amoroso, Ware, Preusse, & Pilkey, 1973; Ware, Brown, Amoroso, Pilkey, & Preusse, 1972).
- People with different degrees of sex guilt showed different patterns of viewing-time as sexual explicitness increased (Love, Sloan, & Schmidt, 1976).
- Sexually non-explicit material was a less effective predictor of sexual preference because it elicited limited variability (Quinsey, Rice, Harris, & Reid, 1993).

- Increased viewing-time was associated with preferred vs. non-preferred sexual objects in normal heterosexual and homosexual adults (Wright & Adams, 1994).
- Normal heterosexual males and females showed a clear pattern of increased viewing-time to adult sexual objects with decreasing attention across age and non-preferred objects (Quinsey, Ketzetsis, Earls, & Karamanoukian, 1996).
- Child molesters showed a restricted flat pattern of viewing-time across age categories reminiscent of subjects with high sex guilt and of normals viewing their non-preferred objects (Harris, Rice, Quinsey, & Chaplin, 1996; Love et al., 1976; Quinsey et al., 1996).

In 2006, a study on the Affinity 1.0 (a popular viewing-time measure) found that it could differentiate between adolescents who had sexually assaulted a male child from those who had assaulted other categories though it could not identify those who had assaulted primarily female children (Worling, 2006). However, seven years later further analysis of the affinity (now the 2.5 version) yielded contradictory results (Mokros et al., 2013). In a laboratory setting with a sample of known pedophilic sex offenders (n = 42) and a control group of male non-offenders (n = 95), a differentiation sensitivity of only 50% was recorded, and this was at the expense of 13% false positives (Mokros et al., 2013). Obviously, with an issue of such importance and sensitivity, false positives are extremely dangerous.

Dangers Inherent in the Current Measures

The usefulness of viewing-time measures is often found in forensic settings. In the process of reintegrating and rehabilitating sex offenders, parole officers and courts routinely want an assessment of potential risk. As the level of sexual attraction to children specifically is among the most important factors that increase the risk of recidivism among pedophiles (Hanson

& Morton-Bourgon, 2005), information about an individual's attraction to children is highly valuable. The measures previously described have been relied upon for that vital information. In determining whether an accused offender will reoffend it is of upmost importance that the evidence given is presented accurately. Many past measures are often assumed to be more valid and reliable than they are in reality. For example, all of the viewing-time tests in use to this date are ipsative in nature, meaning they are only useful in comparing the tested individual to themselves. In the case of an actual pedophile the most that could be supported is that they show high interest in children in comparison with their other sexual interests. One could not conclude that the offender shows more or less sexual interest towards children than any other person or group. This is because the data collected by these tests are descriptive and not comparative in nature.

In addition, the rate of (true) pedophiles among sex predators is low. Although many sex crimes are committed against children, many of the offenders in these cases do not actually have high sexual interest in children, or if they do it is not exclusive interest in children. A high estimate of the rate of pedophilia among sex offenders is about half (Seto, 2008). The offender may target a child because they were convenient, vulnerable, easily manipulated, and were opportune to their needs. Although there is a popular notion that sexual offending is often motivated by a need for control and power, recent literature has found that the two most common motivators of sexual offense are "a desire for sexual gratification and … anger, vindictiveness, or aggression" (Reid, Beauregard, Fedina, & Frith, 2014, p. 210). There is a real danger when these facts are not known by decision makers in sexual offending cases. These tests could possibly be used falsely in order to show that an individual has no sexual interests in children and therefore is not at high risk of recidivism. If the decision maker in these cases does not understand that (a), primary and exclusive sexual interest in children only occurs in a small percentage of sexual offenders, and (b), these tests are ipsative and not norm referenced, then their decision-making ability may be dangerously impaired.

Overview of the LOOK

The LOOK is an iPad-based app that is designed to estimate sexual interest through a non-invasive measure of viewing-time (an estimate of unconscious sexual arousal). It functions by presenting a total of 140 randomized images of individuals across 14 categories of age and gender one at a time on the screen. These categories are: Elderly Female (ELF), Elderly Male (ELM), Mature Adult Female (MAF), Mature Adult Male (MAM), Adult Female (ADF), Adult Male (ADM), Juvenile Female (JUF), Juvenile Male (JUM), Pre-juvenile Female (PJF), Pre-juvenile Male (PJF), Small Child Female (SCF), Small Child Male (SCM), Infant Female (INF), and Infant Male (INM).

Before beginning the actual test, 14 images (one from each category) are shown the participant to familiarize them with the test controls. The individual using the app sees the image appear and must first touch a dot that appears randomly in one of the corners of the screen before proceeding to rate the image's sexual attractiveness (a conscious estimate of sexual arousal). This dot task serves to create the first-choice reaction time measurement, the principle behind which is that images that are sexually attractive to the user will lengthen the amount of time it takes to find and touch the randomly placed dot. This dot task (choice reaction time) indirectly measures the amount of attention the user is giving the image by measuring how quickly the user is able to perform the simultaneous attentional task of touching the dot (Mokros, Dombert, Osterheider, Zappalà, & Santtila, 2010).

After this dot task, the user rates the image. The time taken to rate the image creates the second level of choice reaction time. The application discreetly records the time taken to both touch the dot and rate the image before proceeding to the next image. The data consists of individual Dot-time, Rate-time, and an aggregate of those two measurements for each individual (Total-time). These measurements are available for each picture on the LOOK.

Several studies to date have begun to analyze the effectiveness of this application as a sexual interest measure. Baird (2015) analyzed whether or not the LOOK would yield expected viewing-time patterns for reference (non-offender) groups of men and women. The LOOK has distinctly more categories of age and gender than other measures and yet the expected viewing-time patterns were still found. In addition, this study measured the temporal stability of the LOOK and found that the total temporal stability for men was 98.2% and 100% for women. This temporal stability is a strength of the LOOK over other viewing-time measures.

However, a study by Cox (2015) could not accurately distinguish a known sexual offender sample from the non-offender reference group using the LOOK. The viewing-time trends of both groups appeared to be similar. A Fischer Chi-Square model was implemented in attempting to analyze the viewing-time data and distinguish the two groups, however in this case, Cox could not find a fair constant multiplier that would differentiate the two groups. This lack of differentiation has been reported in the Affinity 2.5 as well (Mokros et al., 2013; Stephenson, 2014).

Veas (2015) applied a falsification paradigm to the LOOK and measured how well participants could manipulate the test based on what information was given them. Of the eight groups that were meant to falsify the study, four were successfully able to do so. In the groups that were told to emulate a person of the opposite gender 62.8% were able to do so, thus effectively falsifying the test. However, groups that were told to take the test as quickly as possible were largely unable to falsify their results. Falsifiability is a reported problem with plethysmography as well (Banse et al., 2010).

Purpose of the Study

Because many sexual interest measures in use today are based on a measure of viewing-time and attention, these techniques beg the question of whether one's reported sexual attraction and viewing-time are in fact strongly correlated in nature. Numerous studies on this issue in the past have had mixed results. For example, one study found that, after controlling for the explicit nature of the photographs used in their study, only a weak correlation was found between viewing-time and sexual preference/interest (Quinsey et al., 1993). It is important to note that the LOOK uses only fully clothed images of people in non-suggestive/sexual poses, this fact should mitigate the problems found in the before-mentioned study. In contrast, viewing-time measures have been shown to be highly accurate in predicting sexual orientation with heterosexual and homosexual participants (Bourke & Gormley, 2012; Ebsworth & Lalumière, 2012; Rönspies et al., 2015).

The present study has three main goals: (a), Estimate the correlation between viewing-time and ratings of sexual attraction on the LOOK; (b), determine whether the correlations are similar for males and females; and (c), discover whether patterns of responding might differentiate clusters of respondents within men and women. Because sexual arousal is hypothesized to have both conscious and unconscious elements, we further posit that each can be recorded through separate means. The self-reported attraction aspect of the LOOK would indicate the individual's conscious response of sexual attraction, and the surreptitiously measured viewing-time should indicate the unconscious element. If, as in the case of our samples, the individuals have very little reason to be dishonest in their ratings, we would hope to effectively estimate the correlation between the conscious and unconscious elements of sexual attraction. Further, as previous research has demonstrated gender differences in sexual arousal (Chivers et al., 2010), we will explore whether any differences in the before-mentioned correlations of men and women exists.

Research Questions

1. Does measured sexual attraction correlate with measured viewing-time on the LOOK?
2. Do men and women differ on how strongly these two constructs correlate?
3. Is there a pattern of responding that might differentiate clusters of respondents within men and women?

CHAPTER 3

Method

Participants

The data set came from Baird's 2015 study on the temporal stability of the LOOK. Because the study was focused on temporal stability, her sample was given the LOOK twice. We utilized the data from her Time-1 tests. This data set was made up of 69 males and 91 females who all indicated exclusive heterosexuality. The subjects were all students at a large, mid-western, private, religiously-oriented university.

The male participants had an age range of 18 to 28 years. The year in school of the male participants was 26.5% freshmen, 32% sophomores, 18% juniors, and 23.5% seniors. The male subjects were made up of 69.5% single, 29% married, and 1.5% divorced students. In terms of ethnicity, 86% of the males were Caucasian, 7% were Hispanic, 5.5% Asian, and 1.5% were mixed (Caucasian and Native American).

The female participants had an age range of 18 to 30 years. The year in school of the female subjects were as follows: 49% were freshmen, 20% were sophomores, 16% were juniors, and 15% were seniors. Of the female participants, 93% were single, 7% were married, and none were divorced or widowed. In terms of ethnicity, 82.4% of the females were Caucasian, 1.4% were Hispanic, 7% were Asian, 1.4% were Native American, 2.5% were Caucasian and African American mixed, 1.4% were Caucasian and Native American mixed, 1.4% were Caucasian and Asian mixed, and 2.5% were Caucasian and Hispanic mixed.

Apparatus and Materials

Baird's (2015) study used the LOOK viewing-time iPad app. This app begins by allowing the participant to rate their own preferred sexual attraction categories (by age and gender). Then the participant proceeds to rate 154 images of individuals on how sexually attracted they are to them. These images are of fully clothed men and women and from a large range of age groups. The app records both the Dot-time and the time taken to rate each image. Participants from this study were then asked to fill out the Kinsey Scale, which is a sexual orientation scale (Kinsey, Pomeroy, & Martin, 2003).

Method of Analysis

The data used came from Baird's (2015) study. This sample consists of male and female respondents. The data set included Dot-time, Rate-time, Total-time (Dot-time + Rate-time), and attractiveness Ratings aggregated by age categories of the images. We used the initial time sample of this study as it included more participants.

The first layer of analysis was to correlate the time measures with the average Ratings at the category level for males and females separately. Pearson Product Moment Correlation Coefficients was used to estimate the coherence between time and Ratings for each of the 42 categories. With three separate time measures (Dot, Rate, and Total) across 14 age/gender categories, this layer of analysis rendered 42 total correlations for each sample. Bonferrroni adjustment for 14 tests within measurement sample required significant *p*-values to be lower than 0.004.

The next layer of analysis tested whether the males' and females' correlations were equivalent. A Fisher's Z-test was used to test whether the males' Rate-time with Ratings correlation coefficients were equivalent to the females' correlations for each category. This layer of analysis rendered 14 Fisher Z-tests. Bonferrroni adjustment for 14 tests across genders will require *p*-values to be lower than 0.004.

The final layer involved a cluster analysis based on Rate-time and Ratings to determine whether or not there was any pattern that might differentiate between any number of respondent groups. Post hoc analyses were used to articulate the patterns that emerged. These analyses were done for men and women separately.

CHAPTER 4

Results

Descriptive Statistics

As a matter of reference, male and female mean Rate-time and Ratings are reported. These descriptive statistics are shown in Tables 1 and 2, and Figures 1 and 2. Tables 1 and 2 show the Rate-time and Rating descriptive statistics for male and female participants respectively. Figure 1 illustrates the Ratings of all male and female participants. Figure 2 illustrates the Rate-time of all male and female participants. All Rate-times are shown as computer tics (microseconds). Ratings are shown as mean aggregate totals of all 10 images per category (i.e., a Rating of 17.9 would indicate a mean individual image Rating of 1.79 on the Likert scale).

Male mean Rate-times were highest in what are considered to be the two target categories (or those categories most germane to male participants), ADF (M = 23551.84, SD = 15543.18) and JUF (M = 22949.2687, SD = 11136.70795). Male mean Ratings were also highest in these same categories, ADF (M = 17.95, SD, 8.82) and JUF (M = 11.24, SD = 9.22).

Female Rate-times showed a generally lower degree of variance than male Rate-time results as shown in Figure 2. Female mean Rate-times followed a distinct pattern, the two highest were in categories JUM (M = 13467.98, SD =6002.35) and MAM (M = 13148.90, SD =6346.83). These were followed closely by ADM (M = 12077.2193, SD = 5903.881768). Mean Female Ratings were highest in categories ADM (M = 21.02, SD = 6.79) and JUM (M = 4.68, SD = 10.5). Scatterplots and Histograms of male and female Rate-time and Ratings on each category are found in the appendices.

Table 1

Male Rate-Time and Ratings

Categories	N	Mean	Skewness Statistic	Skewness Std. Error	Kurtosis Statistic	Kurtosis Std. Error
Rate-Time ELF	69	8823.05	1.84	0.29	5.52	0.57
Rate-Time ELM	69	7760.73	1.45	0.29	2.67	0.57
Rate-Time MAF	69	15144.78	1.03	0.29	1.13	0.57
Rate-Time MAM	69	9312.28	1.42	0.29	2.05	0.57
Rate-Time ADF	69	23551.84	2.42	0.29	8.57	0.57
Rate-Time ADM	69	12645.11	3.69	0.29	19.21	0.57
Rate-Time JUF	69	22949.27	0.65	0.29	-0.09	0.57
Rate-Time JUM	69	10240.08	3.64	0.29	18.12	0.57
Rate-Time PJF	69	14788.43	0.92	0.29	0.15	0.57
Rate-Time PJM	69	9840.11	1.32	0.29	1.84	0.57
Rate-Time SCF	69	11863.55	1.88	0.29	5.09	0.57
Rate-Time SCM	69	10123.34	1.60	0.29	2.00	0.57
Rate-Time INF	69	10940.90	1.44	0.29	1.63	0.57
Rate-Time INM	69	10720.24	1.86	0.29	3.11	0.57
Total Rating ELF	69	-23.20	1.30	0.29	0.60	0.57
Total Rating ELM	69	-26.87	2.81	0.29	7.89	0.57
Total Rating MAF	69	-10.48	0.17	0.29	-0.93	0.57
Total Rating MAM	69	-24.45	2.05	0.29	3.44	0.57
Total Rating ADF	69	17.96	-1.25	0.29	1.93	0.57
Total Rating ADM	69	-20.13	1.52	0.29	1.37	0.57
Total Rating JUF	69	11.25	-0.60	0.29	1.40	0.57
Total Rating JUM	69	-23.10	1.84	0.29	3.09	0.57
Total Rating PJF	69	-14.71	0.62	0.29	-0.45	0.57
Total Rating PJM	69	-23.67	1.76	0.29	2.61	0.57
Total Rating SCF	69	-18.75	0.99	0.29	-0.13	0.57
Total Rating SCM	69	-23.10	1.47	0.29	1.08	0.57
Total Rating INF	69	-21.94	1.22	0.29	-0.14	0.57
Total Rating INM	69	-22.80	1.29	0.29	0.09	0.57

Note. ELF/M (Elderly Female/Male), MAF/M (Mature Adult Female/Male), ADF/M (Adult Female/Male), JUF/M (Juvenile Female/Male), PJF/M (Pre-juvenile Female/Male), SCF/M (Small Child Female/Male), INF/M (Infant Female/Male).

Table 2

Female Rate-Time and Ratings

			Skewness		Kurtosis	
Categories	N	Mean	Statistic	Std. Error	Statistic	Std. Error
Rate-Time ELF	91	8666.74	1.82	0.25	5.02	0.50
Rate-Time ELM	91	9132.15	2.47	0.25	8.63	0.50
Rate-Time MAF	91	11194.22	1.68	0.25	2.80	0.50
Rate-Time MAM	91	13148.91	1.71	0.25	5.09	0.50
Rate-Time ADF	91	11183.73	1.95	0.25	5.96	0.50
Rate-Time ADM	91	12077.22	1.75	0.25	5.05	0.50
Rate-Time JUF	91	11120.61	1.49	0.25	2.90	0.50
Rate-Time JUM	91	13467.98	1.48	0.25	2.88	0.50
Rate-Time PJF	91	9274.06	4.29	0.25	28.41	0.50
Rate-Time PJM	91	9161.91	1.23	0.25	1.44	0.50
Rate-Time SCF	91	9185.25	1.63	0.25	3.39	0.50
Rate-Time SCM	91	8944.03	1.99	0.25	6.65	0.50
Rate-Time INF	91	8528.28	2.64	0.25	9.52	0.50
Rate-Time INM	91	8574.66	1.96	0.25	4.28	0.50
Total Rating ELF	91	-21.77	0.99	0.25	-0.11	0.50
Total Rating ELM	91	-18.56	0.77	0.25	-0.32	0.50
Total Rating MAF	91	-15.21	0.44	0.25	-0.98	0.50
Total Rating MAM	91	-4.85	-0.26	0.25	-0.91	0.50
Total Rating ADF	91	-5.82	0.05	0.25	-1.14	0.50
Total Rating ADM	91	21.02	-2.15	0.25	9.70	0.50
Total Rating JUF	91	-8.55	0.04	0.25	-1.11	0.50
Total Rating JUM	91	4.68	-0.85	0.25	1.58	0.50
Total Rating PJF	91	-18.98	0.77	0.25	-0.60	0.50
Total Rating PJM	91	-17.33	0.62	0.25	-1.09	0.50
Total Rating SCF	91	-19.09	0.94	0.25	-0.31	0.50
Total Rating SCM	91	-18.02	0.81	0.25	-0.78	0.50
Total Rating INF	91	-18.92	0.99	0.25	-0.39	0.50
Total Rating INM	91	-18.57	0.97	0.25	-0.40	0.50

Note. ELF/M (Elderly Female/Male), MAF/M (Mature Adult Female/Male), ADF/M (Adult Female/Male), JUF/M (Juvenile Female/Male), PJF/M (Pre-juvenile Female/Male), SCF/M (Small Child Female/Male), INF/M (Infant Female/Male).

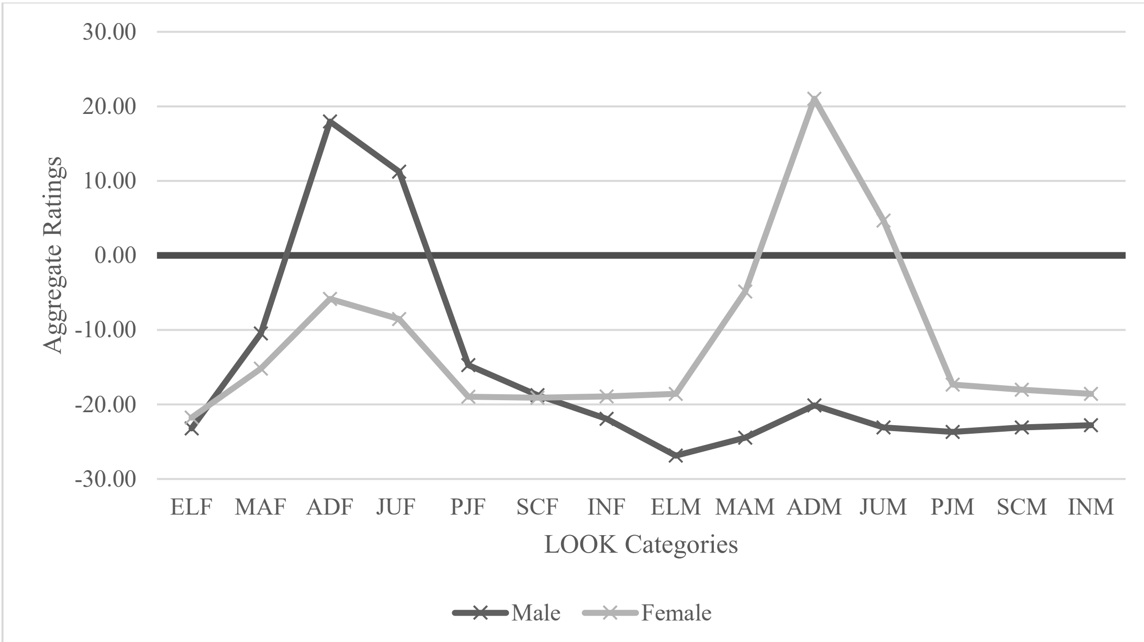

Figure 1. Total Ratings for male and female participants.

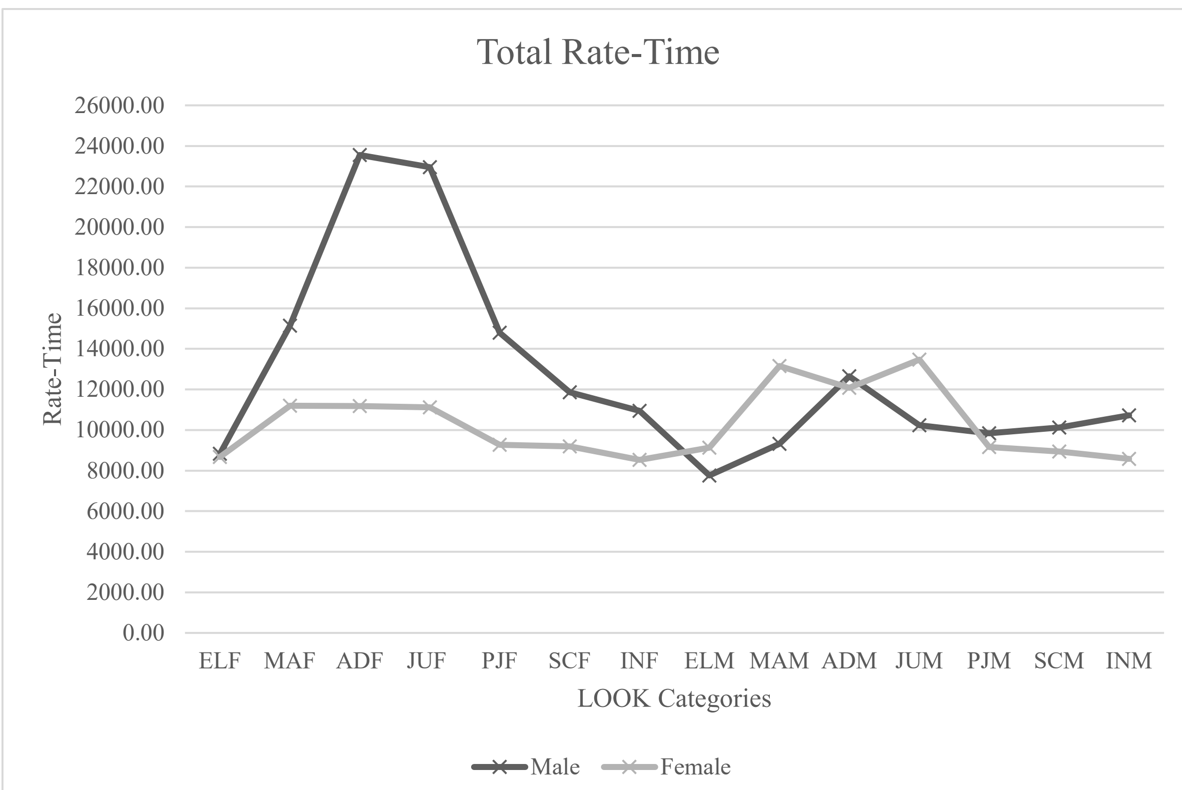

Figure 2. Total Rate-time for male and female participants.

Correlational Analysis

Pearson Product Moment Correlation coefficients were calculated for the relationship between Dot-time, Rate-time, and Total-time with Ratings. For both men and women, Dot-time, Rate-time, and Total-time were correlated separately with the recorded Ratings per each of the 14 age and gender categories, rendering 42 correlations. The results of these correlations can be seen in Table 3 for males and Table 4 for females, a visual comparison of male vs. female correlation coefficients can be seen in Figure 3. Coefficients of opposite category genders were also compared. That is, male results for Elderly Females were compared to female results of Elderly Males and so on. This comparison is shown in Figure 4.

Correlational coefficients are considered weak when the absolute value is below .1, moderate if the absolute value is between .3 and .5, and strong if the absolute value is above .5 (Hemphill, 2003). Tests of skew indicated that the data was skewed in most categories, as would be expected. However, because the means and variance were not similar, and the nature of the data collected, we were not able to run a Poisson regression. Because of the skewness of the data, we ran a Spearman's Rho Correlation and found the same overall pattern as was found in the Pearson Product Moment Correlation results.

Interpretation of the results was accomplished by using a significance value of $p < .05$. When the results were interpreted using a Bonferroni adjustment all interpretable patterns were seemingly lost. Given that using a Bonferroni adjustment decreases the chance of Type I error but also increases the risk of Type II error, our analysis of the results will use the original significance value of $p < .05$. This analysis makes more sense given the theoretical constructs used and the patterns that emerged and held across the data in different statistical analyses.

Male participants' correlation coefficients were not found to be significant in any category for Dot-time (time taken to find and press the randomly placed dot before being allowed to rate the image). Rate-time correlations with Ratings were found to be non-significant ($p < .05$) in two categories: ADF (r (67) = -.0008, p = .949) and JUF (r (67) = .152, p = .213). Correlations between Total-time (Rate-time+ Dot-time) and Ratings yielded non-significant results in three categories: MAF (r (67) = .172, p = .158), ADF (r (67) = -.089, p = .469), and JUF (r (67) = .126, p = .303). The rest of the Rate-time and Total-time correlations with Ratings were found to be significant at the .05 level.

Correlation coefficients based on female participant's response were found to be significant in only two categories for Dot-time and Ratings, significant correlations were found in the MAF (r (89) = .239, p = .023) and ADM (r (89) = -.324, p = .002) categories. Rate-time correlations with Ratings were found to be non-significant in JUM (r (89) = -.097, p = .360). Total-time correlations with Ratings were found to be non-significant in JUF (r (89) = -.144, p = .172) and PJF (r (89) = .198, p = .059). All other Rate-time and Total-time correlations with Ratings were shown to be significant at the .05 level.

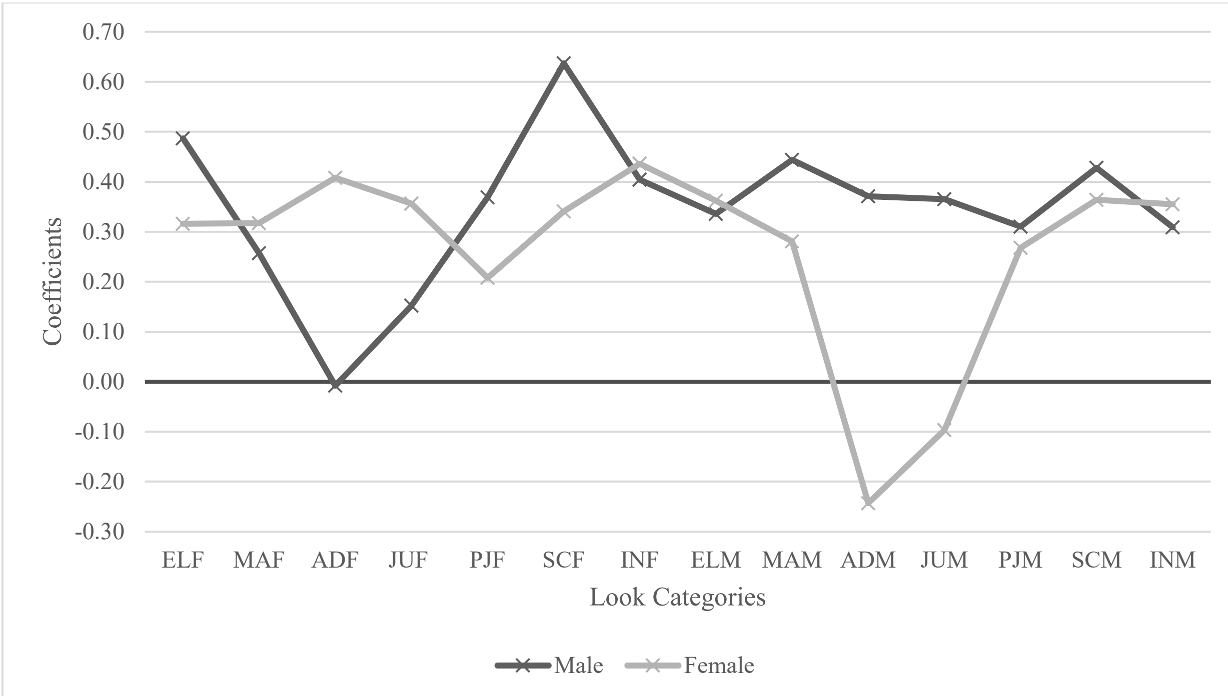

Figure 3. Rate-time with Ratings correlation coefficients for male and female participants.

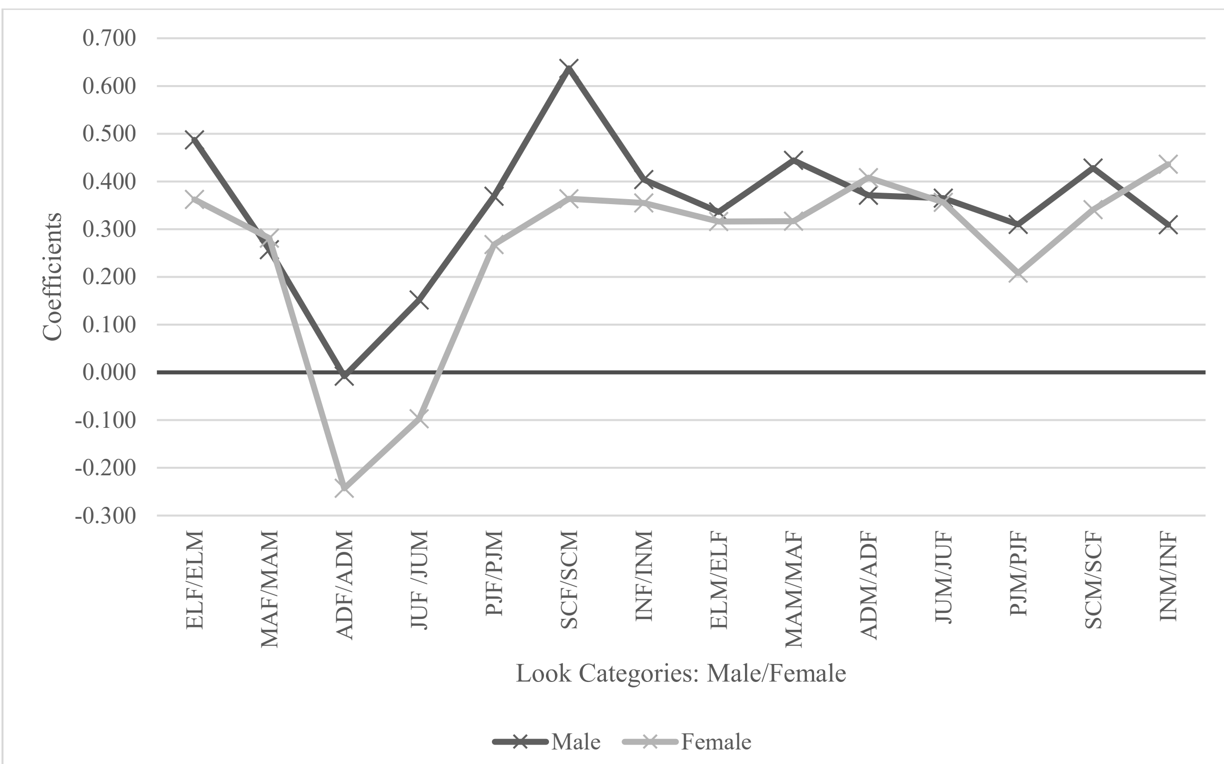

Figure 4. Rate-time with Ratings correlation coefficients: Opposite category genders compared.

Table 3

Male Participant Correlations Across Categories

Category	Dot *r*	Dot *p*	Rate *r*	Rate *p*	Total *r*	Total *p*
ELF	0.023^{ns}	0.854	0.487	$p < 0.001$	0.408	$p < 0.001$
ELM	0.058^{ns}	0.637	0.336	0.005	0.279	0.020
MAF	-0.140^{ns}	0.251	0.257	0.033	0.172^{ns}	0.158
MAM	0.115^{ns}	0.347	0.444	$p < 0.001$	0.403	0.001
ADF	-0.204^{ns}	0.092	-0.008^{ns}	0.949	-0.089^{ns}	0.469
ADM	0.009^{ns}	0.941	0.371	0.002	0.334	0.005
JUF	0.064^{ns}	0.600	0.152^{ns}	0.213	0.126^{ns}	0.303
JUM	0.028^{ns}	0.821	0.365	0.003	0.318	0.008
PJF	0.061^{ns}	0.620	0.369	0.002	0.324	0.007
PJM	0.096^{ns}	0.432	0.310	0.010	0.282	0.019
SCF	0.048^{ns}	0.696	0.637	$p < 0.001$	0.582	$p < 0.001$
SCM	0.081^{ns}	0.507	0.428	$p < 0.001$	0.394	0.001
INF	0.001^{ns}	0.992	0.404	0.001	0.354	0.003
INM	0.153^{ns}	0.209	0.309	0.010	0.306	0.010

Note. N = 69. r = Pearson Product Correlation Coefficient. ns = not significant. Dot = Dot-time. Rate = Rate-time. Total = Total-time. ELF/M (Elderly Female/Male), MAF/M (Mature Adult Female/Male), ADF/M (Adult Female/Male), JUF/M (Juvenile Female/Male), PJF/M (Pre-juvenile Female/Male), SCF/M (Small Child Female/Male), INF/M (Infant Female/Male).

Table 4

Female Participant Correlations Across Categories

Category	Dot *r*	Dot *p*	Rate *r*	Rate *p*	Total *r*	Total *p*
ELF	0.097[ns]	0.361	0.316	0.002	0.263	0.012
ELM	0.042[ns]	0.690	0.362	$p < 0.001$	0.314	0.002
MAF	0.239	0.023	0.317	0.002	0.323	0.002
MAM	0.081[ns]	0.447	0.281	0.007	0.262	0.012
ADF	0.056[ns]	0.598	0.408	$p < .001$	0.351	0.001
ADM	-0.324	0.002	-0.243	0.021	-0.310	0.003
JUF	0.062[ns]	0.562	0.356	0.001	0.312	0.003
JUM	-0.170[ns]	0.106	-0.097[ns]	0.360	-0.144[ns]	0.172
PJF	0.061[ns]	0.564	0.208	0.048	0.198[ns]	0.059
PJM	0.081[ns]	0.447	0.268	0.010	0.231	0.028
SCF	0.124[ns]	0.240	0.341	0.001	0.312	0.003
SCM	0.093[ns]	0.379	0.364	$p < 0.001$	0.346	0.001
INF	0.166[ns]	0.115	0.436	$p < 0.001$	0.398	$p < 0.001$
INM	0.169[ns]	0.109	0.355	0.001	0.340	0.001

Note. N=69. r = Pearson Product Correlation Coefficient. ns = not significant. Dot = Dot-time. Rate = Rate-time. Total = Total-time. ELF/M (Elderly Female/Male), MAF/M (Mature Adult Female/Male), ADF/M (Adult Female/Male), JUF/M (Juvenile Female/Male), PJF/M (Pre-juvenile Female/Male), SCF/M (Small Child Female/Male), INF/M (Infant Female/Male).

Responding to the question of whether or not response times and Ratings were related to age, we ran partial correlations controlling for the effect of age. The results showed that the same pattern held and that age was not a significant covariate. The correlations between Ratings and Rate-time were not significantly mediated by the age of the participants.

Male and Female Correlation Coefficients Equivalence

The next layer of analysis tested whether male and female correlations of Rating and Rate-time were equivalent. The results of the correlations indicated that Dot-time did not follow any apparent pattern and made the results more nebulous. Given this random pattern, we analyzed the results of Rate-time and Ratings using Fisher's Z-tests to estimate whether male correlations were equivalent to female correlations for each category, these results are shown in Table 5. This layer of analysis rendered 14 Fisher Z-tests. The correlations in four categories: ADF (z = -2.71, p = .0067), ADM (z = 3.92, p = .0001), JUM (z = 2.95, p = .0032), SCF (z = 2.44, p = .0147), were found to be statistically different. The correlations in all other categories were shown to be statistically equivalent.

Table 5

Fisher Z-Test Male/Female Correlation Coefficients

Category	*z* Score	Two-tailed *p*
Elderly Female	1.26	0.2077
Elderly Male	-0.18	0.8572
Mature Adult Female	-0.4	0.6892
Mature Adult Male	1.16	0.2460
Adult Female	-2.7**	0.0067
Adult Male	3.92**	0.0001
Juvenile Female	-1.35	0.1770
Juvenile Male	2.95**	0.0032
Pre-juvenile Female	1.08	0.2801
Pre-juvenile Male	0.28	0.7795
Small Child Female	2.44*	0.0147
Small Child Male	0.47	0.6384
Infant Female	-0.24	0.8103
Infant Male	-0.32	0.7490

*p < .05, two-tailed, **p<.01.

Fisher's Z-tests were also done on opposite category genders. That is, male Rate-time and Ratings coefficients for their opposite gender (Female Categories) were compared to Female coefficients of their corresponding opposite genders (Male Categories). Male and female Coefficients for the same gender categories were also compared. These results are shown in Table 6. This layer of analysis rendered 14 Fisher Z-tests. The correlations in one category, SCF/SCM (i.e., male participant coefficients on SCF compared to female participant coefficients on SCM) were found to be statistically different ($z = 2.28$, $p = .0226$). The correlations in all other categories were shown to be statistically equivalent.

Table 6

Fisher Z-Test Male/Female Correlation Coefficients: Opposite Category Genders Compared

Male/Female Category	Z Score	Two-tailed *p*
ELF/ELM	0.94	0.3472
MAF/MAM	-0.16	0.8729
ADF/ADM	1.47	0.1416
JUF /JUM	1.54	0.1236
PJF/PJM	0.69	0.4902
SCF/SCM	2.28*	0.0226
INF/INM	0.35	0.7263
ELM/ELF	0.14	0.8887
MAM/MAF	0.91	0.3628
ADM/ADF	-0.27	0.7872
JUM/JUF	0.06	0.9522
PJM/PJF	1.05	0.2937
SCM/SCF	0.63	0.5287
INM/INF	-0.91	0.3628

*p < .05, two-tailed, **p<.01.

Cluster Analysis

A two-step cluster analysis was run for men and women separately to determine clusters of respondents in each. Distinct clusters were found within both male and female respondent groups. These cluster analyses were run in both Rating-time and on actual Ratings given. The distinct clusters showed the same pattern between both Rating-time and actual Ratings. The results of the correlations indicated that Dot-time did not follow any apparent pattern and made the results more nebulous. Given these results, we conducted independent samples t-tests on Rate-time and Ratings.

Within the male respondents, two clusters were discovered with a fair amount of cohesion and separation. An independent-samples t-test indicated that Cluster 1 (N = 26, *M* = 22.42, *SD* = 2.43) and Cluster 2 (N = 43, *M* = 21.76, *SD* = 2.35) were not significantly different in terms of age ($t(67) = 1.105$, $p = .273$). These clusters were differentiated by significant differences in overall Rate-time and Ratings. As a general trend, Cluster 1 was typified by longer Rate-time and higher Ratings across categories in comparison to Cluster 2. These trends are illustrated in Figure 5 and Figure 6 respectively.

Of the male participants, the smaller Cluster 1 (N = 26) had significantly higher Rate-time than Cluster 2 (N = 43; see Table 7). Rate-time for males was higher in all but one category, Adult Females (ADF). An independent-samples t-test indicated there was not a significant difference in Rate-time between Cluster 1 (*M* = 27023.69, *SD* = 20202.40) and Cluster 2 (*M* = 21452.58, SD = 11671.92) in the ADF category ($t(67) = 1.455$, $p = .150$). All other categories had significant differences. As an example, within the Infant Female (INF) category Cluster 1 (*M* = 16732.56, *SD* = 8356.42) had significantly higher Rate-time ($t(30) = 5.41$, $p < .001$) than Cluster 2 (*M* = 7438.96, *SD* = 3356.95). Levene's test indicated unequal variances ($F = 29.27$, $p < .001$), so degrees of freedom were adjusted from 67 to 30.

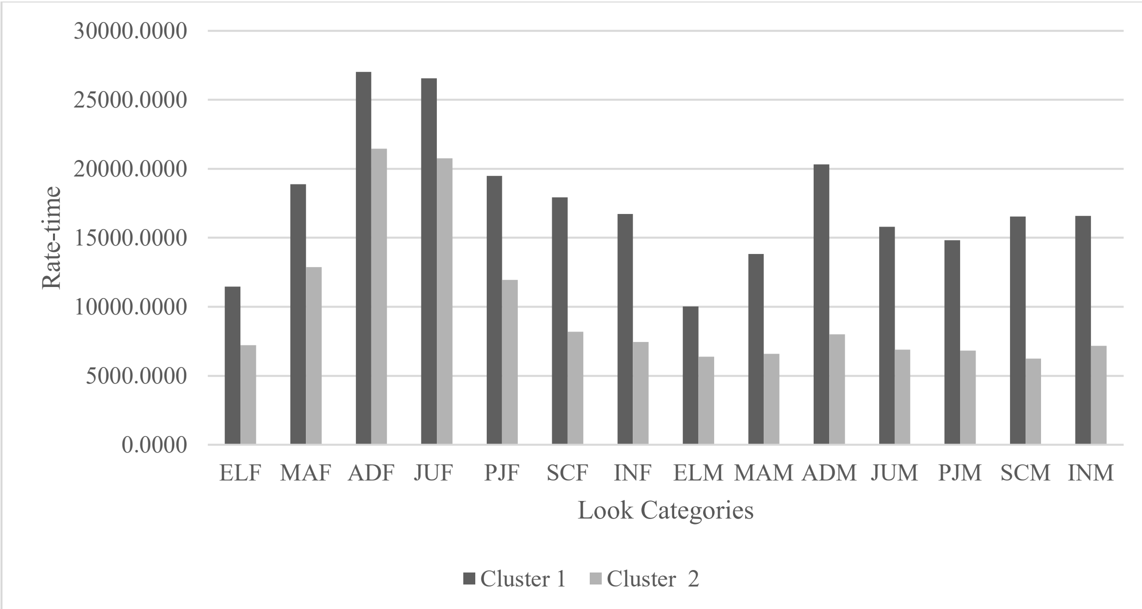

Figure 5. Rate-time for Male Cluster 1 and Male Cluster 2.

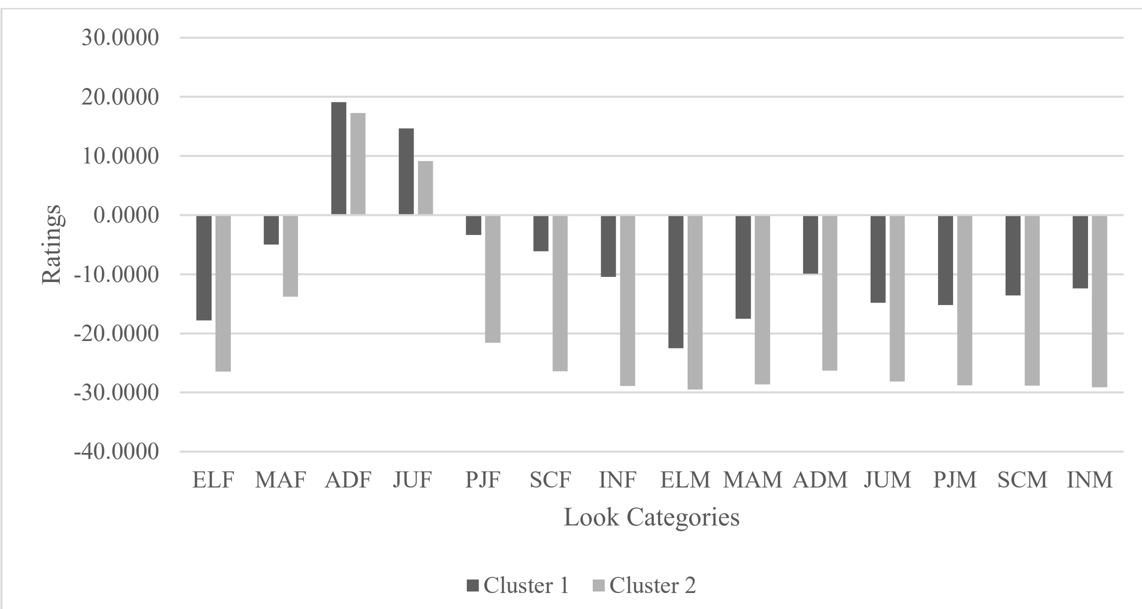

Figure 6. Ratings for Male Cluster 1 and Male Cluster 2.

Table 7

Cluster Analysis of Male Participant Rate-Time

Category	Cluster	N	Mean	*SD*	*t* Value	*p* Value
Age	1	26	22.4230	2.4359	1.105^{ns}	0.273
	2	43	21.7670	2.3587		
Rate Time ELF	1	26	11470.4122	5699.5548	3.783	$p < 0.001$
	2	43	7222.3261	3640.6413		
Rate Time ELM	1	26	10024.8899	4637.0856	3.629	0.001
	2	43	6391.6996	2745.5467		
Rate Time MAF	1	26	18878.3088	8852.8384	3.094	0.004
	2	43	12887.2987	5622.8535		
Rate Time MAM	1	26	13822.1701	5798.6852	5.969	$p < 0.001$
	2	43	6585.3735	2757.9117		
Rate Time ADF	1	26	27023.6922	20202.4096	1.455^{ns}	0.150
	2	43	21452.5850	11671.9277		
Rate Time ADM	1	26	20316.9912	15831.2034	3.887	0.001
	2	43	8006.2989	4093.9330		
Rate Time JUF	1	26	26561.9910	11133.0125	2.150	0.035
	2	43	20764.8319	10680.0382		
Rate Time JUM	1	26	15787.9071	12439.4580	3.580	0.001
	2	43	6885.5825	3164.5228		
Rate Time PJF	1	26	19479.8925	9759.5975	3.435	0.001
	2	43	11951.7374	7002.3552		
Rate Time PJM	1	26	14819.1446	6113.0231	6.045	$p < 0.001$
	2	43	6829.5246	3648.7691		
Rate Time SCF	1	26	17926.5650	9267.8993	4.995	$p < 0.001$
	2	43	8197.5401	4592.1159		
Rate Time SCM	1	26	16537.9621	7695.3915	6.635	$p < 0.001$
	2	43	6244.7288	2353.3838		
Rate Time INF	1	26	16732.5581	8356.4205	5.413	$p < 0.001$
	2	43	7438.9595	3356.9555		
Rate Time INM	1	26	16595.1729	9351.1471	4.980	$p < 0.001$
	2	43	7167.9518	3078.6433		

Note. N=69. ns = not significant.
ELF/M (Elderly Female/Male), MAF/M (Mature Adult Female/Male), ADF/M (Adult Female/Male), JUF/M (Juvenile Female/Male), PJF/M (Pre-juvenile Female/Male), SCF/M (Small Child Female/Male), INF/M (Infant Female/Male).

Further, of the male participants, Cluster 1 had significantly higher Ratings (less negative) than Cluster 2 overall (see Figure 6 and Table 8). This significant difference was found in all but one category, again ADF. An independent-samples t-test revealed that the ADF category of Cluster 1 (M = 19.11, SD = 9.25) was not significantly higher ($t(67)$ = .847, p = .400) than the Ratings of Cluster 2 (M = 17.25, SD = 8.58). Again, all other categories showed significant differences. As an example, in the INF category, Cluster 1 (M = -10.42, SD = 12.15) had Ratings significantly higher ($t(27)$ = 7.62, p < .001) than Cluster 2 (M = -28.90, SD = 2.87). Levene's test indicated unequal variances (F = 140.76, p < .001), so degrees of freedom were adjusted from 67 to 27.

Pearson Product Moment Correlation coefficients were calculated for the relationship between Rate-time with Ratings for both Male Cluster 1 and 2 separately. Fisher's Z-tests were then used to estimate whether the Male Cluster 1 correlation coefficients were equivalent to the Male Cluster 2 correlations coefficients for each category. These results are shown in Table 9. This layer of analysis rendered 14 Fisher Z-tests. Non-equivalence between the Male Clusters 1 and 2 correlation coefficients were found in four categories: PJF (z = -3.92, p < .001); SCF (z = -2.32, p = .020); ADM (z = -3.18, p = .002); and SCM (z = -2.38, p = .017). Overall, and with the exception of category ELM, Cluster 1 had lower correlation coefficients than Cluster 2 (see Figure 7).

Table 8

Cluster Analysis of Male Participant on Rating Scores

Category	Cluster	N	Mean	Std. Deviation	*t* Value	*p* Value
Age	1	26	22.4230	2.4359	1.105 ns	0.273
	2	43	21.7670	2.3587		
Total Rating ELF	1	26	-17.8077	10.4767	3.889	$p < 0.001$
	2	43	-26.4651	5.6161		
Total Rating ELM	1	26	-22.5385	10.0687	3.484	0.002
	2	43	-29.4884	1.8435		
Total Rating MAF	1	26	-5.0000	11.6447	3.150	0.002
	2	43	-13.7907	10.9839		
Total Rating MAM	1	26	-17.5385	12.5546	4.440	$p < 0.001$
	2	43	-28.6279	2.7518		
Total Rating ADF	1	26	19.1150	9.2534	0.847 ns	0.400
	2	43	17.2560	8.5832		
Total Rating ADM	1	26	-9.8846	16.1575	4.985	$p < 0.001$
	2	43	-26.3256	5.9909		
Total Rating JUF	1	26	14.6923	8.5077	2.506	0.015
	2	43	9.1628	9.0998		
Total Rating JUM	1	26	-14.8077	12.9245	5.136	$p < 0.001$
	2	43	-28.1163	3.5336		
Total Rating PJF	1	26	-3.3462	10.8183	8.103	$p < 0.001$
	2	43	-21.5814	7.8262		
Total Rating PJM	1	26	-15.1923	11.2571	6.039	$p < 0.001$
	2	43	-28.7907	2.9078		
Total Rating SCF	1	26	-6.1154	11.3219	8.691	$p < 0.001$
	2	43	-26.3953	4.7063		
Total Rating SCM	1	26	-13.5769	11.1433	6.865	$p < 0.001$
	2	43	-28.8605	2.7824		
Total Rating INF	1	26	-10.4231	12.1595	7.623	$p < 0.001$
	2	43	-28.9070	2.8770		
Total Rating INM	1	26	-12.3850	11.4789	7.331	$p < 0.001$
	2	43	-29.0930	2.3382		

Note. N=69. ns = not significant.
ELF/M (Elderly Female/Male), MAF/M (Mature Adult Female/Male), ADF/M (Adult Female/Male), JUF/M (Juvenile Female/Male), PJF/M (Pre-juvenile Female/Male), SCF/M (Small Child Female/Male), INF/M (Infant Female/Male).

Table 9

Male Cluster Rate-Time with Ratings Correlation Equivalence Analysis

Category	Cluster 1 r	Cluster 1 *p*	Cluster 2 *r*	Cluster 2 *p*	*z* Scores	two-tailed *p*
ELF	0.336	0.093	0.402**	0.008	-0.29	0.772
MAF	0.099	0.631	0.18	0.247	-0.32	0.749
ADF	-0.174	0.396	0.136	0.386	-1.19	0.234
JUF	-0.223	0.274	0.262	0.090	-1.89	0.059
PJF	-0.306	0.129	0.61**	$p < 0.001$	-3.92**	$p < 0.001$
SCF	0.247	0.225	0.696**	$p < 0.001$	-2.32*	0.020
INF	-0.178	0.384	0.118	0.453	-1.14	0.254
ELM	0.247	0.224	-0.243	0.116	1.91	0.056
MAM	0.081	0.694	0.391**	0.009	-1.27	0.204
ADM	0.005	0.981	0.684**	$p < 0.001$	-3.18**	0.002
JUM	0.04	0.846	0.498**	0.001	-1.94	0.052
PJM	-0.3	0.136	0.034	0.827	-1.31	0.190
SCM	-0.242	0.233	0.36**	0.018	-2.38*	0.017
INM	-0.297	0.140	0.02	0.899	-1.25	0.211

Note. Cluster 1 N = 26. Cluster 2 N = 43. *p < .05, two-tailed, **p<.01, two tailed.
ELF/M (Elderly Female/Male), MAF/M (Mature Adult Female/Male), ADF/M (Adult Female/Male), JUF/M (Juvenile Female/Male), PJF/M (Pre-juvenile Female/Male), SCF/M (Small Child Female/Male), INF/M (Infant Female/Male).

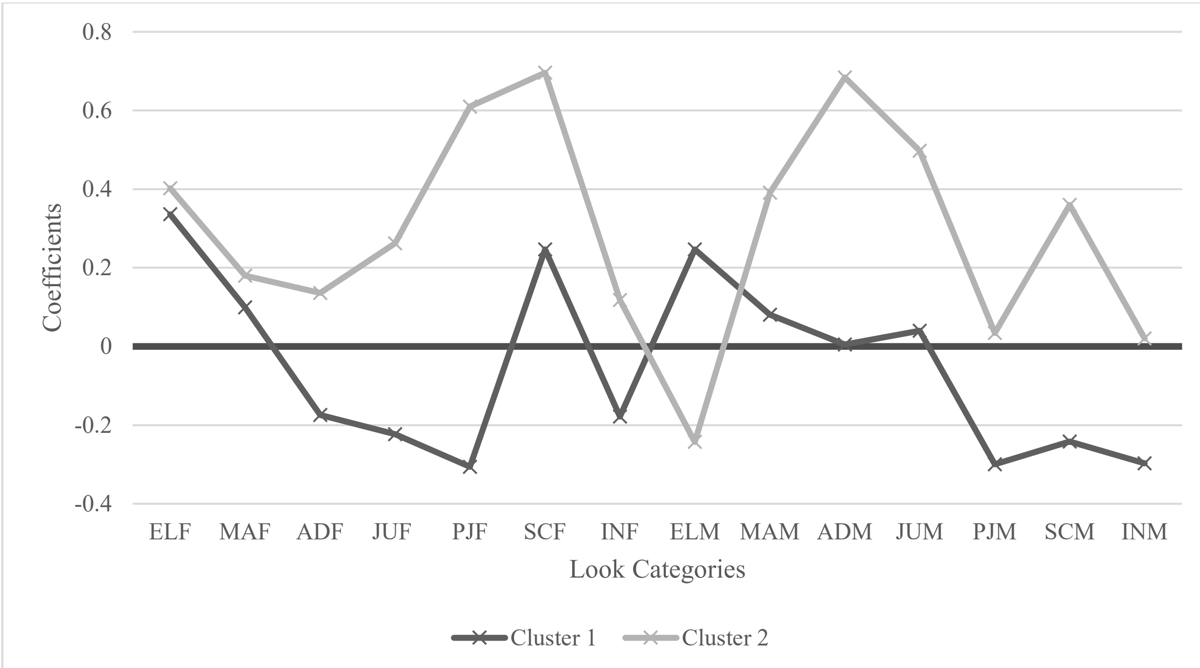

Figure 7. Male Cluster 1 and Male Cluster 2 Rate-time with Ratings correlation coefficients.

Within the female respondents, two clusters were discovered with a fair amount of cohesion and separation. An independent-samples t-test indicated that Cluster 1 (N = 33, *M* = 19.54, *SD* = 2.68) and Cluster 2 (N = 58, *M* = 19.36, *SD* = 1.43) were not significantly different in terms of age ($t(89) = .426$, $p = .671$). These clusters were differentiated by significant differences in overall Rate-time and Ratings. As a general trend, Cluster 1 was typified by longer Rate-time and higher Ratings across categories in comparison to Cluster 2. These trends are illustrated in Figure 8 and Figure 9 respectively.

Of the female participants, Cluster 1 had significantly higher Rate-time than Cluster 2 in all but four categories: Mature Adult Males (MAM), Adult Males (ADM), Juvenile Females (JUF), and Juvenile Males (JUM). These results are shown in Table 10. An independent-samples t-test indicated there was not a significant difference in Rate-time between Cluster 1 (*M* = 15062.64, *SD* = 8085.71) and Cluster 2 (*M* = 12060.05, SD = 4855.2) in the MAM category ($t(45) = -1.943$, $p = .058$). Levene’s test indicated unequal variances ($F = 5.055$, $p = .027$), so degrees of freedom were adjusted from 89 to 45. In the ADM category ($t(89) = -.923$, $p = .359$). Cluster 1 ($M = 12835.07$, $SD = 6915.37$) was not significantly different from Cluster 2 ($M = 11646.02$, $SD = 5259.86$). In the JUF category ($t(89) = -1.68$, $p = .096$), Cluster 1 ($M = 12659.85$, $SD = 10244.83$) was not significantly different from Cluster 2 ($M = 10244.83$, $SD = 6838.55$). In the JUM category ($t(89) = -.68$, $p = .498$), Cluster 1 ($M = 14037.33$, $SD = 6563.66$) was not significantly different from Cluster 2 ($M = 13144.03$, $SD = 5692.62$). All other categories showed significant differences. As an example, within the Infant Female (INM) category, Cluster 1 ($M = 11374.43$, $SD = 6028.84$) had significantly higher Rate-time ($t(43) = -3.86$, $p < .001$) than Cluster 2 ($M = 6981.67$, $SD = 3317.31$). Levene's test indicated unequal variances ($F = 12.54$, $p = .001$), so degrees of freedom were adjusted from 89 to 45.

Further, of the female participants, Cluster 1 recorded significantly higher Ratings than Cluster 2 overall (see Table 11). Significant differences were found in all but one category, ADF. An independent-samples t-test revealed that in the ADM category, Cluster 1 ($M = 22.66$, $SD = 5.30$) was not significantly higher ($t(89) = -1.763$, $p = .081$) than the Ratings of Cluster 2 ($M = 20.08$, $SD = 7.38$). As an example, in the INM category, Cluster 1 ($M = -2.45$, $SD = 12.25$) had Ratings significantly higher ($t(38) = -11.34$, $p < .001$) than Cluster 2 ($M = -27.74$, $SD = 4.93$). Levene's test indicated unequal variances ($F = 18.11$, $p < .001$), so degrees of freedom were adjusted from 89 to 38.

Pearson Product Moment Correlation coefficients were calculated for the relationship between Rate-time with Ratings for both Female Cluster 1 and 2 separately. Fisher's Z-tests were then used to estimate whether the Female Cluster 1 correlation coefficients were equivalent to the Female Cluster 2 correlations coefficients for each category (see Table 12). This layer of analysis rendered 14 Fisher Z-tests. Non-equivalence between the Female Clusters 1 and 2 correlation coefficients were found in four categories: MAF (*z* = -3.370, *p* = .001); ADF (*z* = -2.250, *p* = .024); PJF (*z* = -2.440, *p* = .015); and PJM (*z* = -1.990, *p* = .047). Overall, and with the exception of category MAM, Cluster 1 had lower correlation coefficients than Cluster 2 (see Figure 10).

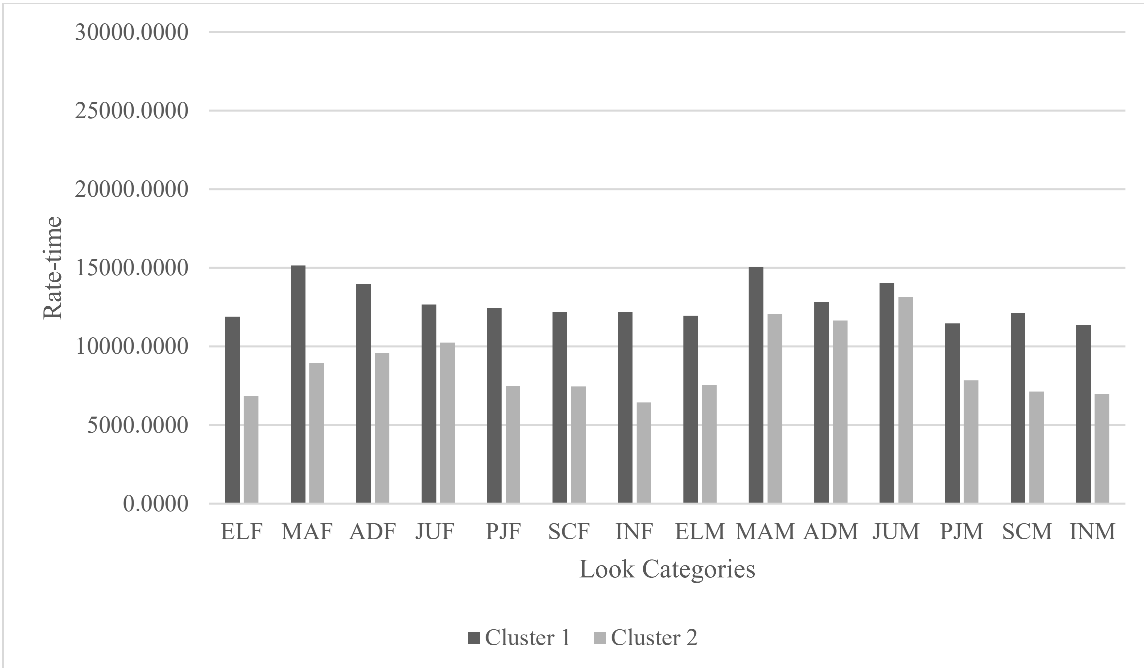

Figure 8. Rate-time for Female Cluster 1 and Female Cluster 2.

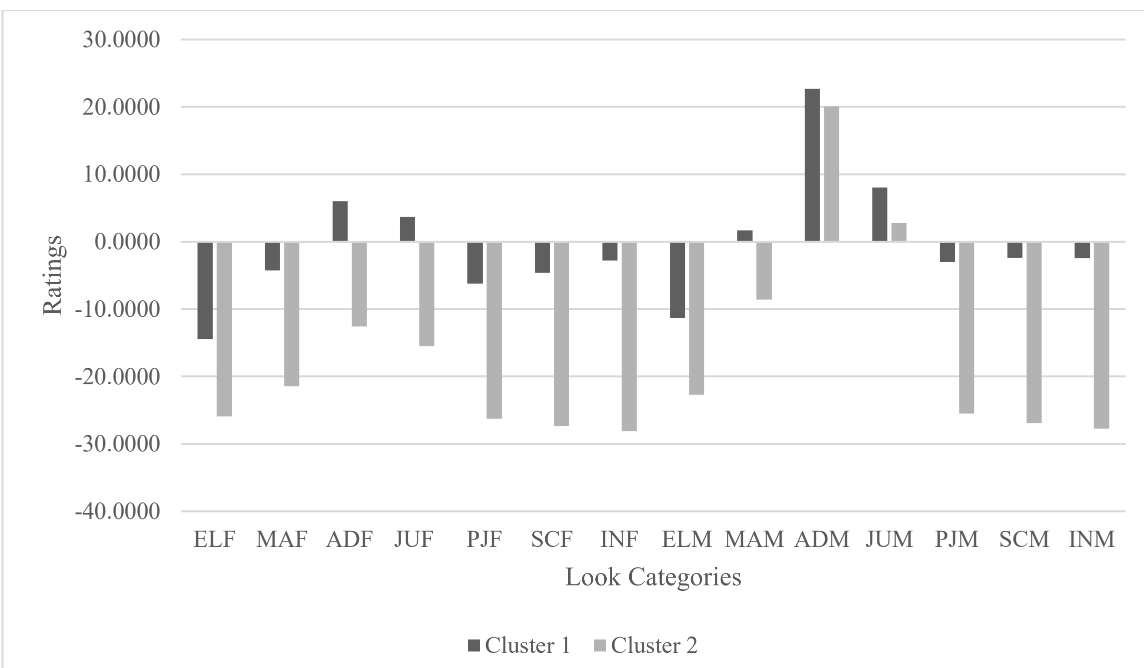

Figure 9. Ratings for Female Cluster 1 and Female Cluster 2.

Table 10

Cluster Analysis of Female Participants Rate-Time

Category	Cluster	N	Mean	Std. Deviation	*t* Value	*p* value
Age	1	33	19.5450	2.6820	-0.426^{ns}	0.671
	2	58	19.3620	1.4351		
Rate Time ELF	1	33	11884.2662	6245.2411	-4.308	$p < 0.001$
	2	58	6836.0716	3329.0754		
Rate Time ELM	1	33	11947.4223	7906.5997	-3.032	0.004
	2	58	7530.3600	3639.2257		
Rate Time MAF	1	33	15142.5769	9491.8650	-3.491	0.001
	2	58	8947.7442	4932.1453		
Rate Time MAM	1	33	15062.6466	8085.7160	-1.943^{ns}	0.058
	2	58	12060.0581	4855.2070		
Rate Time ADF	1	33	13968.5896	9067.3596	-2.512	0.016
	2	58	9599.2396	5564.8922		
Rate Time ADM	1	33	12835.0760	6915.3718	-0.923^{ns}	0.359
	2	58	11646.0249	5259.8625		
Rate Time JUF	1	33	12659.8577	6105.8917	-1.682^{ns}	0.096
	2	58	10244.8351	6838.5583		
Rate Time JUM	1	33	14037.3314	6563.6698	-0.680^{ns}	0.498
	2	58	13144.0387	5692.6224		
Rate Time PJF	1	33	12442.7810	8990.6200	-3.071	0.004
	2	58	7471.1647	3153.7560		
Rate Time PJM	1	33	11473.1285	5777.7321	-3.239	0.002
	2	58	7846.8987	3742.1109		
Rate Time SCF	1	33	12209.1117	6846.0829	-3.757	0.001
	2	58	7464.7830	3182.7172		
Rate Time SCM	1	33	12130.2707	6431.4074	-4.188	$p < 0.001$
	2	58	7131.1638	3152.3328		
Rate Time INF	1	33	12187.9424	8270.4369	-3.874	$p < 0.001$
	2	58	6446.0533	2678.9231		
Rate Time INM	1	33	11374.4372	6028.8486	-3.866	$p < 0.001$
	2	58	6981.6789	3317.3125		

Note. N=69. ns = not significant.
ELF/M (Elderly Female/Male), MAF/M (Mature Adult Female/Male), ADF/M (Adult Female/Male), JUF/M (Juvenile Female/Male), PJF/M (Pre-juvenile Female/Male), SCF/M (Small Child Female/Male), INF/M (Infant Female/Male).

Table 11

Cluster Analysis of Female Participant Rating Scores

Category	Cluster	N	Mean	Std. Deviation	*t* Value	*p* value
Age	1	33	19.5450	2.6820	0.426[ns]	0.671
	2	58	19.3620	1.4351		
Total Rating ELF	1	33	-14.4545	9.5985	6.114	$p < 0.001$
	2	58	-25.9310	6.5155		
Total Rating ELM	1	33	-11.3333	10.9564	5.224	$p < 0.001$
	2	58	-22.6724	9.3460		
Total Rating MAF	1	33	-4.2727	9.7316	7.734	$p < 0.001$
	2	58	-21.4310	10.4144		
Total Rating MAM	1	33	1.6970	9.8536	4.300	$p < 0.001$
	2	58	-8.5690	12.6479		
Total Rating ADF	1	33	6.0000	11.2138	6.231	$p < 0.001$
	2	58	-12.5520	17.1210		
Total Rating ADM	1	33	22.6667	5.3072	1.763[ns]	0.081
	2	58	20.0862	7.3872		
Total Rating JUF	1	33	3.6667	10.2429	7.545	$p < 0.001$
	2	58	-15.5000	13.7793		
Total Rating JUM	1	33	8.0303	7.3036	2.650	0.010
	2	58	2.7759	11.5850		
Total Rating PJF	1	33	-6.1818	9.6581	10.913	$p < 0.001$
	2	58	-26.2586	5.6895		
Total Rating PJM	1	33	-3.0000	9.1652	13.987	$p < 0.001$
	2	58	-25.4828	6.1394		
Total Rating SCF	1	33	-4.5758	11.3771	10.885	$p < 0.001$
	2	58	-27.3448	5.1284		
Total Rating SCM	1	33	-2.3939	11.3135	11.587	$p < 0.001$
	2	58	-26.9138	5.8976		
Total Rating INF	1	33	-2.7879	12.3409	11.341	$p < 0.001$
	2	58	-28.1035	4.6176		
Total Rating INM	1	33	-2.4550	12.2553	11.342	$p < 0.001$
	2	58	-27.7410	4.9331		

Note. N=69. ns = not significant.
ELF/M (Elderly Female/Male), MAF/M (Mature Adult Female/Male), ADF/M (Adult Female/Male), JUF/M (Juvenile Female/Male), PJF/M (Pre-juvenile Female/Male), SCF/M (Small Child Female/Male), INF/M (Infant Female/Male).

Table 12

Female Cluster Rate-Time with Ratings Correlation Equivalence Analysis

Category	Cluster 1 *r*	Cluster 1 *p*	Cluster 2 *r*	Cluster 2 *p*	*z* Scores	two-tailed *p*
ELF	-0.087	0.631	0.282*	0.032	-1.660	0.097
MAF	-0.262	0.141	0.460**	$p < 0.001$	-3.370**	0.001
ADF	0.063	0.729	0.518**	$p < 0.001$	-2.250*	0.024
JUF	0.132	0.465	0.388**	0.003	-1.220	0.223
PJF	-0.314	0.075	0.224	0.091	-2.440*	0.015
SCF	-0.093	0.606	0.188	0.158	-1.250	0.211
INF	0.104	0.564	0.145	0.279	-0.180	0.857
ELM	0.081	0.655	0.470**	$p < 0.001$	-1.890	0.059
MAM	0.229	0.200	0.229	0.083	0.000	1.000
ADM	-0.321	0.069	-0.254	0.054	-0.320	0.749
JUM	-0.157	0.383	-0.109	0.417	-0.220	0.826
PJM	-0.250	0.161	0.194	0.145	-1.990*	0.047
SCM	-0.165	0.360	0.241	0.069	-1.820	0.069
INM	-0.040	0.824	0.096	0.471	-0.600	0.549

Note. Cluster 1 N = 33. Cluster 2 N = 58. *p < .05, two-tailed, **p<.01, two tailed. ELF/M (Elderly Female/Male), MAF/M (Mature Adult Female/Male), ADF/M (Adult Female/Male), JUF/M (Juvenile Female/Male), PJF/M (Pre-juvenile Female/Male), SCF/M (Small Child Female/Male), INF/M (Infant Female/Male).

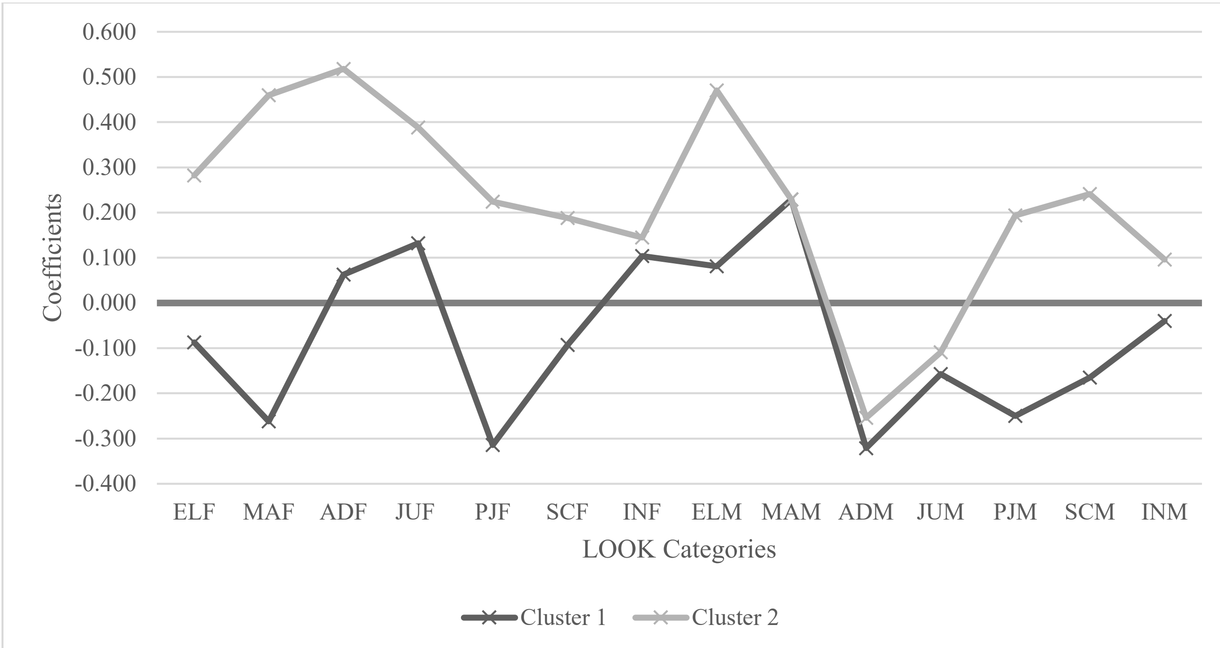

Figure 10. Female Cluster 1 and Female Cluster 2 Rate-time with Ratings correlation coefficients.

CHAPTER 5

Discussion

Given the results, the general theory that longer viewing-time is associated with greater sexual attraction is put in question. Reported sexual attraction did correlate moderately with the recorded viewing-time on the LOOK. This was especially true in those categories typically considered important to judges and other decision makers who use these types of viewing-time measures, namely those categories with vulnerable populations: Infant, Child, and Elderly categories. Moderate correlation coefficients were found for both men and women in these categories. These results indicate that in these categories viewing-time is associated with sexual attraction. Most participants who viewed the images in these categories longer tended to also rate them as more sexually attractive. However, this theory did not account for other results found through this analysis such as negative correlation coefficients, loss of correlational strength in target categories (categories rated as most sexually attractive), and the existence of different response clusters in both males and females.

Strong correlations were found in most of the categories, yet the correlation was either not found or was considerably weaker in those categories most germane to the participant's stated sexual preferences. For male participants, a significant correlation was simply not found in the target categories ADF or JUF. For female participants, a significant correlation was found in all cases except for the target category JUM. Additionally, for females, the category ADM resulted in a negative correlation coefficient, meaning that in this one category longer Rating-time was actually associated with lower Ratings of sexual attraction. When analyzing these correlation coefficients, it is not only the strength but the direction of the correlation that is important. Finding negative correlations runs counter to the proposed theory that increased viewing-time will be associated with higher perception of sexual attraction.

If viewing-time is strongly associated with sexual attraction we would expect to see moderate or strong positive correlations across all categories, especially those in which participants reported the highest amount of sexual attraction. The fact that these correlations were not found raises the question of whether other mediating factors are not being accounted for. Although the measure shows stronger correlations around vulnerable population categories, the fact that the lost correlations are unexplained puts the overall validity of viewing-time tests in question.

The loss of correlation in target areas is significantly problematic for the use of viewing-time measures with individuals with pedophilic interests. Such an individual's target areas may include or be exclusively the Small Child categories. This means the viewing-time results of individuals with true pedophilic interests will be less reliable and more difficult to interpret in the Small Child categories. This puts in question the usefulness of the measure as a whole.

Analysis of the equivalence of male and female participant's correlation coefficients appeared to show that overall, the two groups were equivalent, but notable exceptions were found. Here again we see a breakdown in the theorized results. According to the viewing-time theory, we should expect to see equivalence across all categories if viewing-time is associated closely to sexual attraction for both men and women irrespective of sexual preference. However, we found that correlations in four categories (ADF, ADM, JUM, and SCF) were found to be statistically different. Three of these categories are target categories, the same that were found to lack correlational strength. The last, SCF, is a vulnerable population. The lack of equivalence across all categories is problematic for the validity of viewing-time measures.

The cluster analysis revealed two distinct clusters within both male and female participants. The smaller clusters of both male and female participants were distinguished by significantly longer Rate-time and higher Ratings across almost all categories. The male clusters were significantly different in all cases except for the ADF category for Rate-time and Ratings. Interestingly, this was the category with the lowest correlation coefficient for male participants.

When we conducted a cluster analysis of female participants, we discovered two clusters with the same discriminating features of longer Rate-time and higher Ratings. However, there were many more non-significant differences between the clusters' subcategories than those found for the males. In the case of the two female participant clusters, no significant difference was found in Rate-time for MAM, ADM, JUF, and JUM categories. Additionally, no significant difference was found in the ADM category for Ratings. It is interesting to note that where male Clusters 1 and 2 followed a similar pattern, the Female Clusters 1 and 2 did not. For example, Female Cluster 1 had the longest Rate-time in categories MAF and MAM, running counter to both the theory of viewing-time and the pattern of response shown by Cluster 2.

The fact that the loss of significant differences between the clusters for both men and women in the same categories that showed less correlational strength is notable. In both cases, the smaller cluster of men and women tended to have higher Rate-time and Ratings than the larger clusters; however, in target categories the two clusters tended to have more similar Rate-time and Ratings.

There is a question of why it is that the smaller cluster of heterosexual individuals in both the male and female groups tended to have such significantly higher Rate-time and Ratings across most categories. Could it be that there is a subset of individuals who are more flexible in their sexual preferences than was expected? Are these individuals perhaps just more willing to set aside cultural norms and rate the attractiveness of any individual from any gender or age group? If so, this would run in contrast to the prevailing theory of viewing-time in that it would suggest that longer viewing-time is not necessarily always associated with more sexual attraction.

The comparison of Male Cluster 1 and 2 in terms of their Rate-time with Rating correlation coefficients also showed interesting results. Cluster 2 had higher overall correlational strength than Cluster 1 across all categories except ELM. The clusters' coefficients also differed significantly in key vulnerable populations (PJF, SCF, and SCM). In all these cases, Cluster 1 had lower correlational strength, meaning that for these participants Rate-time was either not as closely associated, or was negatively correlated with Ratings.

A similar result was found in the Female Cluster 1 and 2 comparisons. When both clusters' Rate-time with Ratings correlation coefficients were compared, Cluster 2 showed higher overall strength. In some cases (PJF, ADM, PJM), Cluster 1 had larger coefficients, but in these categories the coefficients were negative.

It is interesting to note that Female Cluster 1 had nine total negative correlation coefficients while Female Cluster 2 had two (ADM, JUM). Additionally, Male Cluster 1 had seven negative coefficients and Male Cluster 2 had one. In both Men and Women, the smaller cluster seems to deviate from the expectations of the viewing-time theory, for these individuals, Rate-time is either weakly or negatively correlated to Ratings. It appears that the assumption that Rate-time correlates positively with Ratings of sexual attraction simply does not hold true for a sizable portion of both the men and women in this study. Both Male and Female Cluster 2 appear to follow the expectations of the viewing-time theory more closely than Cluster 1.

The results of this cluster analysis are especially enlightening when taken into consideration alongside Baird's (2015) discovery of stable viewing-time reference patterns for men and women. The cluster analysis shows greater complexity and differences within groups (male and female) then previously accounted for. Baird's (2015) study was a step towards creating a norm-reference for viewing-time measures. However, subsequent attempts to use this reference to differentiate between pedophilic and non-pedophilic individuals have failed (Cox, 2015). The discovery of distinct clusters of responder types may point to a reason why these attempts at normalization have failed. There are more distinctions within groups of men and women in their response patterns than shown in Baird's original analysis. It may be necessary to compare individuals to a variety of expected male and female response patterns rather than to an average male or female response pattern.

Viewing-time measures operate on the theory that the cognitive work involved in rating the attraction of a sexually appealing individual takes more time than that of judging a sexually unattractive individual. This theory does not adequately describe the results found in all categories. It appears that additional mediating variables may be unaccounted for. One mediating variable might be the aesthetic beauty of the image rather than simple sexual attraction. It is also possible that test participants slowed down and took more time in their target categories and were more deliberate in their consideration of the image. However, in target categories, this longer time spent considering (Rate-time) does not appear to reflect in reliably higher attraction scores (Ratings).

Limitations and Future Research

The sample used for this data was small and overly homogenous. Average age of participants was low, and all participants were college students. By finding participants through self-selection, the original researchers may have introduced the additional variable of comfort discussing sexuality as those individuals uncomfortable with the topic may have self-selected out of the study. The racial makeup of the sample (both men and women) was primarily white, this may have also created another variable especially as the photos of models were from a wider variety of races. Additionally, this research was done using the LOOK, one of many viewing-time measures of sexual attraction. Future research will need to be done with a larger, more representative sample. Additionally, future research should include results from various viewing-time measures, especially those most commonly in use in legal settings.

Future research should address the possible mediating variables that create variance in individual viewing-time. There should especially be a focus on why negative correlation coefficients emerged in these results. Why is it that for some individuals longer Rate-time actually was associated with lower ratings of attraction? Could it be that the unique qualities in an image may slow some participants more than their attraction to the image?

Research should also explore the differences between male and female response patterns first found by Baird (2015) and further shown through the present analysis. For viewing-time measures to be used with women, future research should uncover the reason for the difference in Rate-time variance between men and women. Why is it that male participants show an overall larger variance comparing their target categories to their undesired categories than do the female participants? This lack of variance for female participant Rate-time does seem to support existing data. As seen in Figure 2, while women seem to experience subjective arousal to a wider variety of stimuli, men appear to report larger degrees of sexual arousal (Petersen & Hyde, 2011). Future research might ask if viewing-time measures are truly a theory of sexual attraction or, more precisely, a theory of *male* sexual attraction.

Finally, future research should address the issue of different cluster response types within both male and females. Past assumptions seem to expect one pattern of response for men and a separate pattern of response for women. However, the current research clearly shows distinctions within both male and female samples that warrant a closer inspection. What is it that might differentiate these clusters and explain their differences in Rate-time, Ratings, and correlations of the two? A qualitative analysis of these clusters might yield interesting and enlightening results. If viewing-time measures ever do progress to become a standardized, predictive test, these questions will require answers.

Conclusion

Given the results, the general theory that longer viewing-time is associated with greater sexual attraction is questionable. The results of this analysis indicated viewing-time was moderately associated with reported sexual attraction within vulnerable population categories. Notably, the highest correlation between viewing-time and reported sexual attraction was found with male participants in the Small Child category. One might argue that this is the category on which the test is really intended to focus, and that therefore, the results of this analysis support the continued use and reliance on viewing-time measures when assessing for sexually deviant interests. However, the lack of correlation found in target (the most sexually appealing) categories for both men and women, as well as the existence of negative correlation coefficients, places doubt on the validity of the viewing-time theory upon which these measures are based. The results are especially problematic because individuals with pedophilic interests may treat the Small Child category as their target category. Further, the existence of distinct clusters of men and women for whom the correlation between Rate-time and Ratings were either significantly weaker or were negative raises the question of how generalizable the viewing-time theory really is. Additional research will hopefully illuminate what viewing-time measures truly assess.

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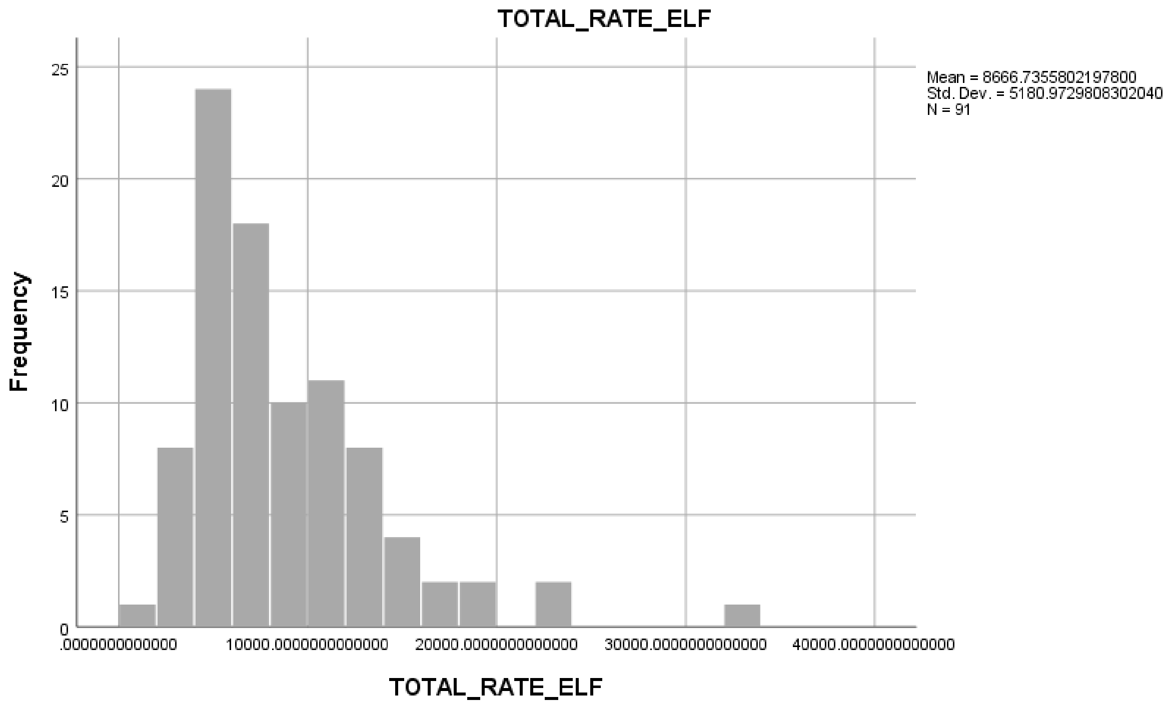
APPENDIX A

Female Participant Histograms

The following histograms portray the Rate-time and Ratings for all female participants across each LOOK category: ELF/M (Elderly Female/Male), MAF/M (Mature Adult Female/Male), ADF/M (Adult Female/Male), JUF/M (Juvenile Female/Male), PJF/M (Pre-juvenile Female/Male), SCF/M (Small Child Female/Male), INF/M (Infant Female/Male).


TOTAL_RATE_ELF
Mean = 8666.7355802197800
Std. Dev. = 5180.9729808302040
N = 91
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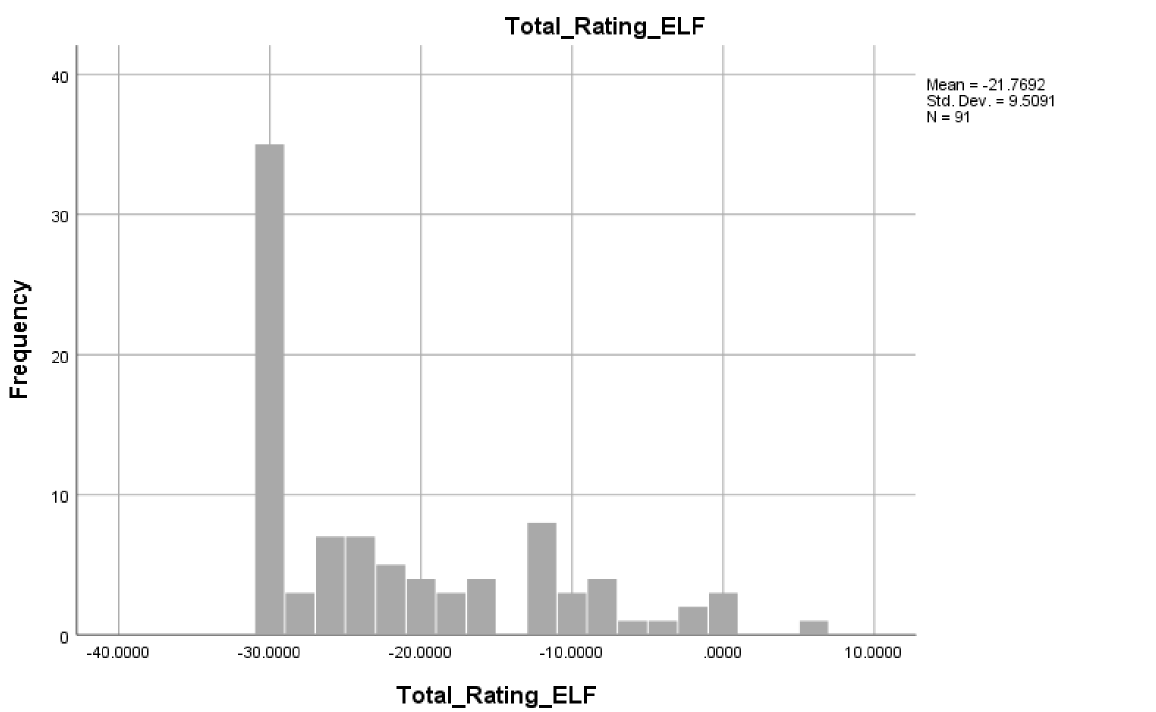
20000.0000000000000
30000.0000000000000
40000.0000000000000
TOTAL_RATE_ELF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Mean = -21.7692
Std. Dev. = 9.5091
N = 91
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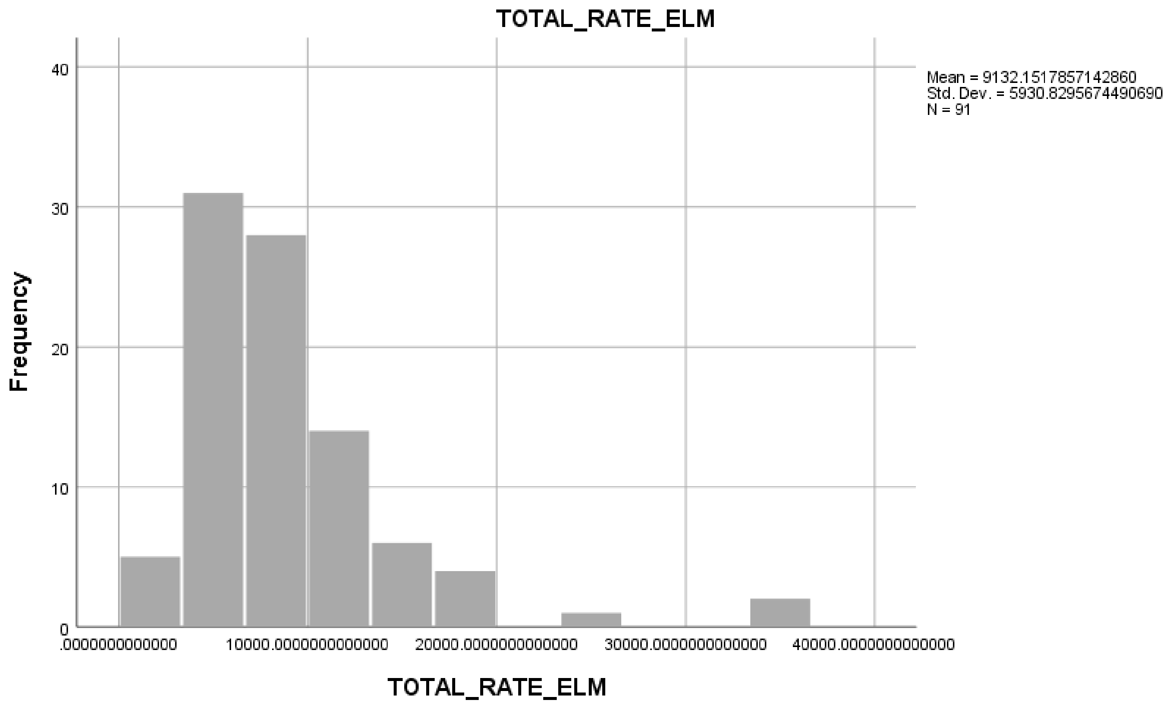
-20.0000
-10.0000
.0000
10.0000
Total_Rating_ELF


TOTAL_RATE_ELM
Mean = 9132.1517857142860
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N = 91
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10
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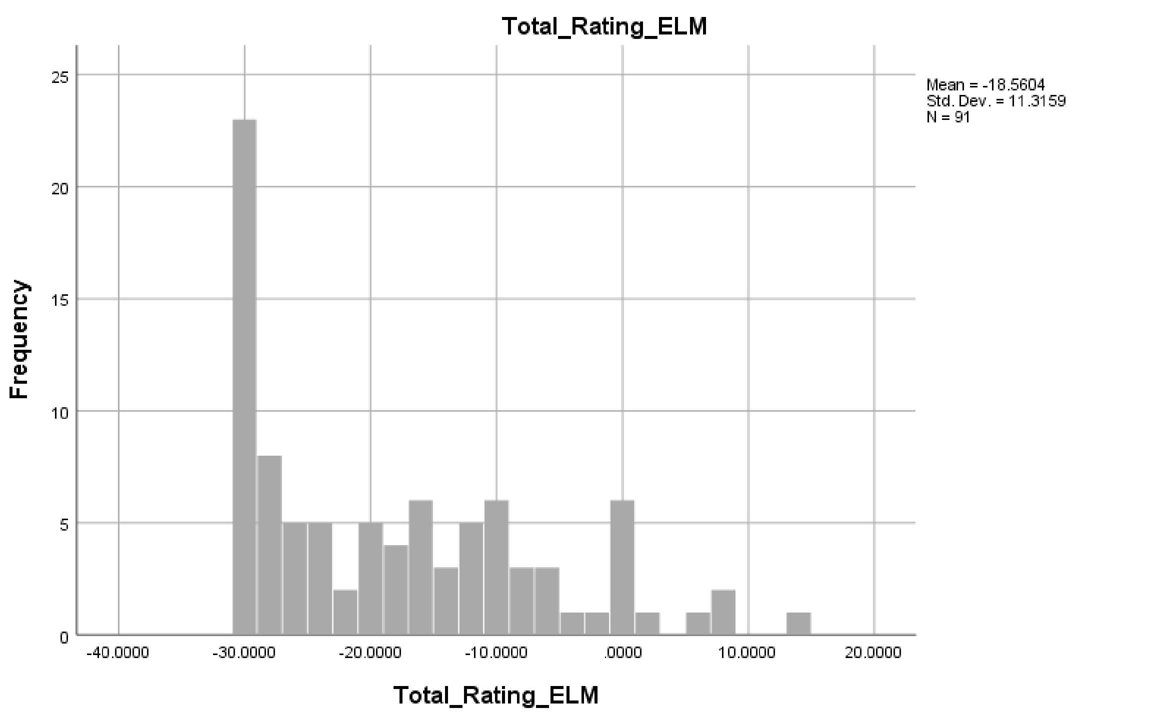
10000.0000000000000
20000.0000000000000
30000.0000000000000
40000.0000000000000
TOTAL_RATE_ELM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Std. Dev. = 11.3159
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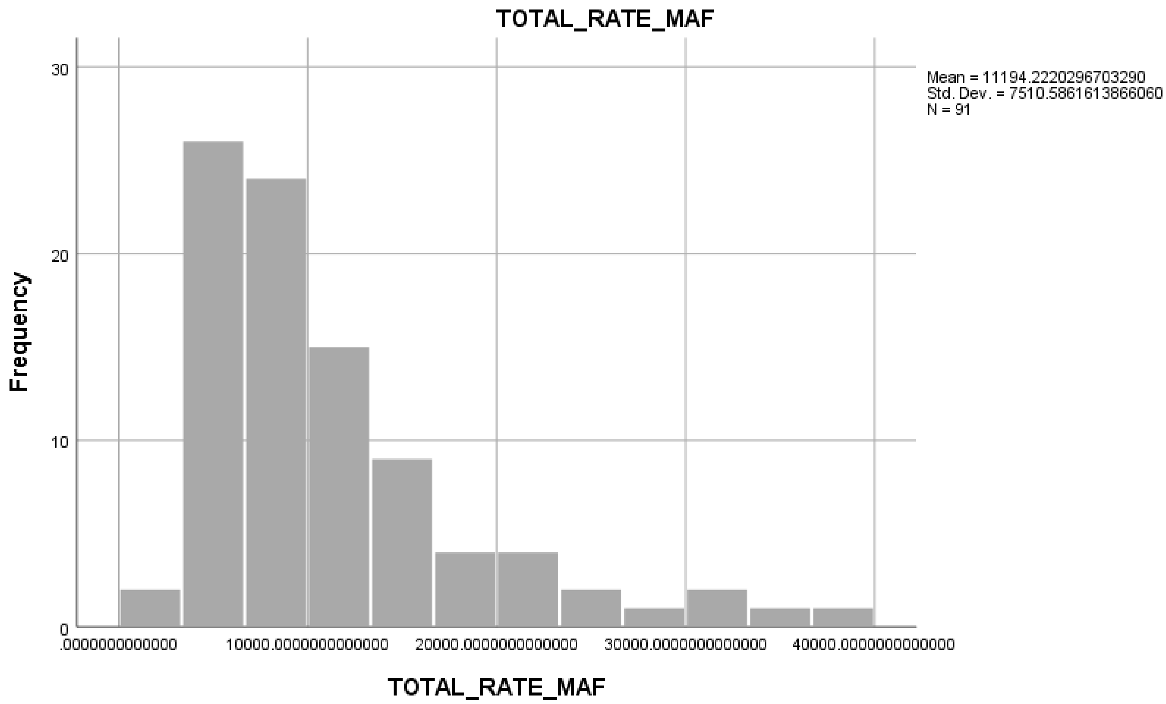
.0000
10.0000
20.0000
Total_Rating_ELM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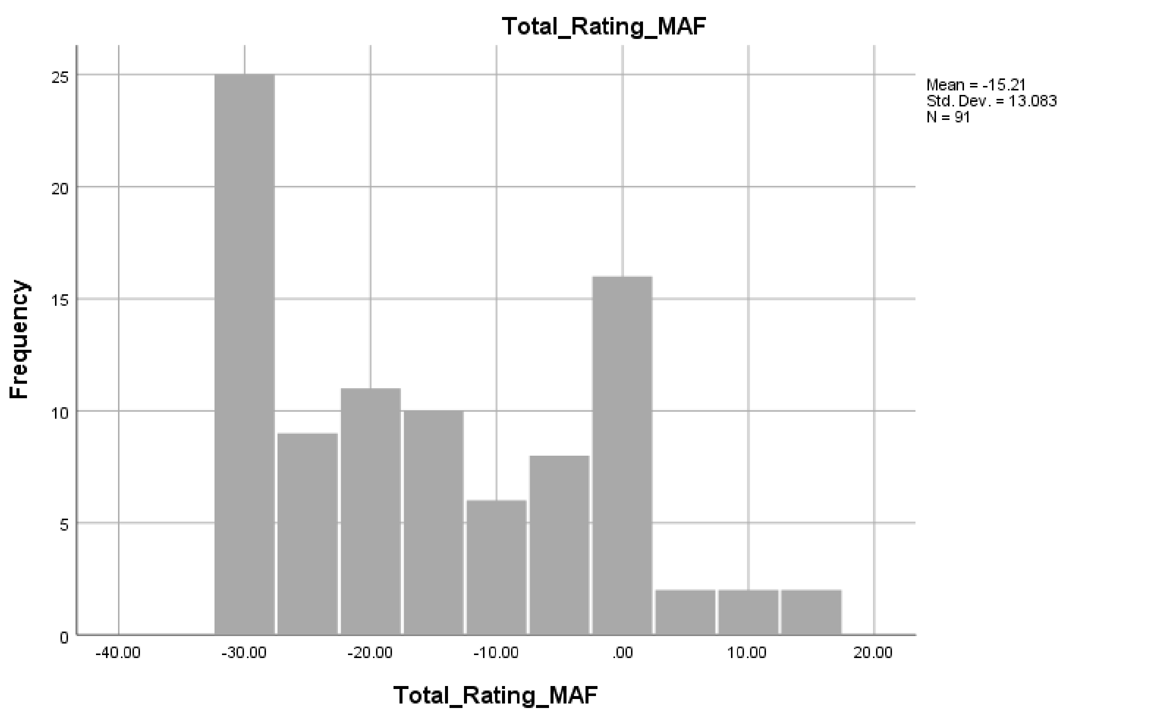
40000.0000000000000
TOTAL_RATE_MAF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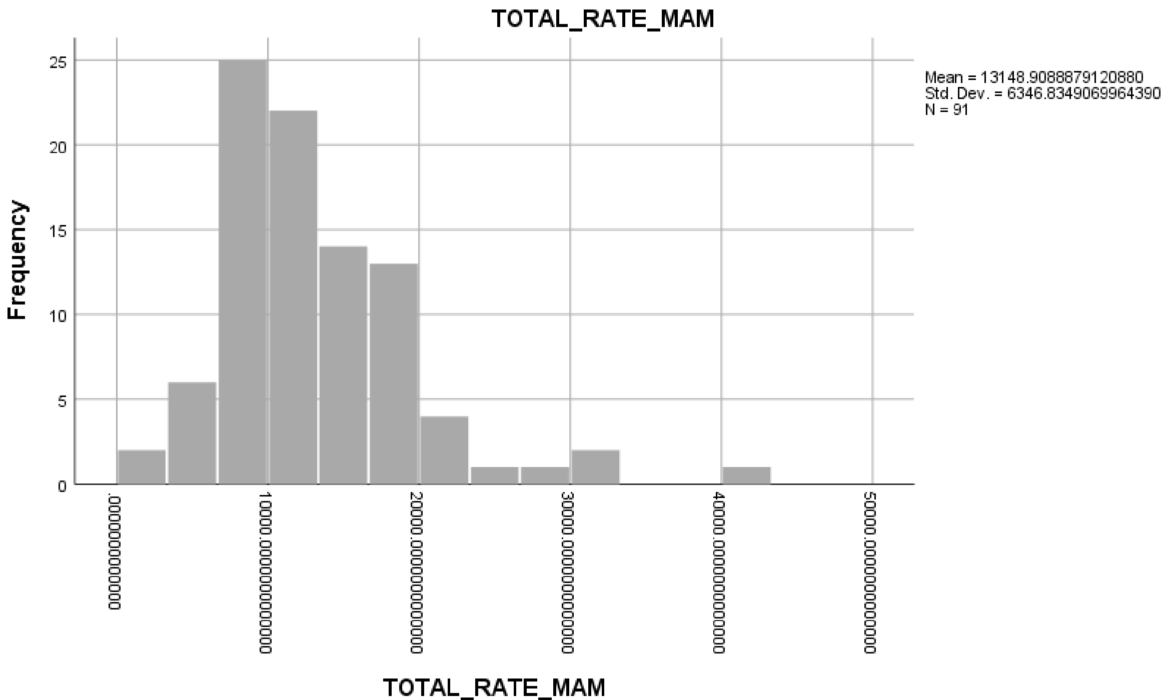
20.00
Total_Rating_MAF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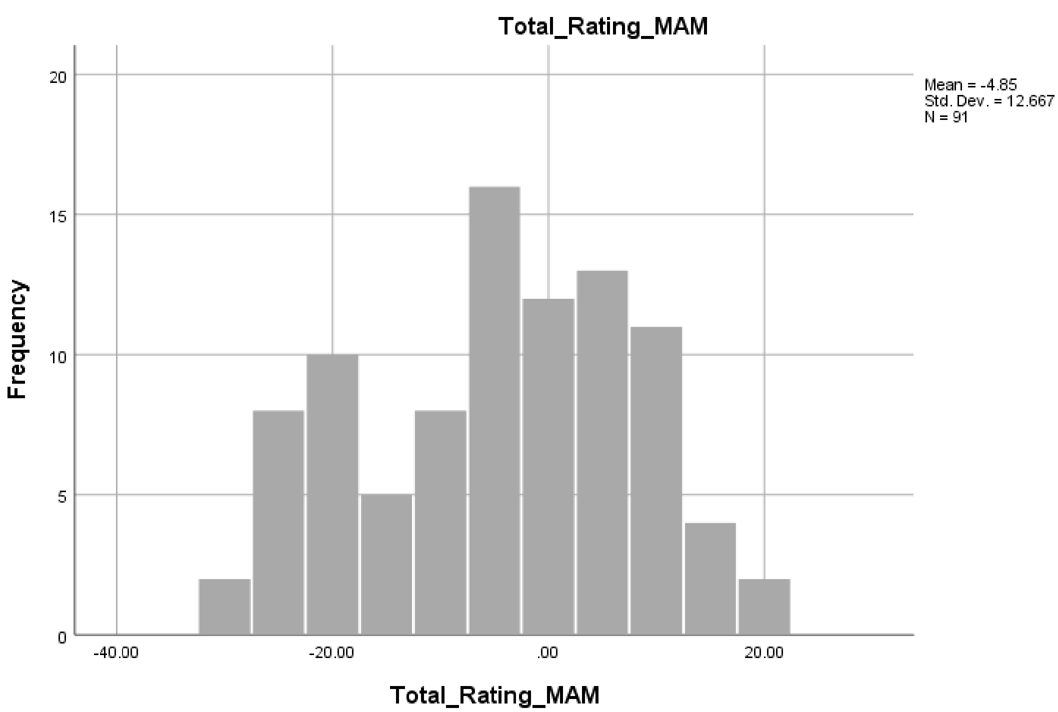
TOTAL_RATE_MAM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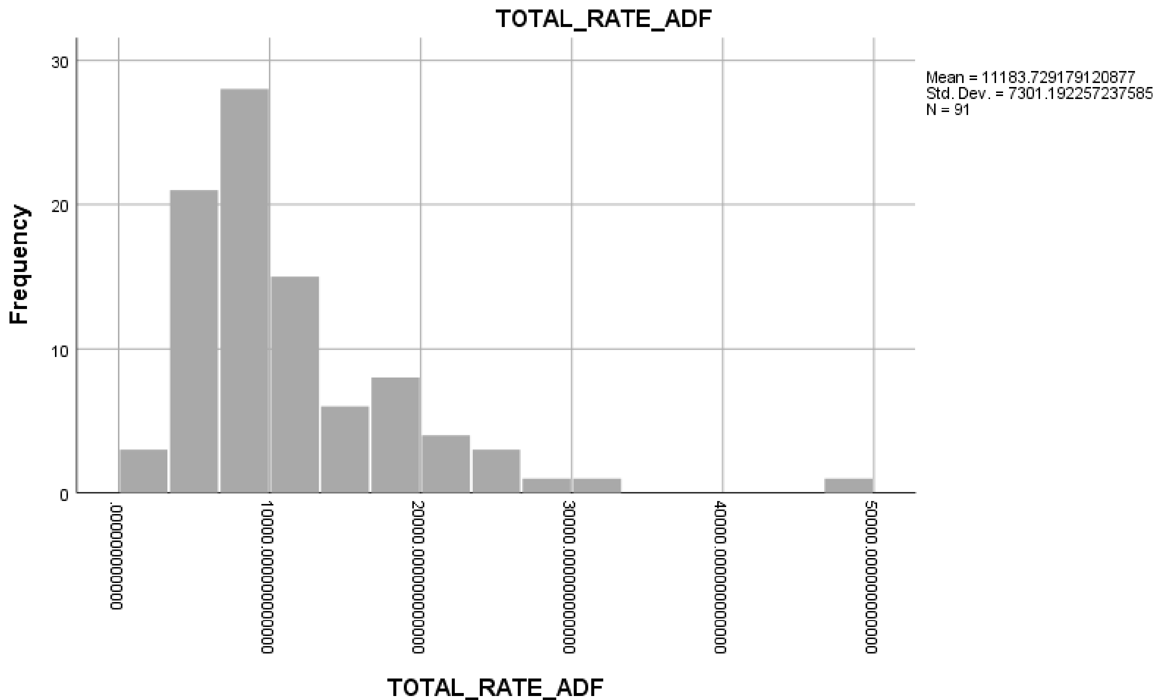
.00
20.00
Total_Rating_MAM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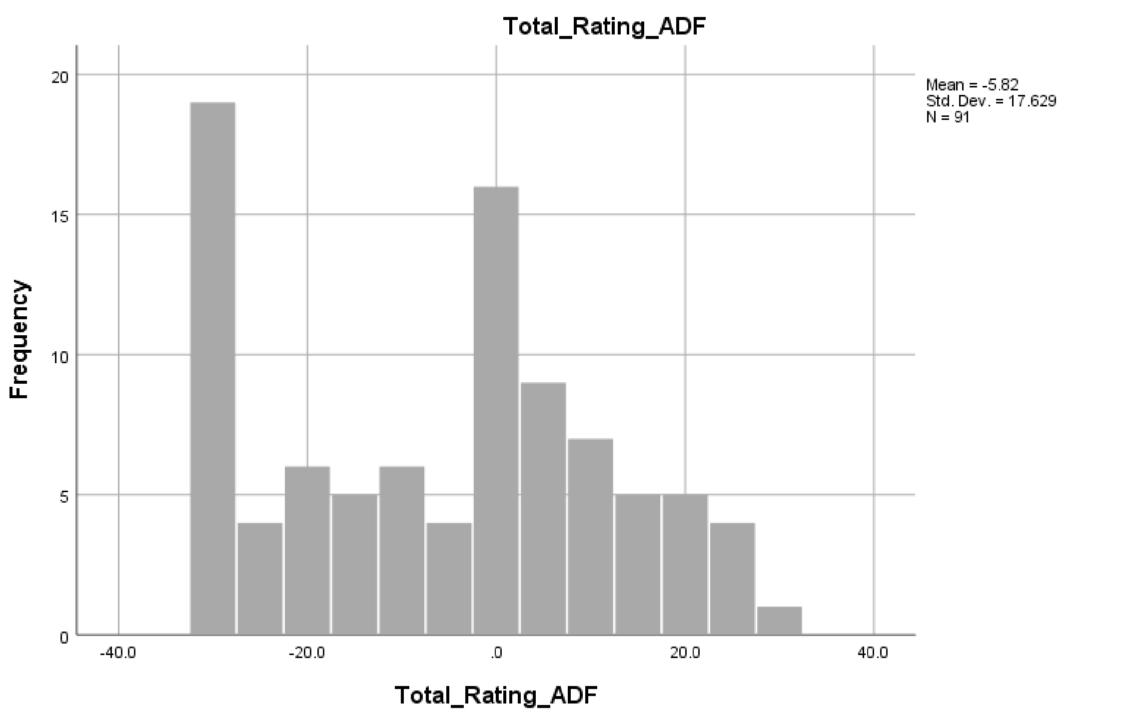
50000.0000000000
TOTAL_RATE_ADF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Std. Dev. = 17.629
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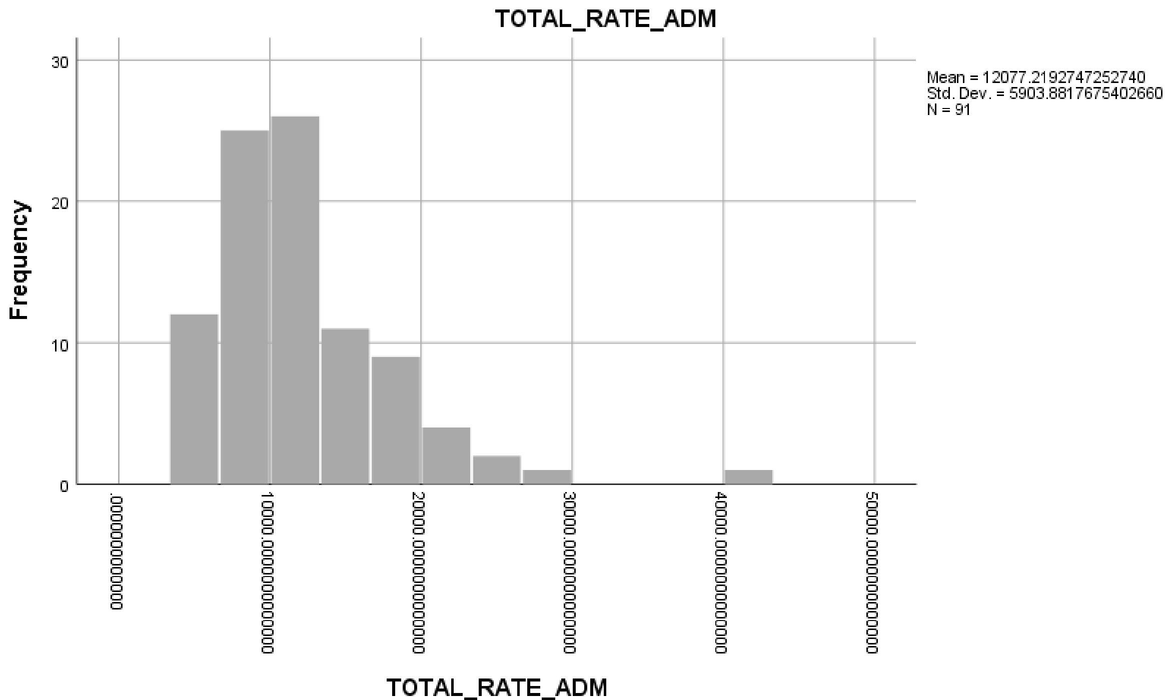
40.0
Total_Rating_ADF



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Std. Dev. = 5903.8817675402660
N = 91
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20000.000000000000
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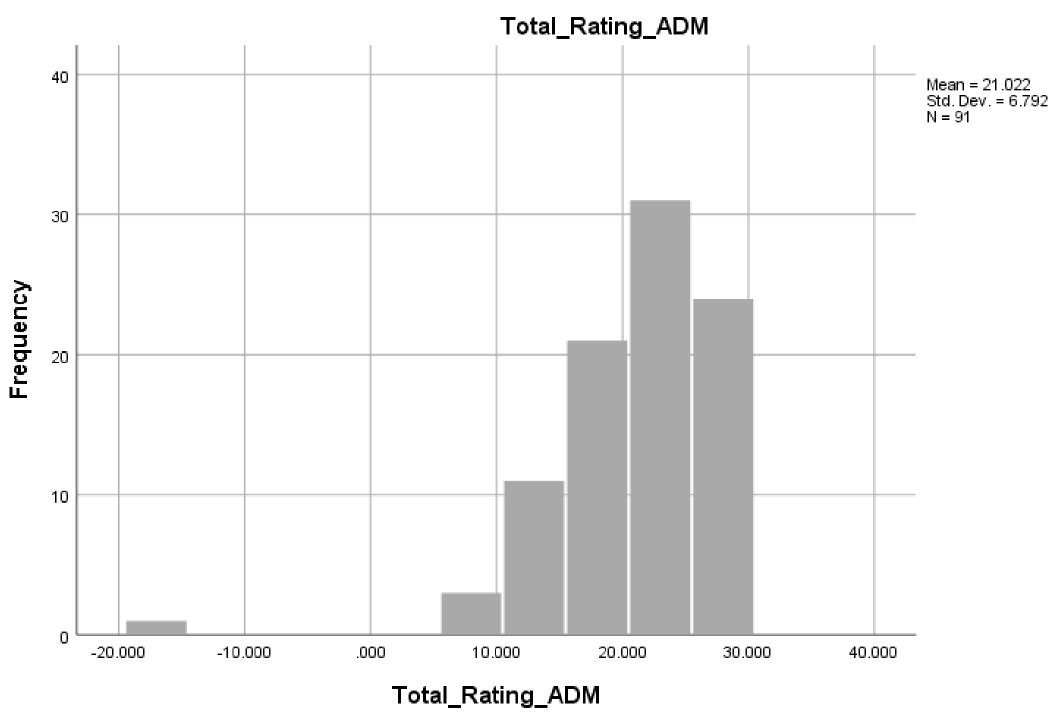
TOTAL_RATE_ADM



Total_Rating_ADM
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Std. Dev. = 6.792
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20.000
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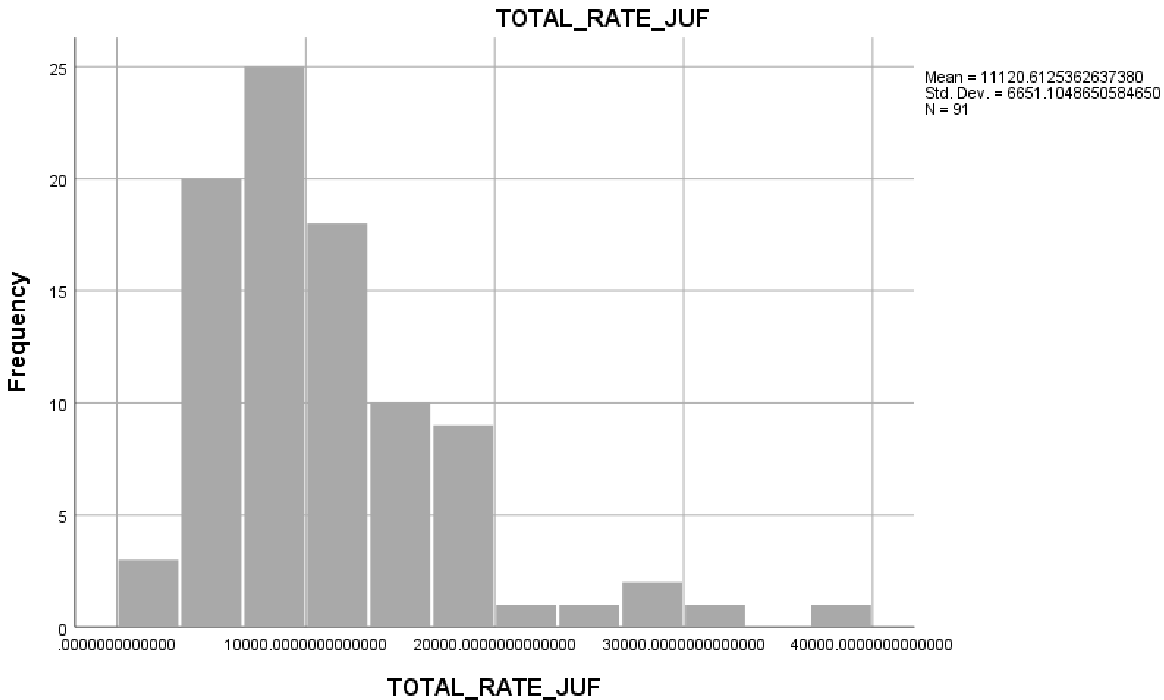
40.000
Total_Rating_ADM



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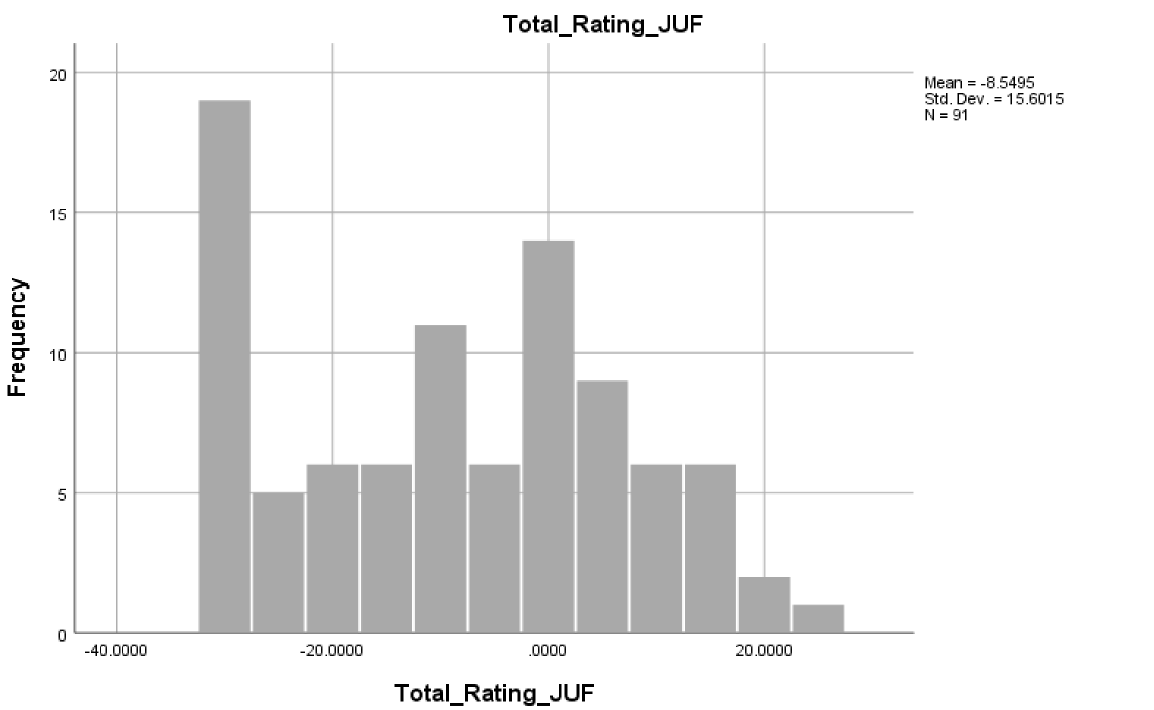
TOTAL_RATE_JUF



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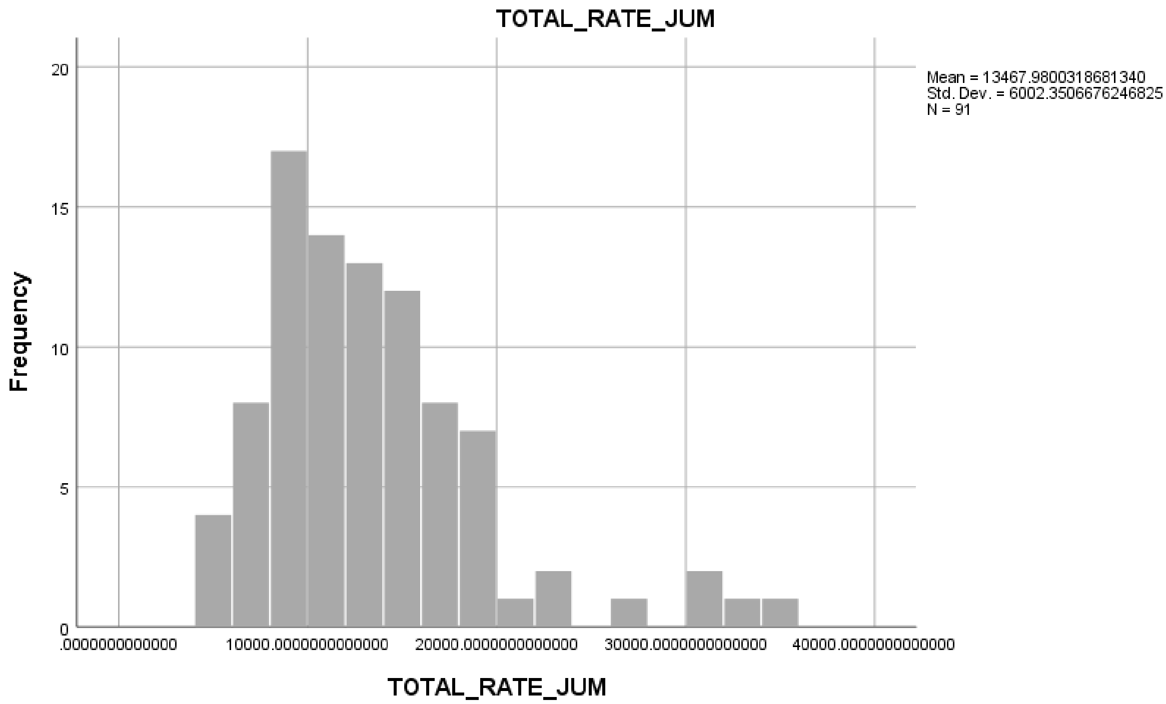
Total_Rating_JUF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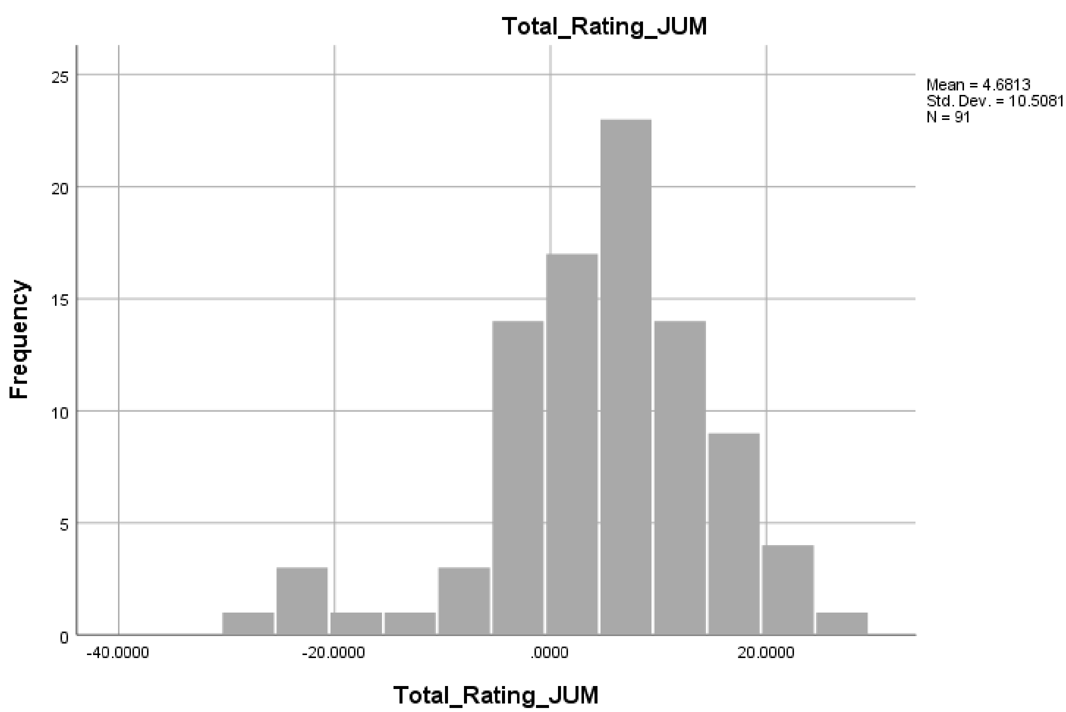
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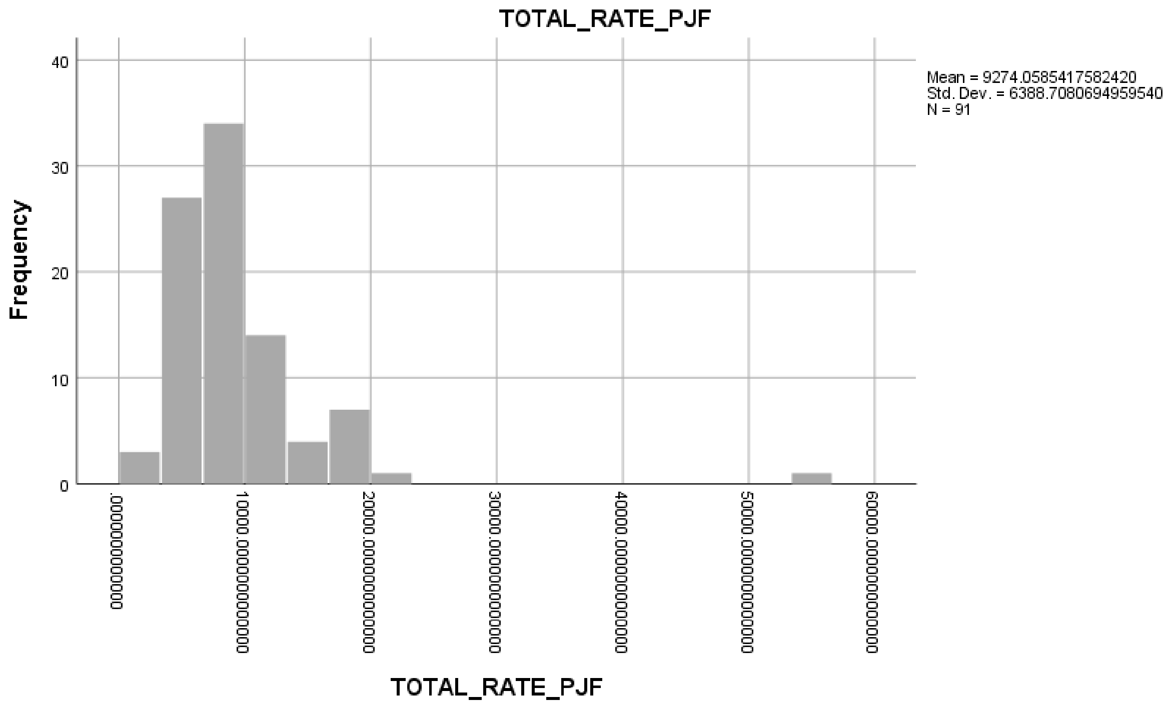
Total_Rating_JUM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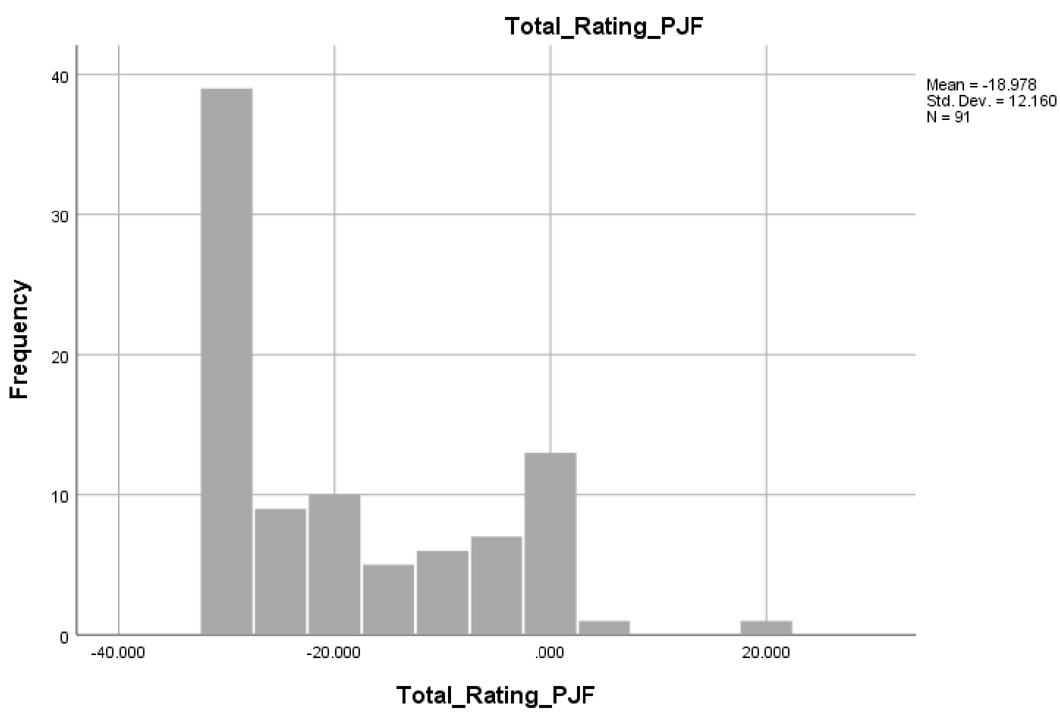
TOTAL_RATE_PJF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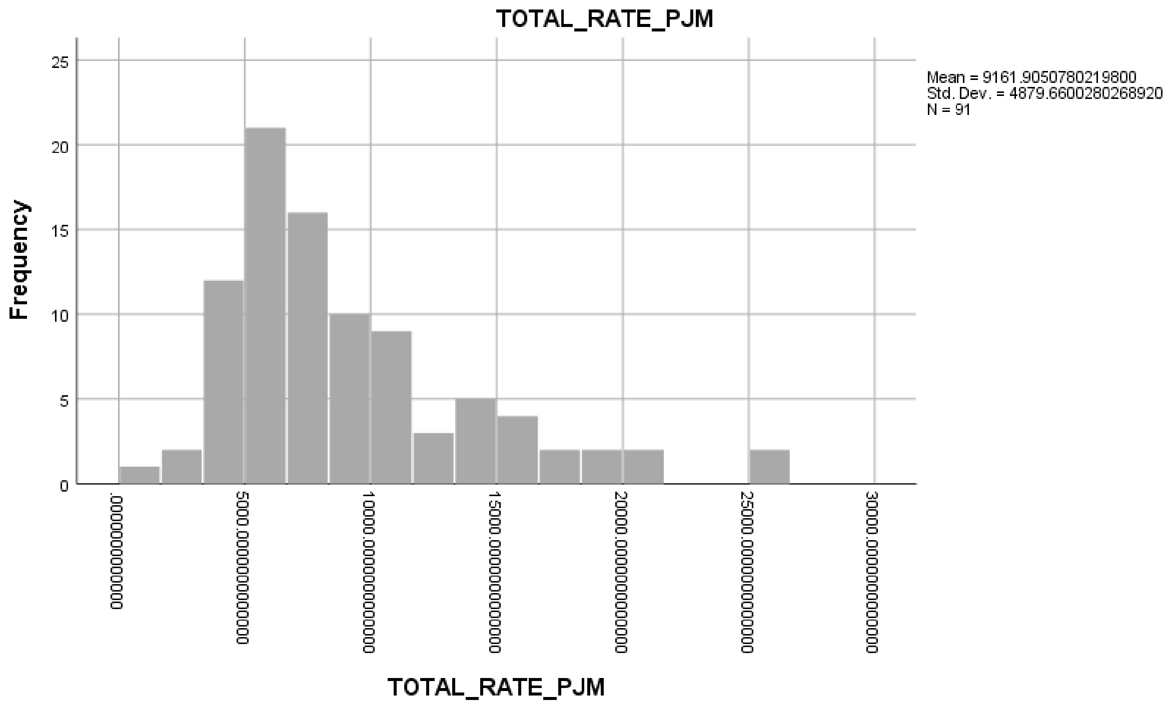
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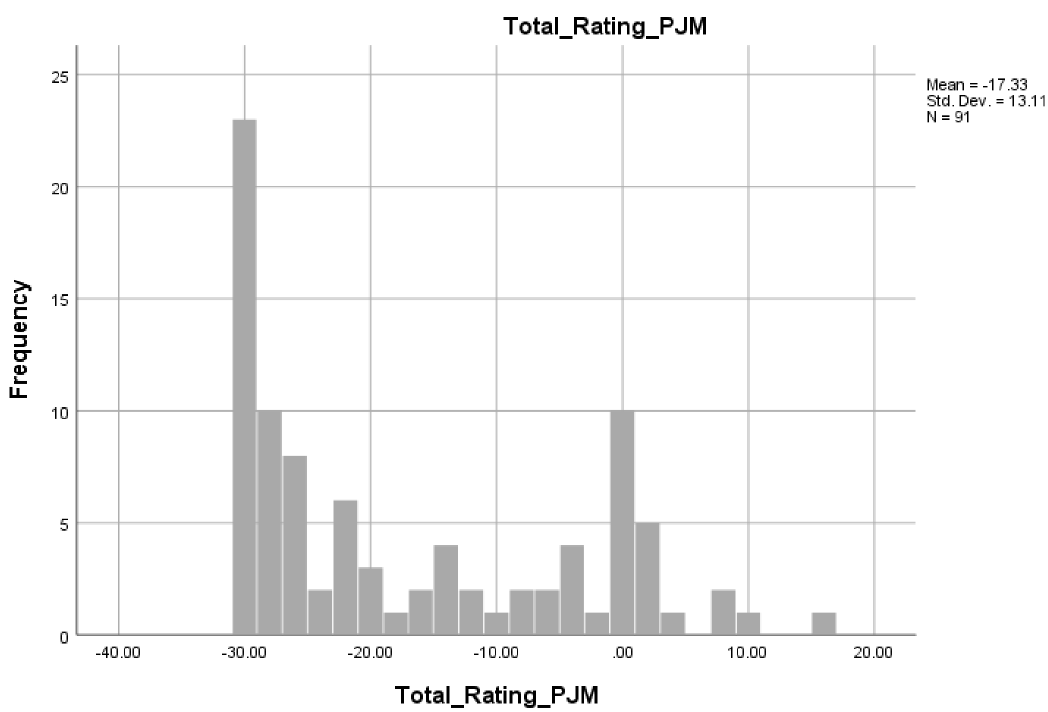
TOTAL_RATE_PJM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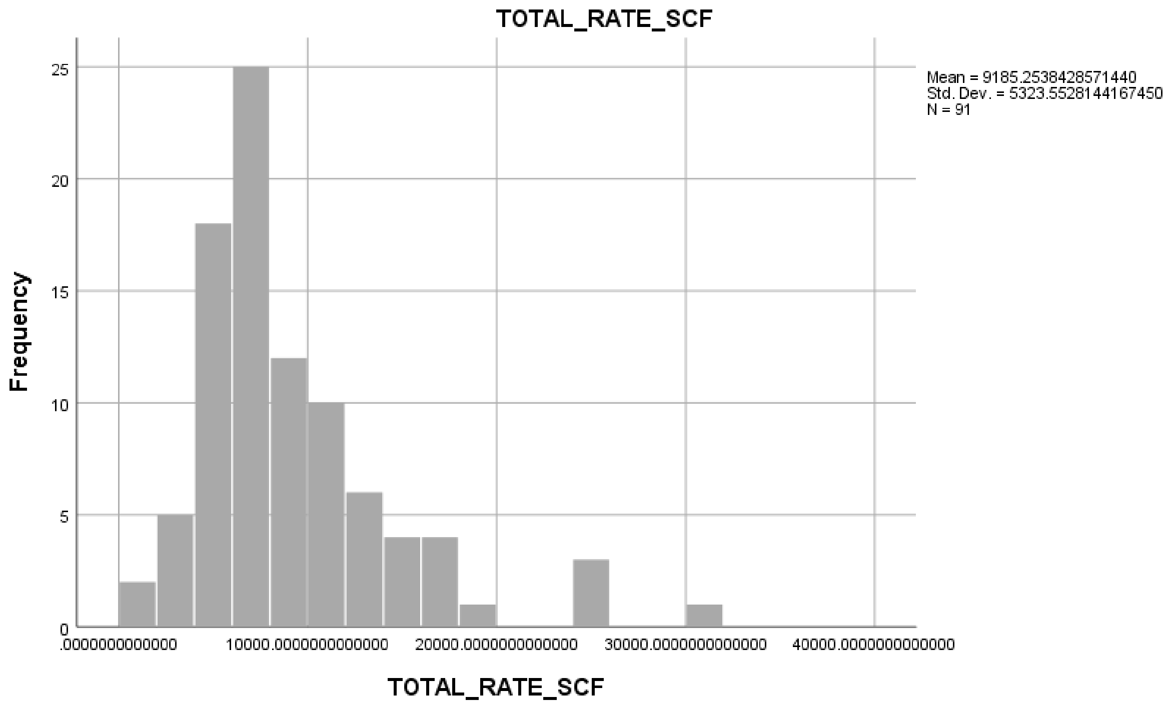
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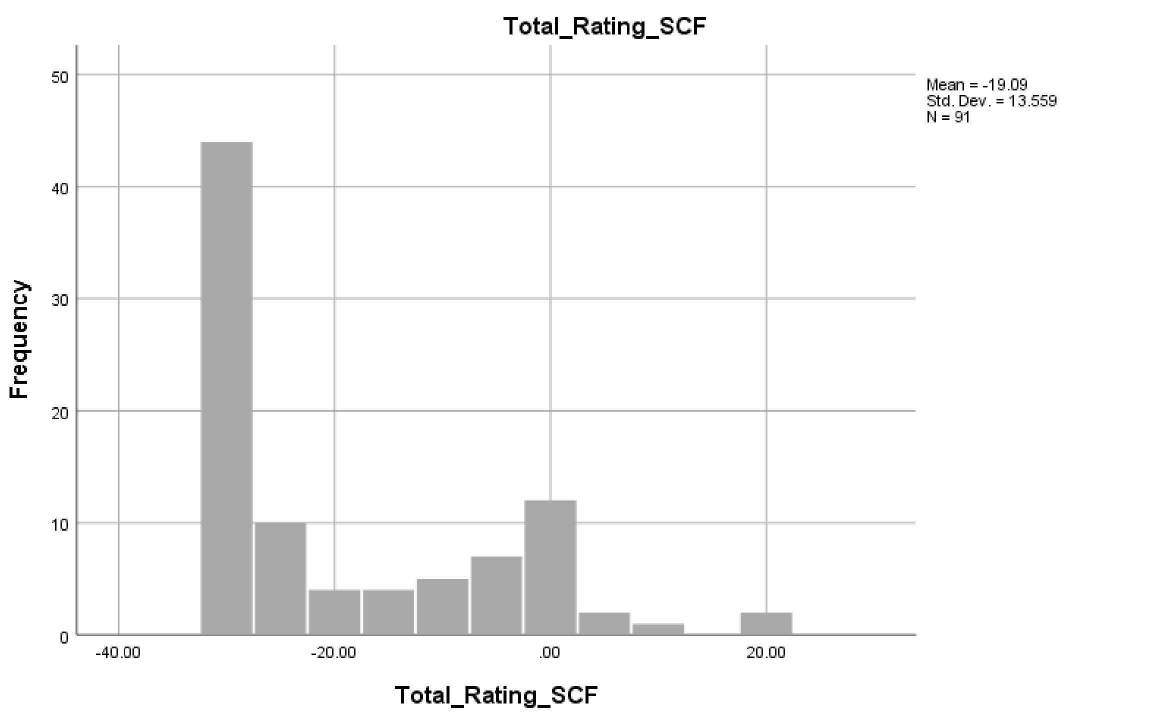
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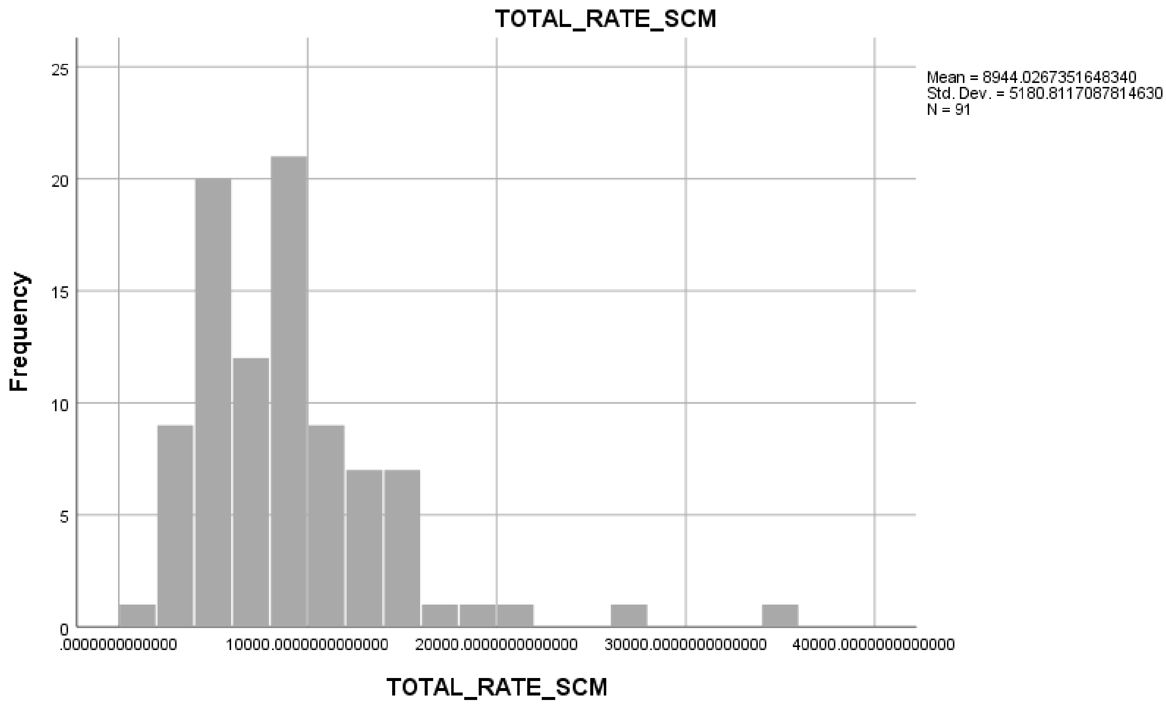
20.00
Total_Rating_SCF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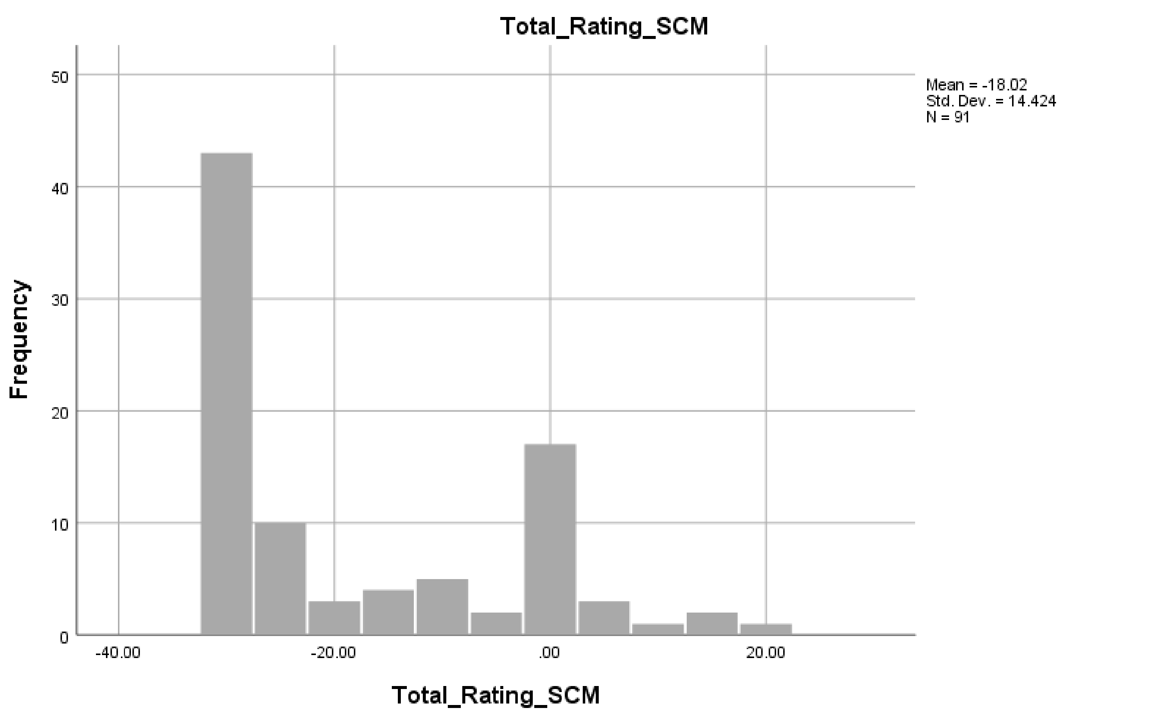
TOTAL_RATE_SCM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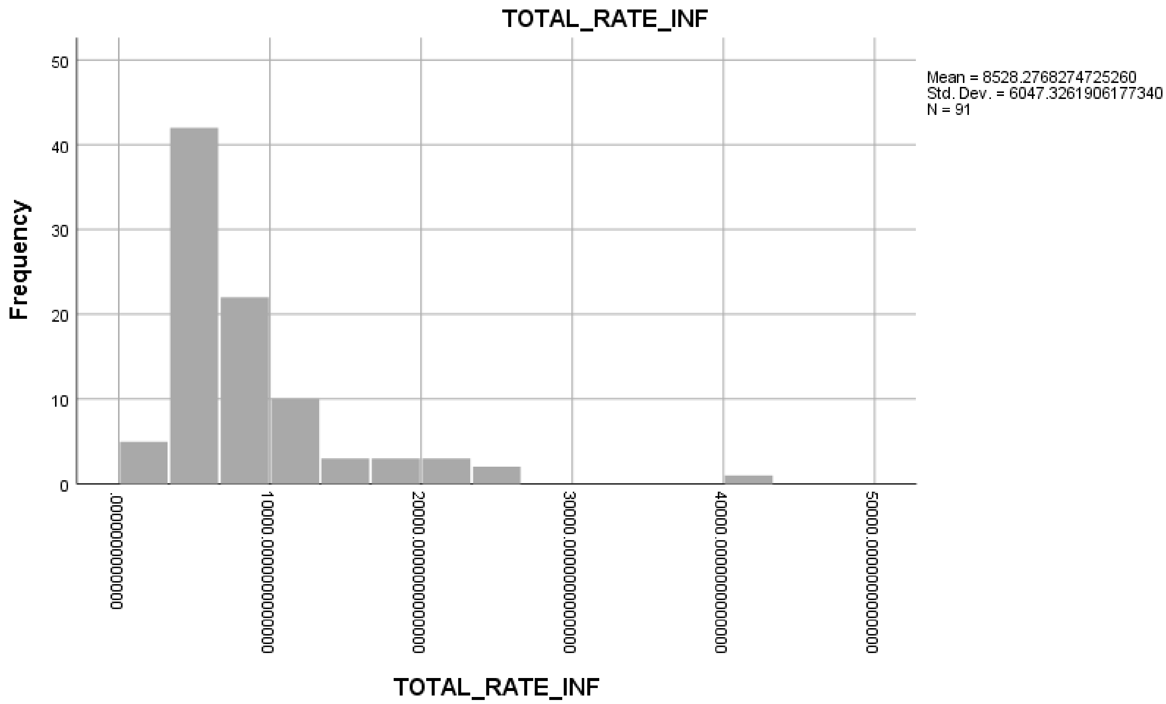
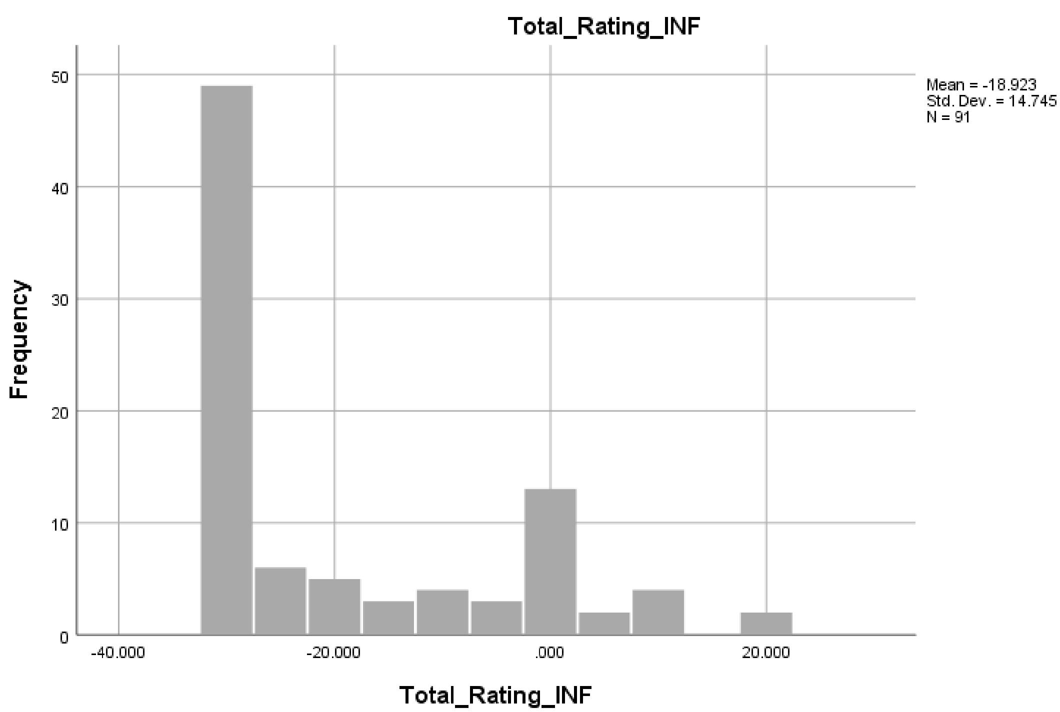
20.00
Total_Rating_SCM


TOTAL_RATE_INF
Mean = 8528.2768274725260
Std. Dev. = 6047.3261906177340
N = 91
Frequency
50
40
30
20
10
0
.000000000000
10000.000000000000
20000.000000000000
30000.000000000000
40000.000000000000
50000.000000000000
TOTAL_RATE_INF


Total_Rating_INF
Mean = -18.923
Std. Dev. = 14.745
N = 91
Frequency
50
40
30
20
10
0
-40.000
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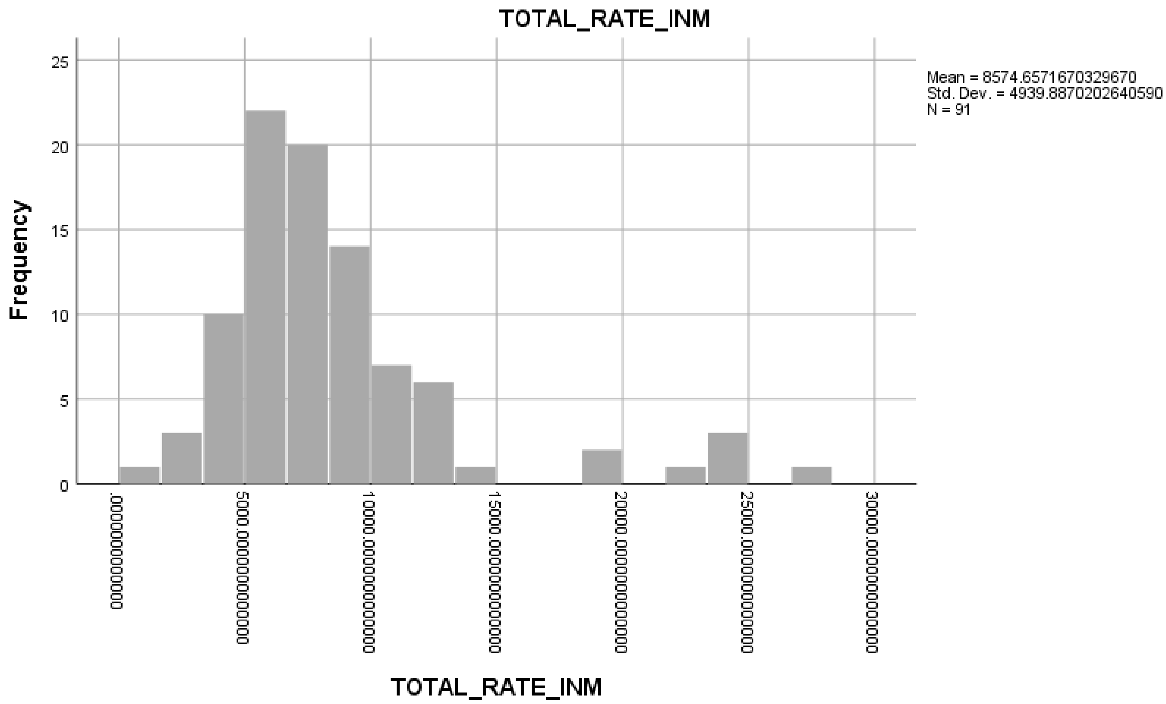
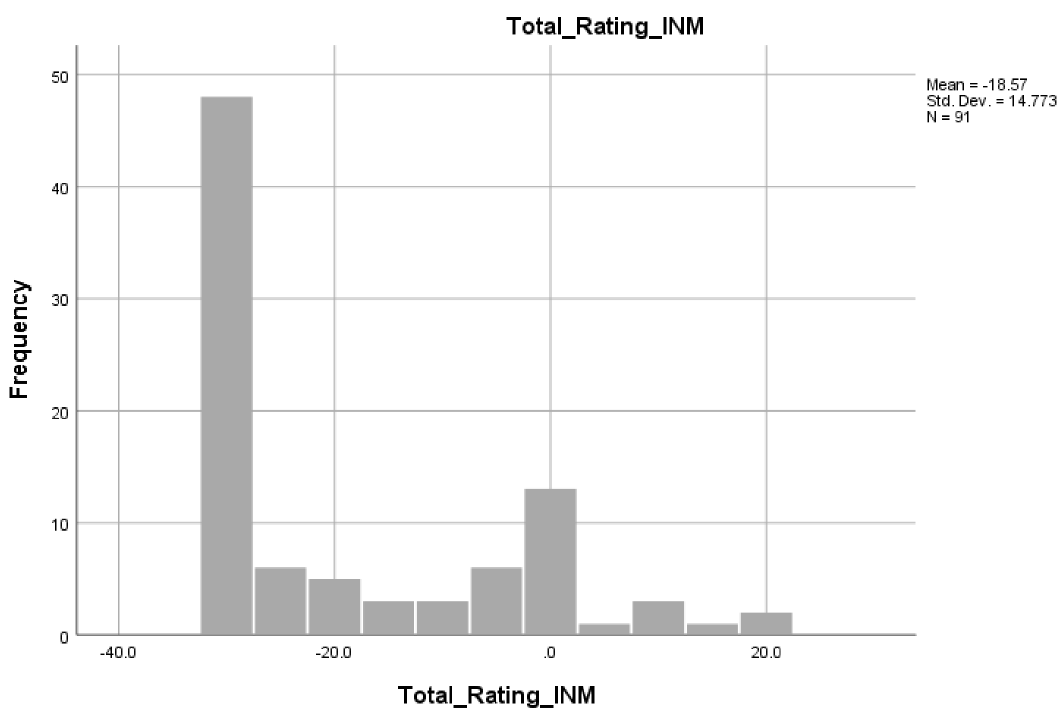
.000
20.000
Total_Rating_INF

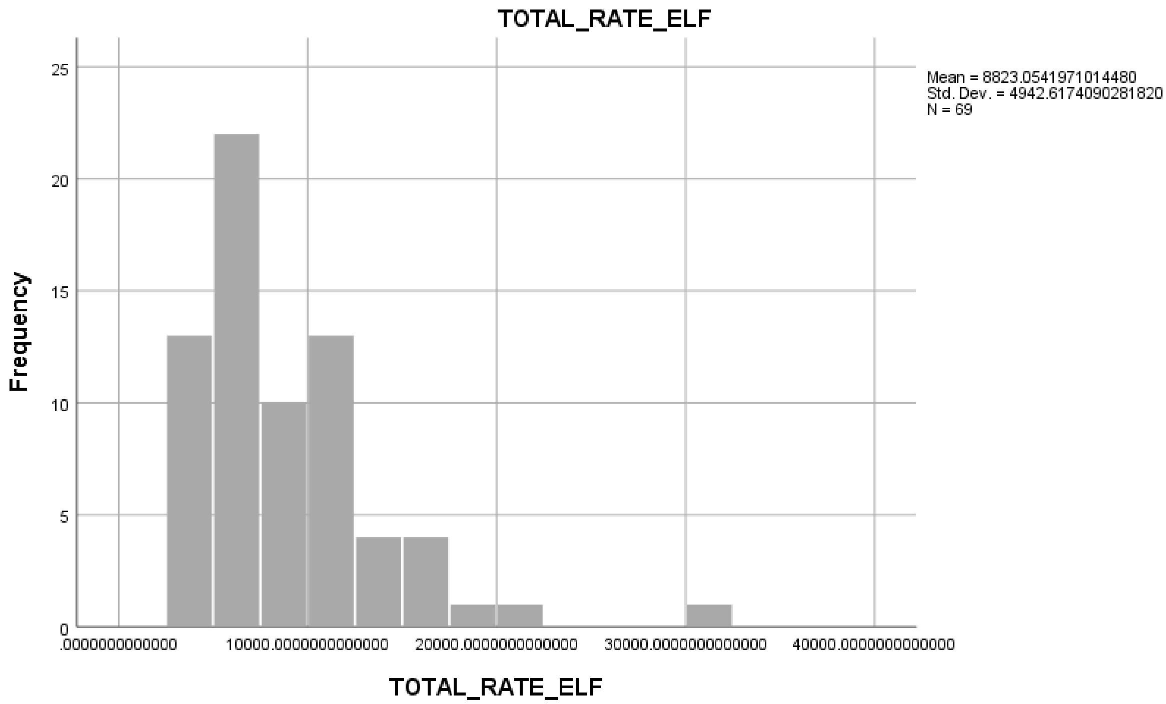

TOTAL_RATE_INM
Mean = 8574.6571670329670
Std. Dev. = 4939.8870202640590
N = 91
Frequency
25
20
15
10
5
0
.000000000000
5000.000000000000
10000.000000000000
15000.000000000000
20000.000000000000
25000.000000000000
30000.000000000000
TOTAL_RATE_INM

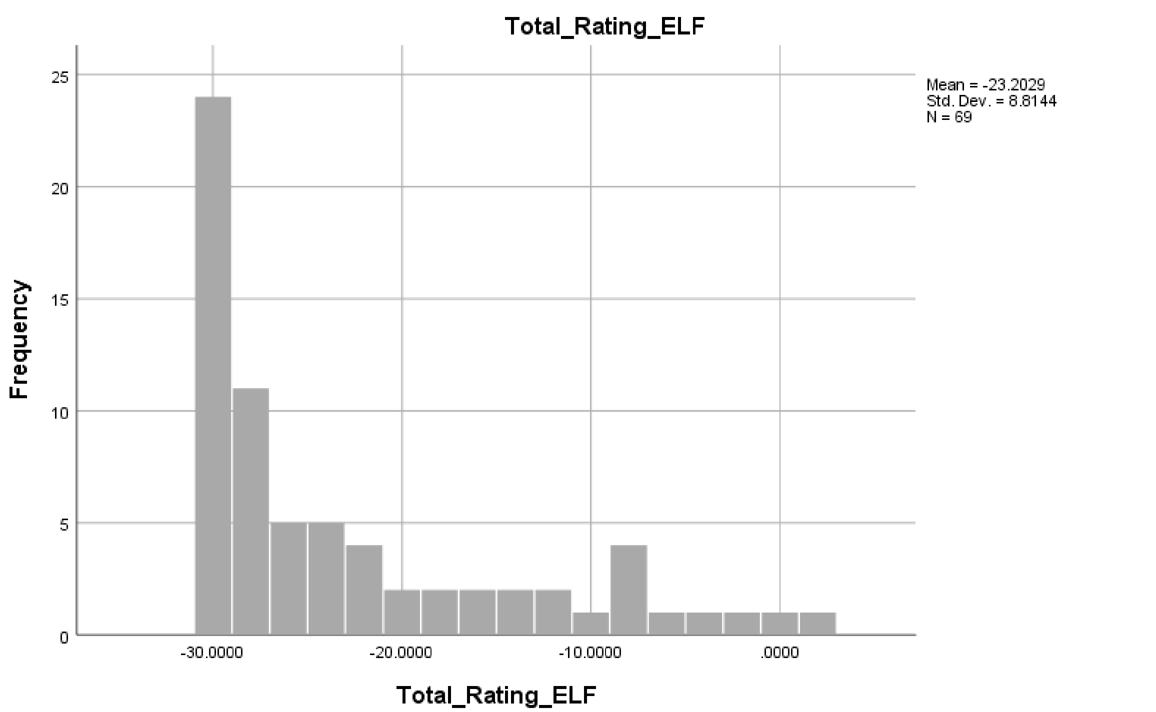

Total_Rating_INM
Mean = -18.57
Std. Dev. = 14.773
N = 91
Frequency
50
40
30
20
10
0
-40.0
-20.0
.0
20.0
Total_Rating_INM

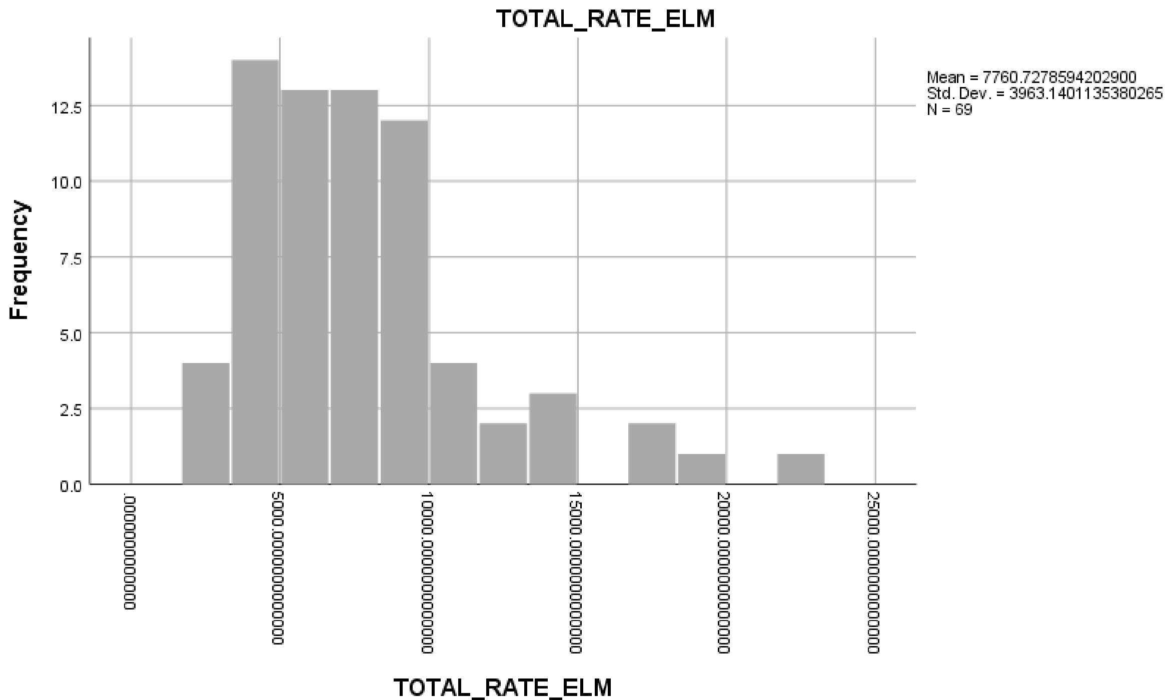
APPENDIX B

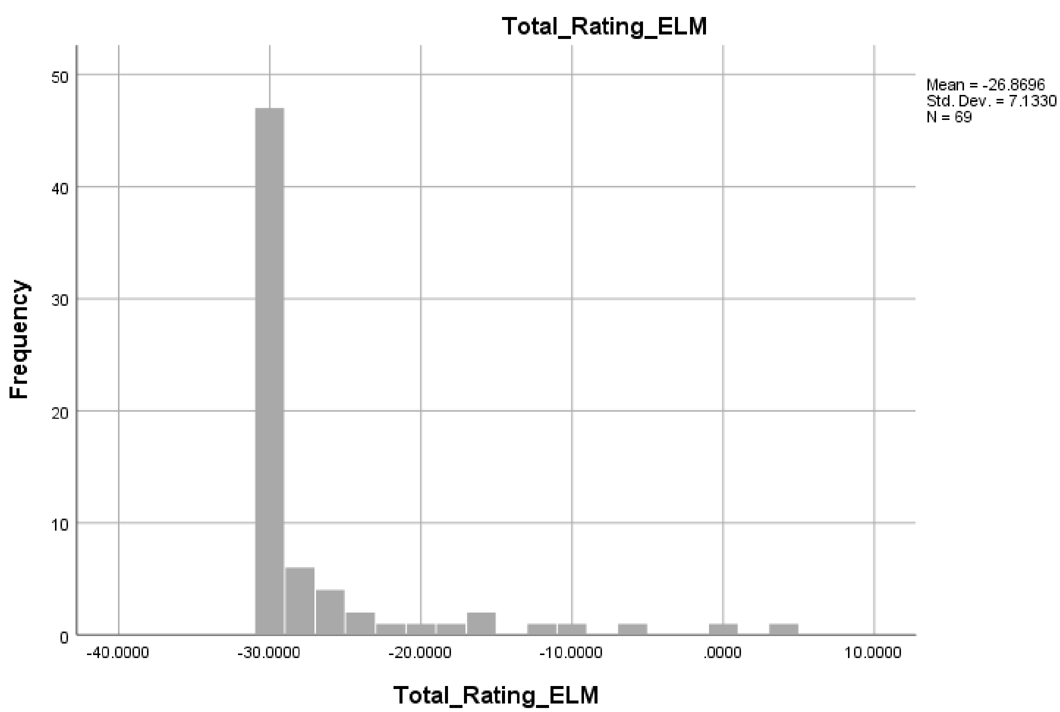
Male Participant Histograms

The following histograms portray the Rate-time and Ratings for all male participants across each LOOK category: ELF/M (Elderly Female/Male), MAF/M (Mature Adult Female/Male), ADF/M (Adult Female/Male), JUF/M (Juvenile Female/Male), PJF/M (Pre-juvenile Female/Male), SCF/M (Small Child Female/Male), INF/M (Infant Female/Male).


TOTAL_RATE_ELF
Mean = 8823.0541971014480
Std. Dev. = 4942.6174090281820
N = 69
Frequency
25
20
15
10
5
0
.0000000000000
10000.0000000000000
20000.0000000000000
30000.0000000000000
40000.0000000000000
TOTAL_RATE_ELF


Total_Rating_ELF
Mean = -23.2029
Std. Dev. = 8.8144
N = 69
Frequency
25
20
15
10
5
0
-30.0000
-20.0000
-10.0000
.0000
Total_Rating_ELF


TOTAL_RATE_ELM
Mean = 7760.7278594202900
Std. Dev. = 3963.1401135380265
N = 69
Frequency
12.5
10.0
7.5
5.0
2.5
0.0
.0000000000000
5000.0000000000000
10000.0000000000000
15000.0000000000000
20000.0000000000000
25000.0000000000000
TOTAL_RATE_ELM


Total_Rating_ELM
Mean = -26.8696
Std. Dev. = 7.1330
N = 69
Frequency
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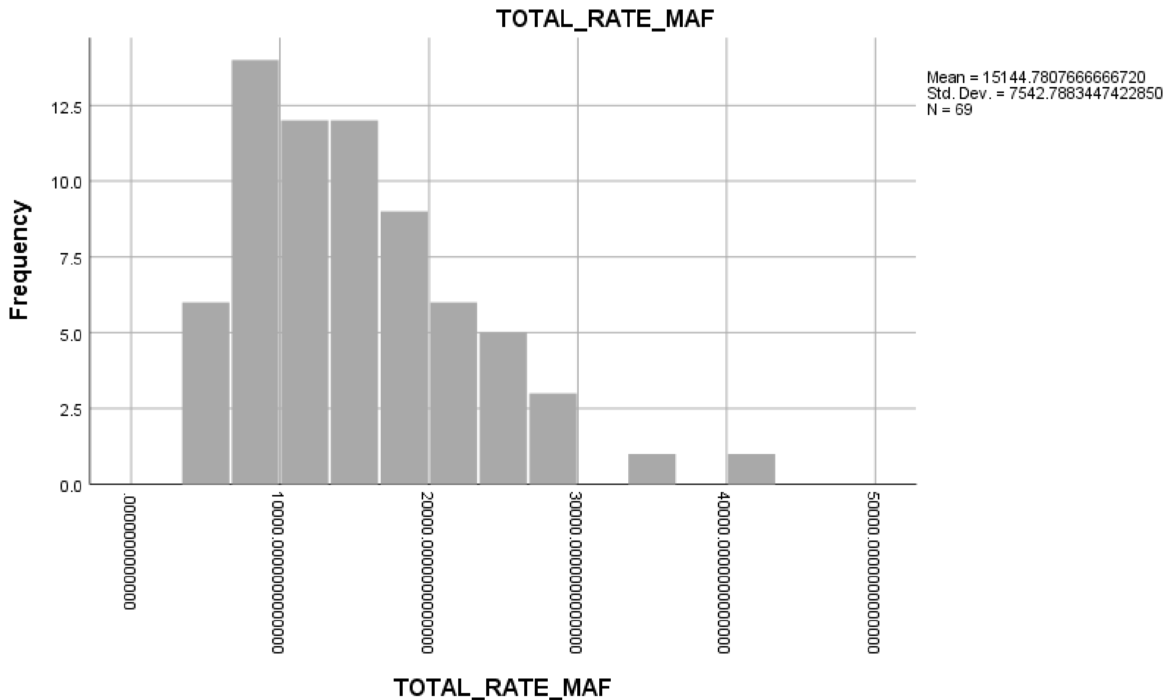
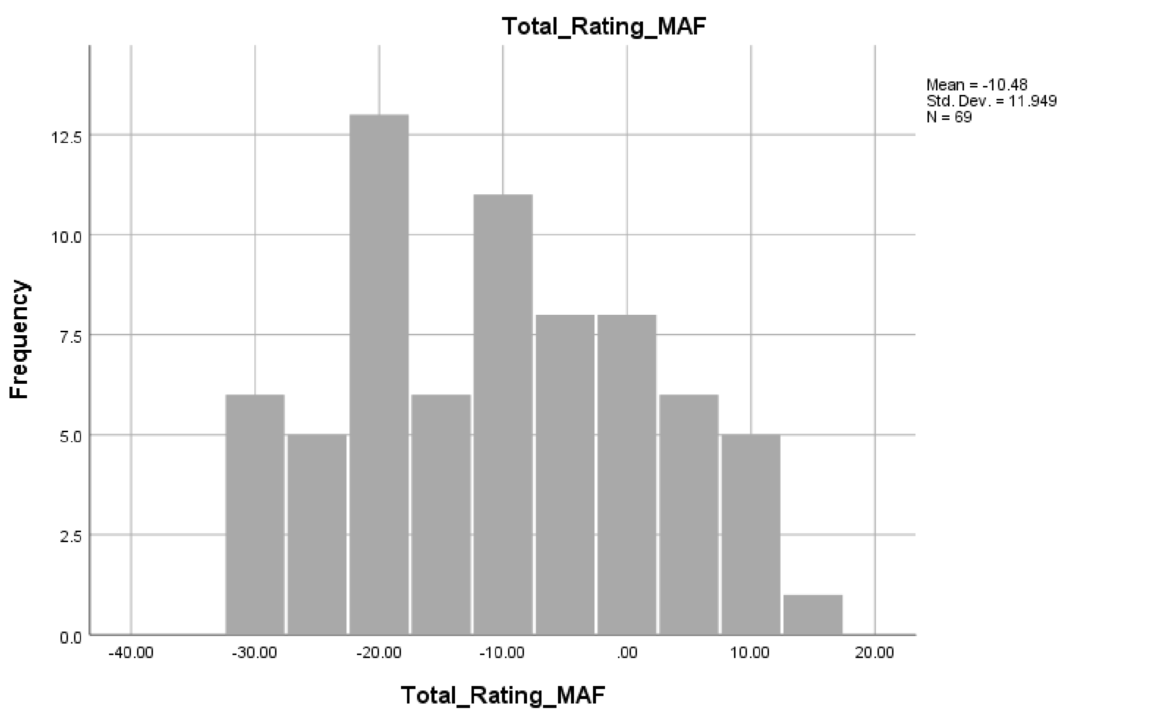
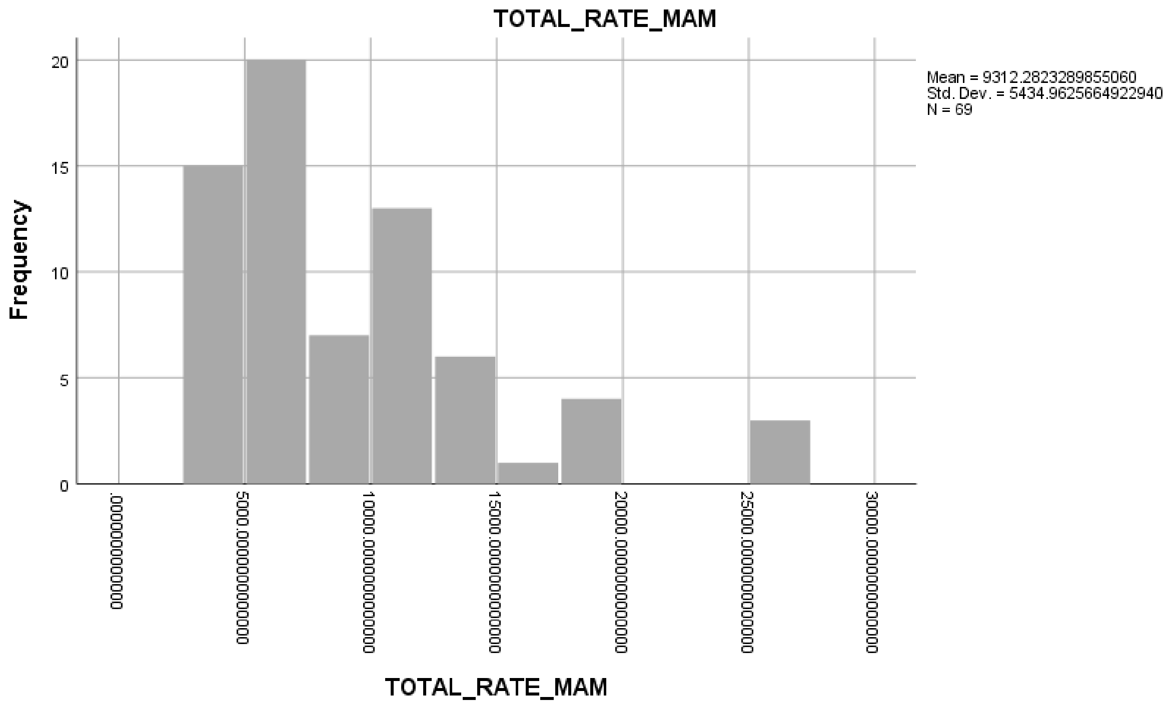
40
30
20
10
0
-40.0000
-30.0000
-20.0000
-10.0000
.0000
10.0000
Total_Rating_ELM

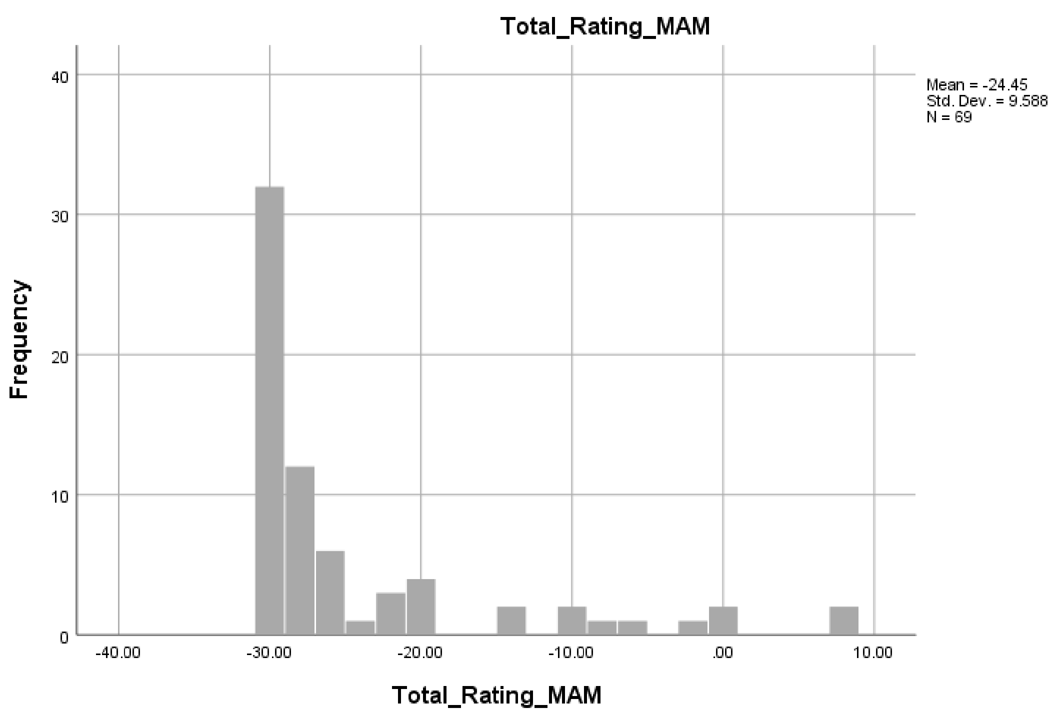


TOTAL_RATE_MAF
Mean = 15144.7807666666720
Std. Dev. = 7542.7883447422850
N = 69
Frequency
0.0
2.5
5.0
7.5
10.0
12.5
.0000000000000
10000.0000000000000
20000.0000000000000
30000.0000000000000
40000.0000000000000
50000.0000000000000
TOTAL_RATE_MAF



Total_Rating_MAF
Mean = -10.48
Std. Dev. = 11.949
N = 69
Frequency
0.0
2.5
5.0
7.5
10.0
12.5
-40.00
-30.00
-20.00
-10.00
.00
10.00
20.00
Total_Rating_MAF


TOTAL_RATE_MAM
Mean = 9312.2823289855060
Std. Dev. = 5434.9625664922940
N = 69
Frequency
20
15
10
5
0
.000000000000
5000.000000000000
10000.000000000000
15000.000000000000
20000.000000000000
25000.000000000000
30000.000000000000
TOTAL_RATE_MAM


Total_Rating_MAM
Mean = -24.45
Std. Dev. = 9.588
N = 69
Frequency
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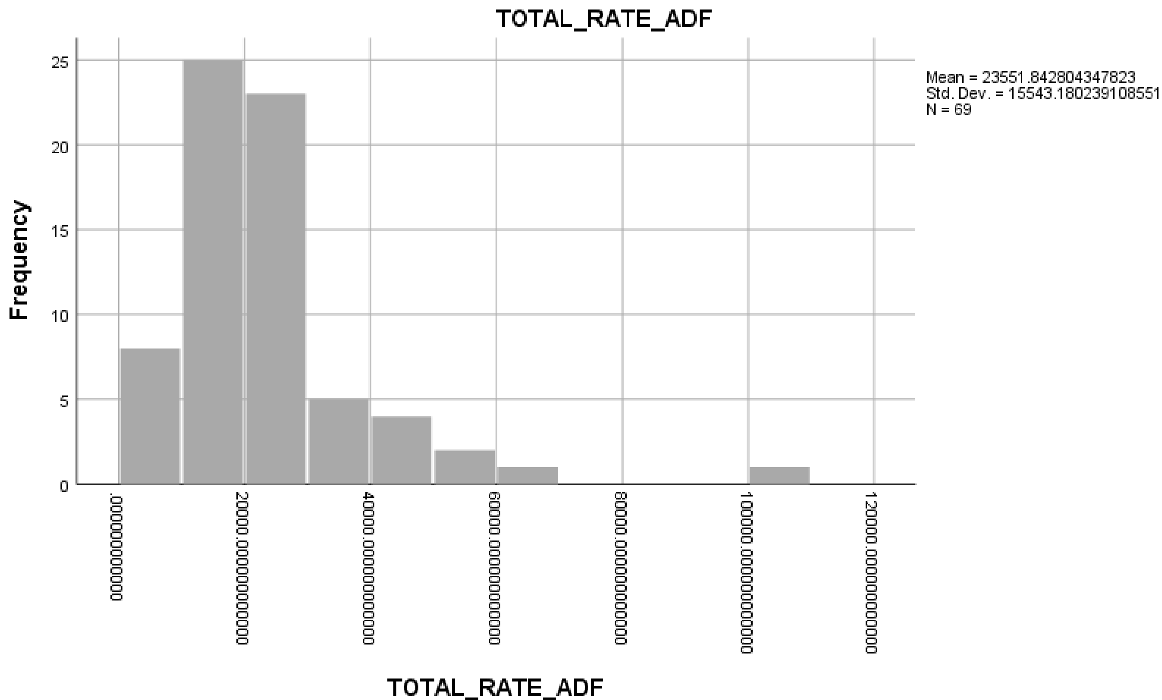
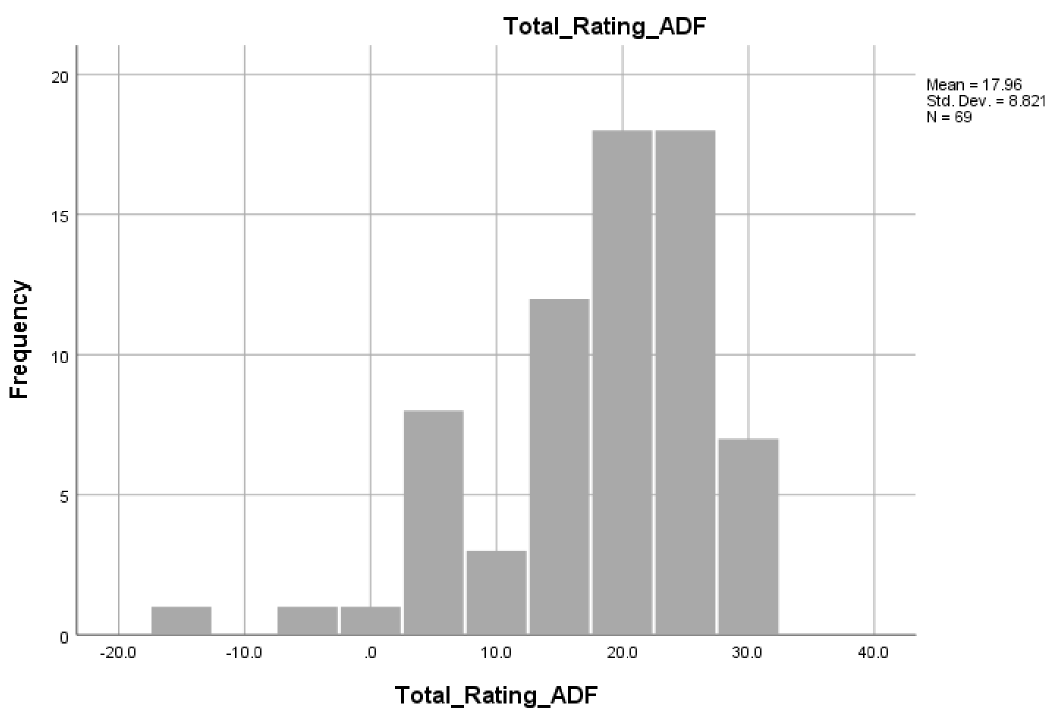
30
20
10
0
-40.00
-30.00
-20.00
-10.00
.00
10.00
Total_Rating_MAM


TOTAL_RATE_ADF
Mean = 23551.842804347823
Std. Dev. = 15543.180239108551
N = 69
Frequency
25
20
15
10
5
0
.0000000000
20000.0000000000
40000.0000000000
60000.0000000000
80000.0000000000
100000.0000000000
120000.0000000000
TOTAL_RATE_ADF


Total_Rating_ADF
Mean = 17.96
Std. Dev. = 8.821
N = 69
Frequency
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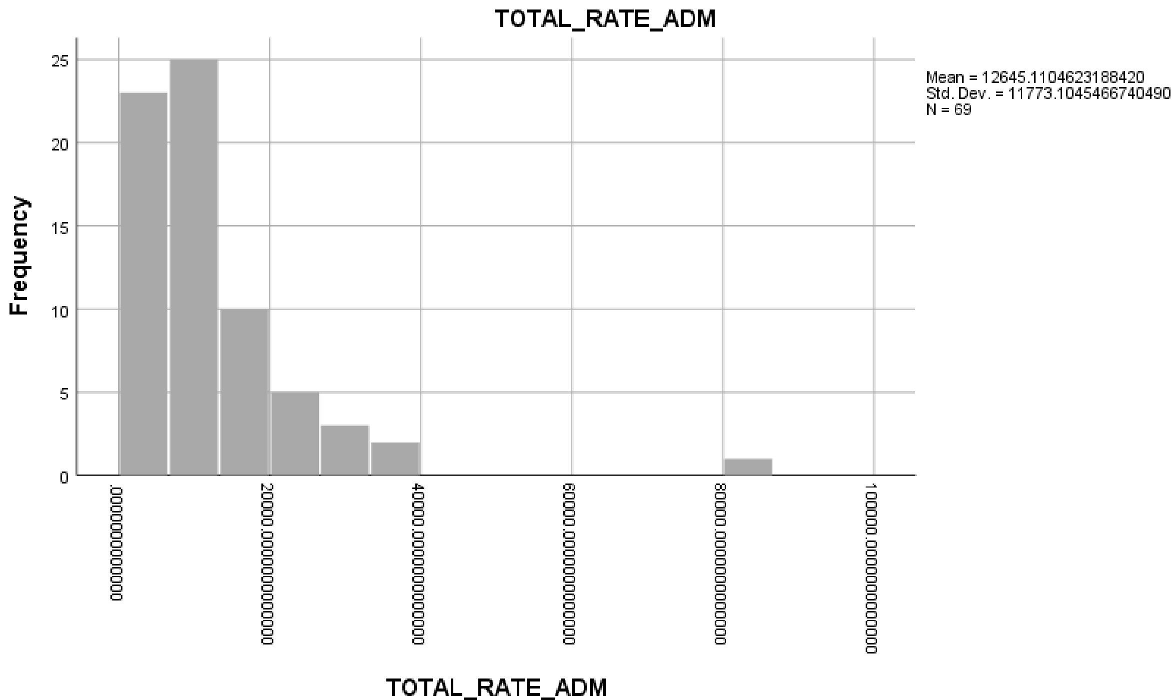
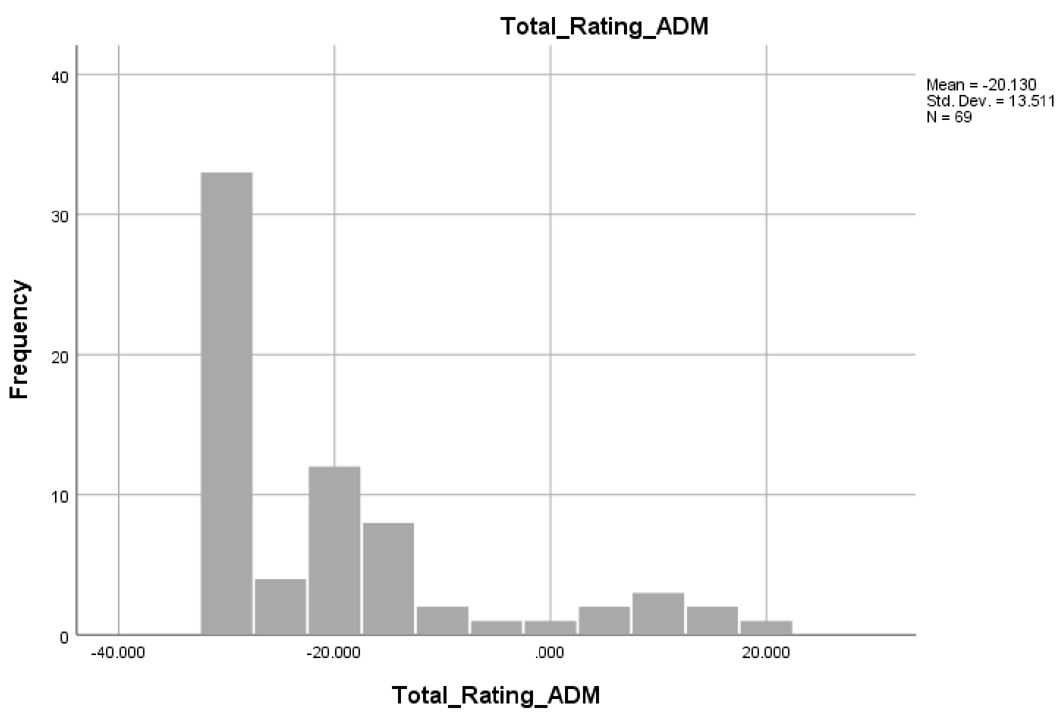
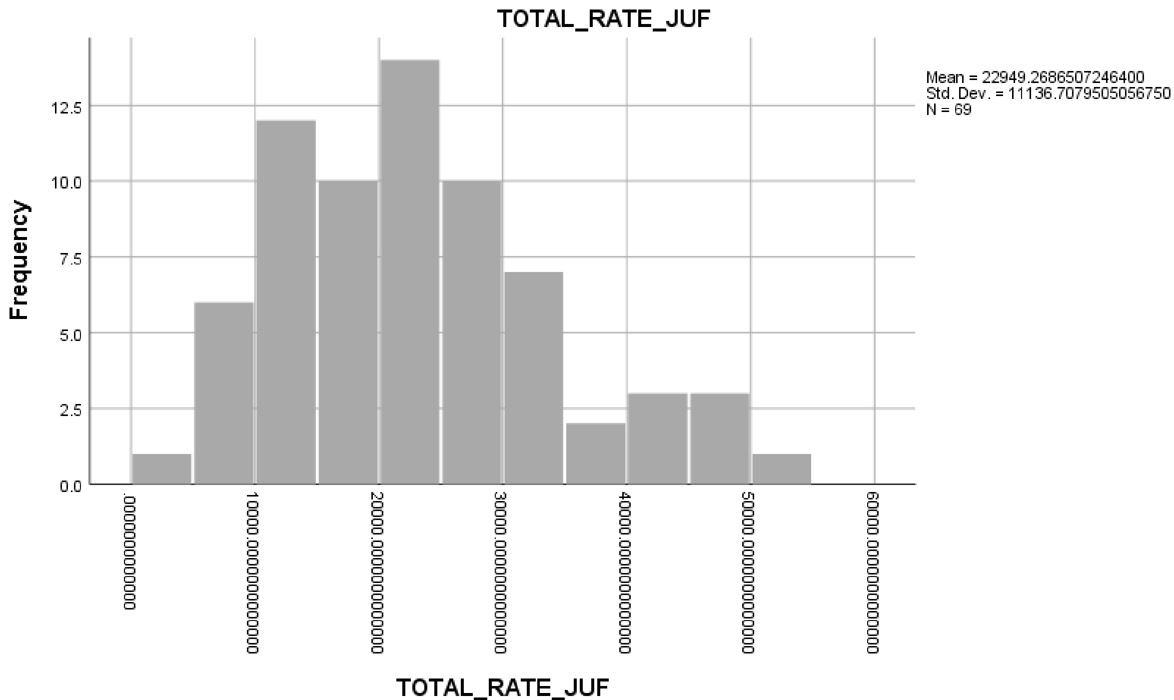
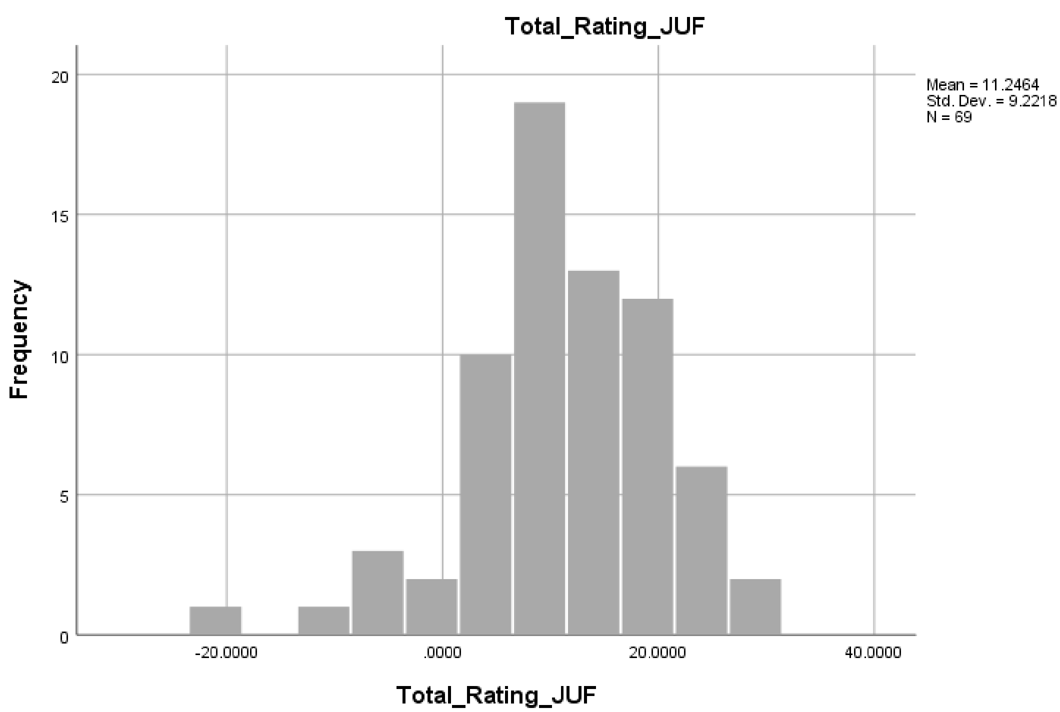
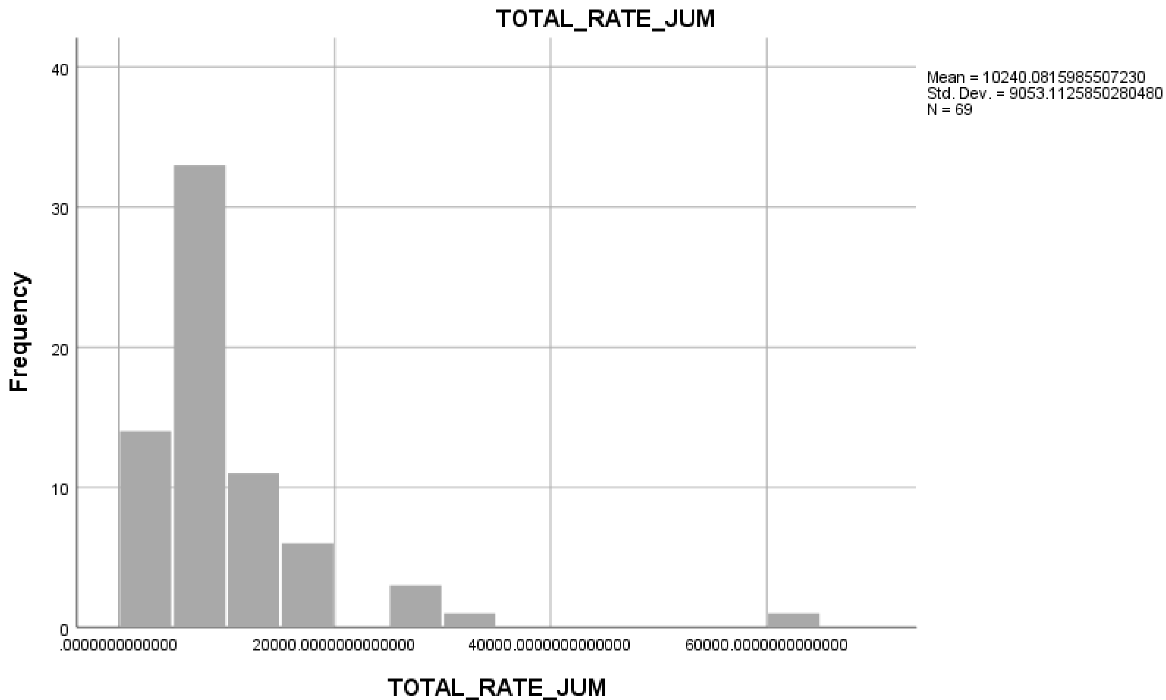
15
10
5
0
-20.0
-10.0
.0
10.0
20.0
30.0
40.0
Total_Rating_ADF

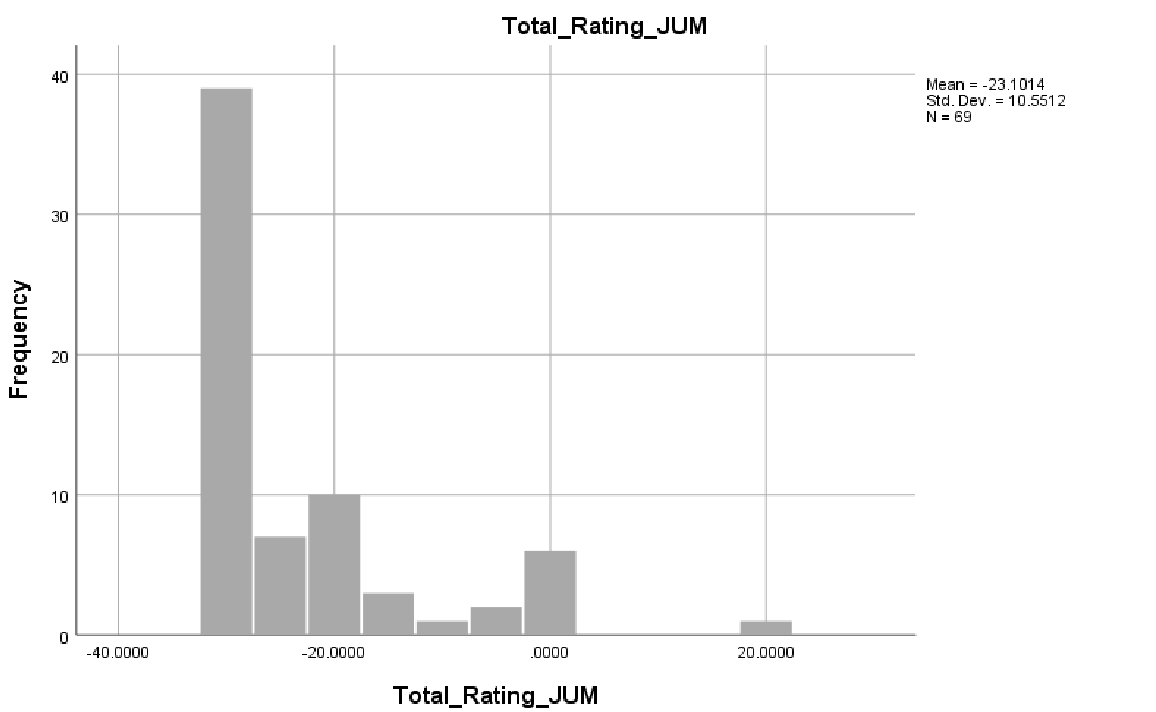

TOTAL_RATE_ADM
Mean = 12645.1104623188420
Std. Dev. = 11773.1045466740490
N = 69
Frequency
25
20
15
10
5
0
.000000000000
20000.000000000000
40000.000000000000
60000.000000000000
80000.000000000000
100000.000000000000
TOTAL_RATE_ADM

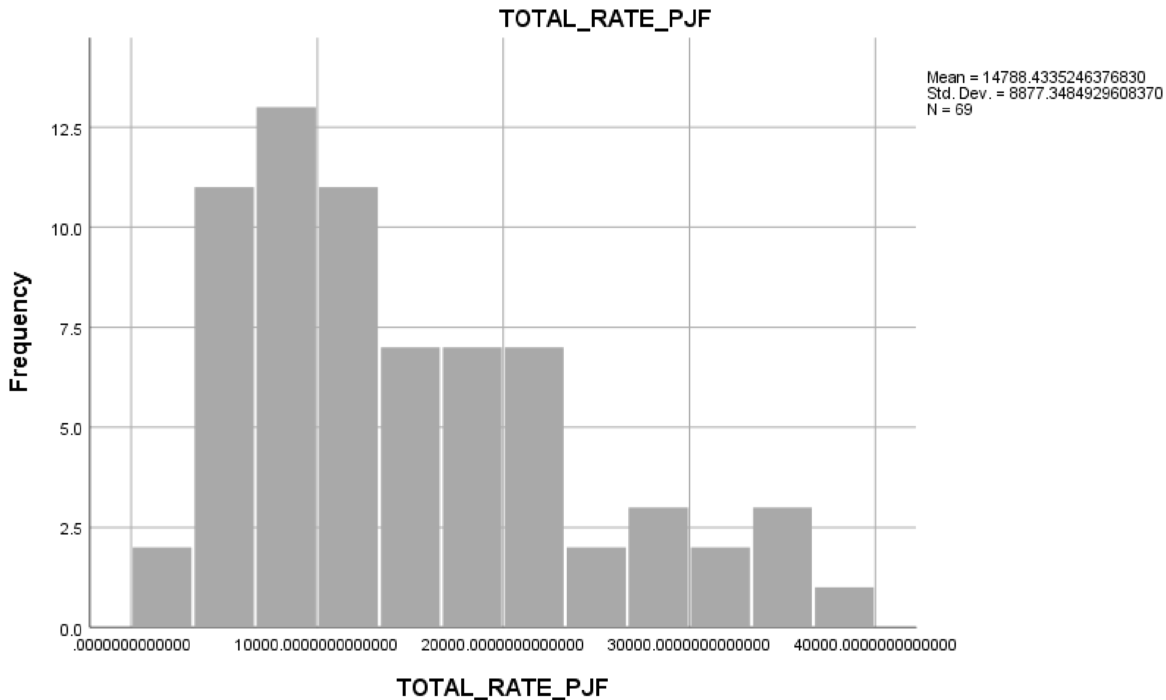

Total_Rating_ADM
Mean = -20.130
Std. Dev. = 13.511
N = 69
Frequency
40
30
20
10
0
-40.000
-20.000
.000
20.000
Total_Rating_ADM

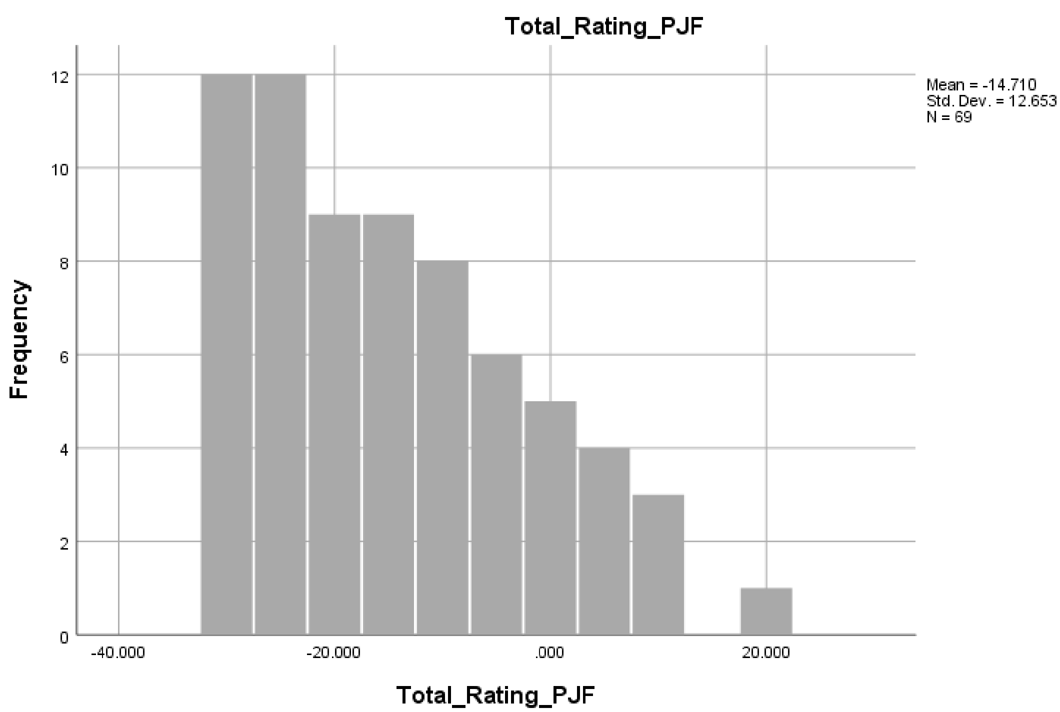

TOTAL_RATE_JUF
Mean = 22949.2686507246400
Std. Dev. = 11136.7079505056750
N = 69
Frequency
0.0
2.5
5.0
7.5
10.0
12.5
.000000000000
10000.000000000000
20000.000000000000
30000.000000000000
40000.000000000000
50000.000000000000
60000.000000000000
TOTAL_RATE_JUF


Total_Rating_JUF
Mean = 11.2464
Std. Dev. = 9.2218
N = 69
Frequency
0
5
10
15
20
-20.0000
.0000
20.0000
40.0000
Total_Rating_JUF


TOTAL_RATE_JUM
Mean = 10240.0815985507230
Std. Dev. = 9053.1125850280480
N = 69
Frequency
40
30
20
10
0
.0000000000000
20000.0000000000000
40000.0000000000000
60000.0000000000000
TOTAL_RATE_JUM


Total_Rating_JUM
Mean = -23.1014
Std. Dev. = 10.5512
N = 69
Frequency
40
30
20
10
0
-40.0000
-20.0000
.0000
20.0000
Total_Rating_JUM


TOTAL_RATE_PJF
Mean = 14788.4335246376830
Std. Dev. = 8877.3484929608370
N = 69
Frequency
12.5
10.0
7.5
5.0
2.5
0.0
.0000000000000
10000.0000000000000
20000.0000000000000
30000.0000000000000
40000.0000000000000
TOTAL_RATE_PJF


Total_Rating_PJF
Mean = -14.710
Std. Dev. = 12.653
N = 69
Frequency
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10
8
6
4
2
0
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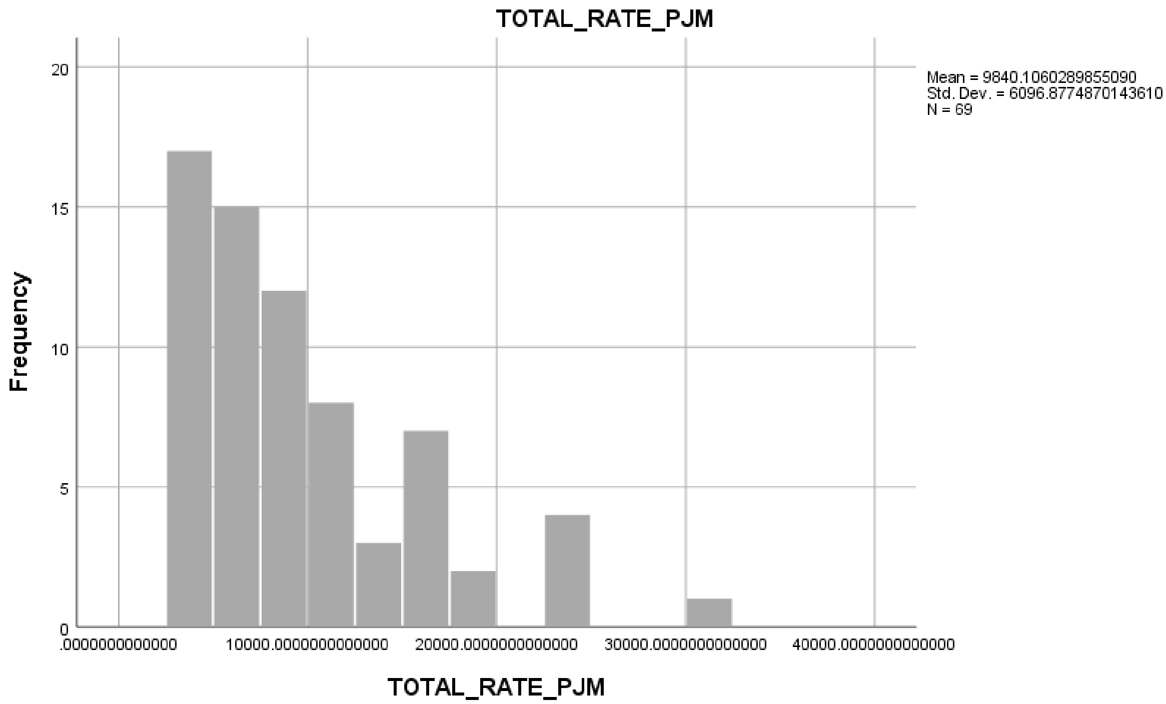
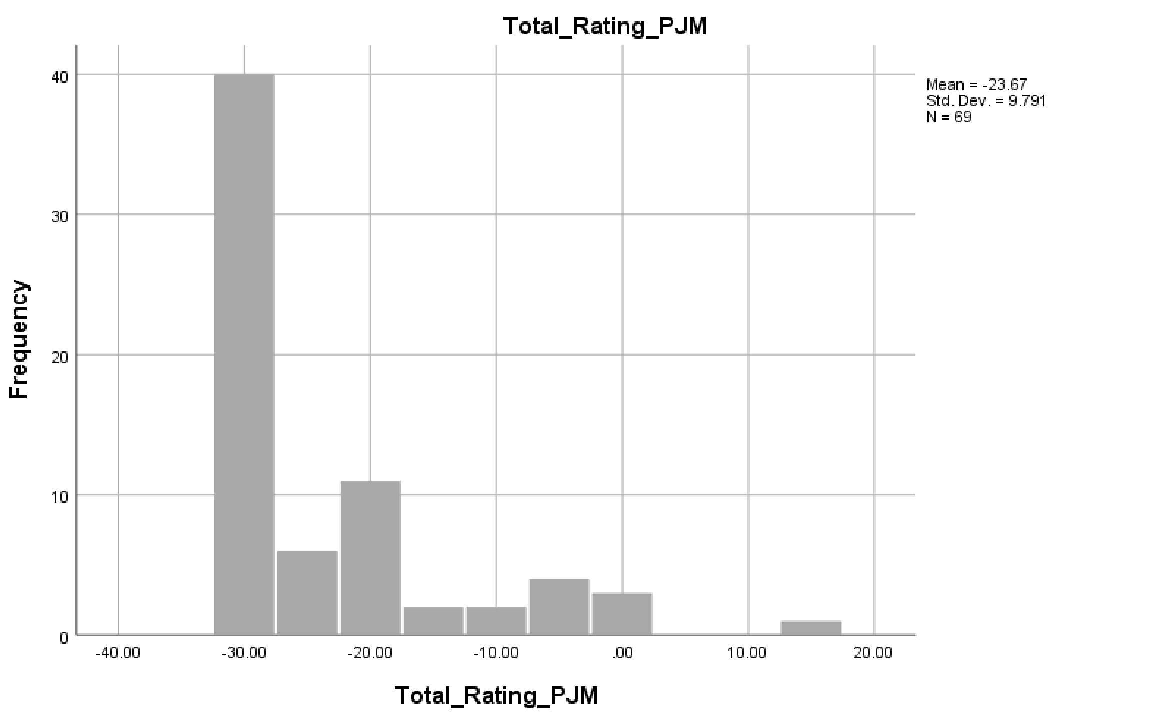
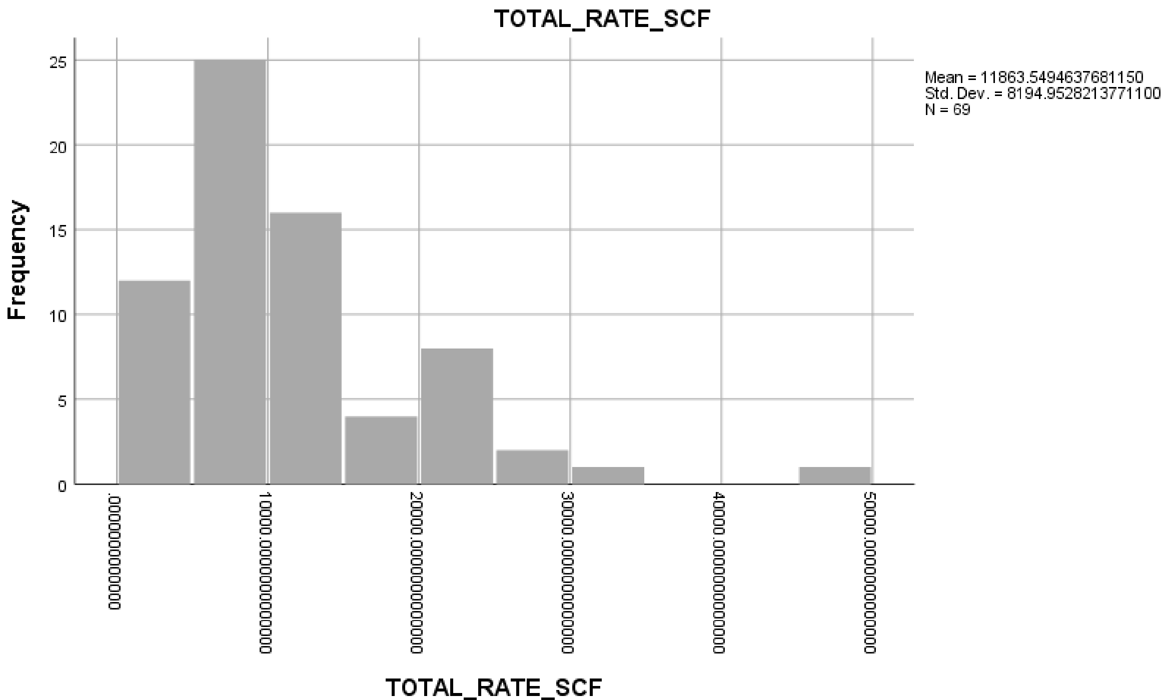
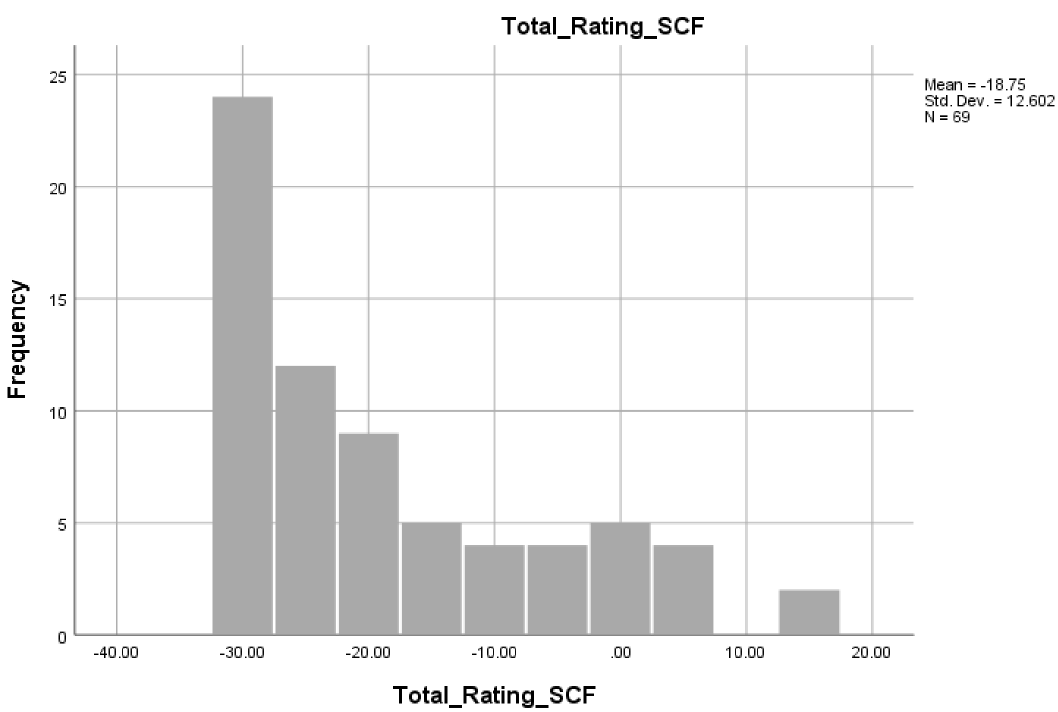
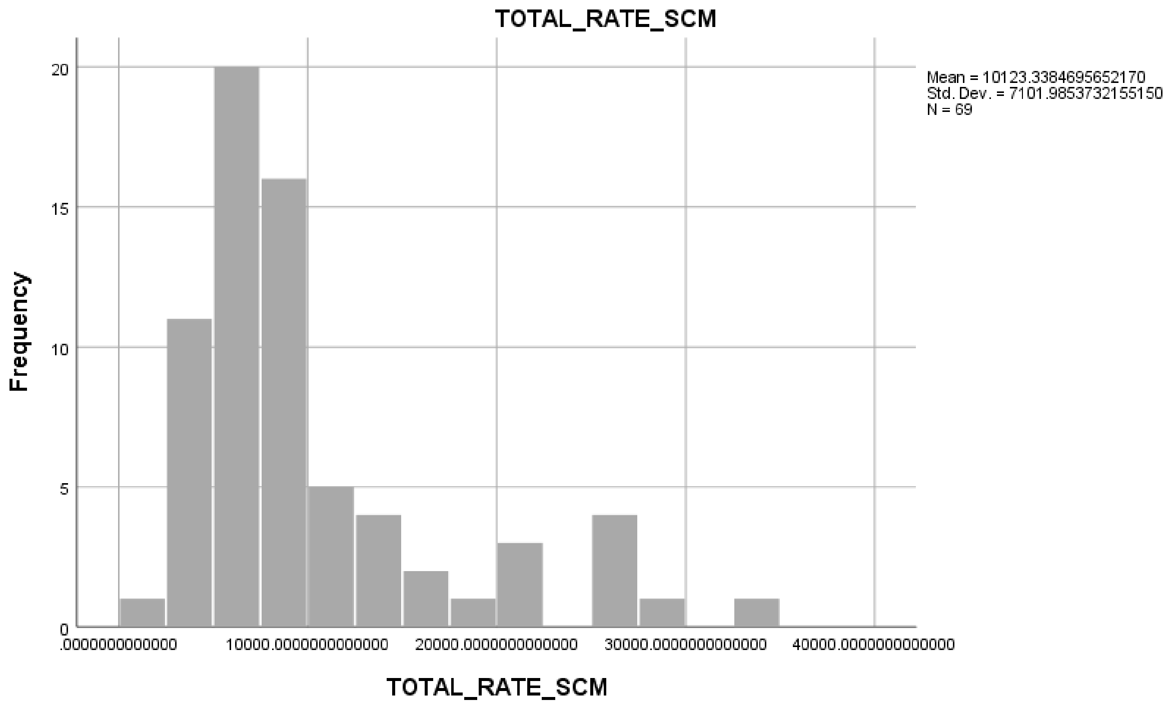
-20.000
.000
20.000
Total_Rating_PJF


TOTAL_RATE_PJM
Mean = 9840.1060289855090
Std. Dev. = 6096.8774870143610
N = 69
Frequency
TOTAL_RATE_PJM


Total_Rating_PJM
Mean = -23.67
Std. Dev. = 9.791
N = 69
Frequency
Total_Rating_PJM


TOTAL_RATE_SCF
Mean = 11863.5494637681150
Std. Dev. = 8194.9528213771100
N = 69
Frequency
0
5
10
15
20
25
.000000000000
10000.000000000000
20000.000000000000
30000.000000000000
40000.000000000000
50000.000000000000
TOTAL_RATE_SCF


Total_Rating_SCF
Mean = -18.75
Std. Dev. = 12.602
N = 69
Frequency
0
5
10
15
20
25
-40.00
-30.00
-20.00
-10.00
.00
10.00
20.00
Total_Rating_SCF


TOTAL_RATE_SCM
Mean = 10123.3384695652170
Std. Dev. = 7101.9853732155150
N = 69
Frequency
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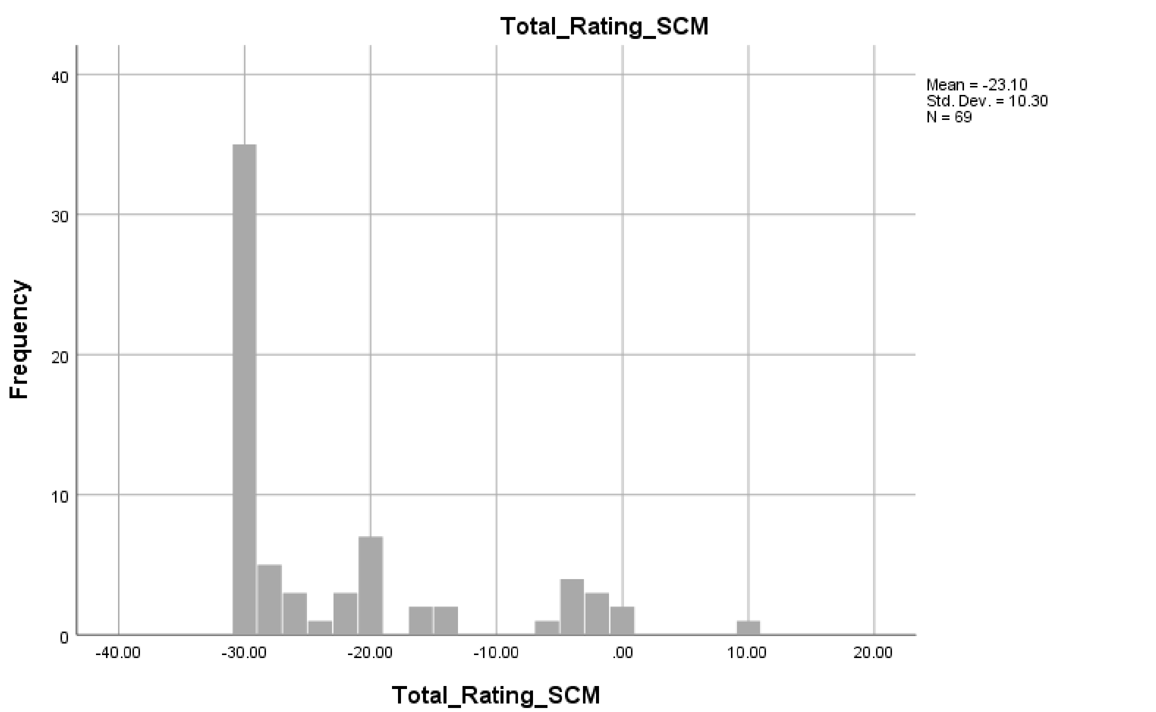
5
10
15
20
.0000000000000
10000.0000000000000
20000.0000000000000
30000.0000000000000
40000.0000000000000
TOTAL_RATE_SCM


Total_Rating_SCM
Mean = -23.10
Std. Dev. = 10.30
N = 69
Frequency
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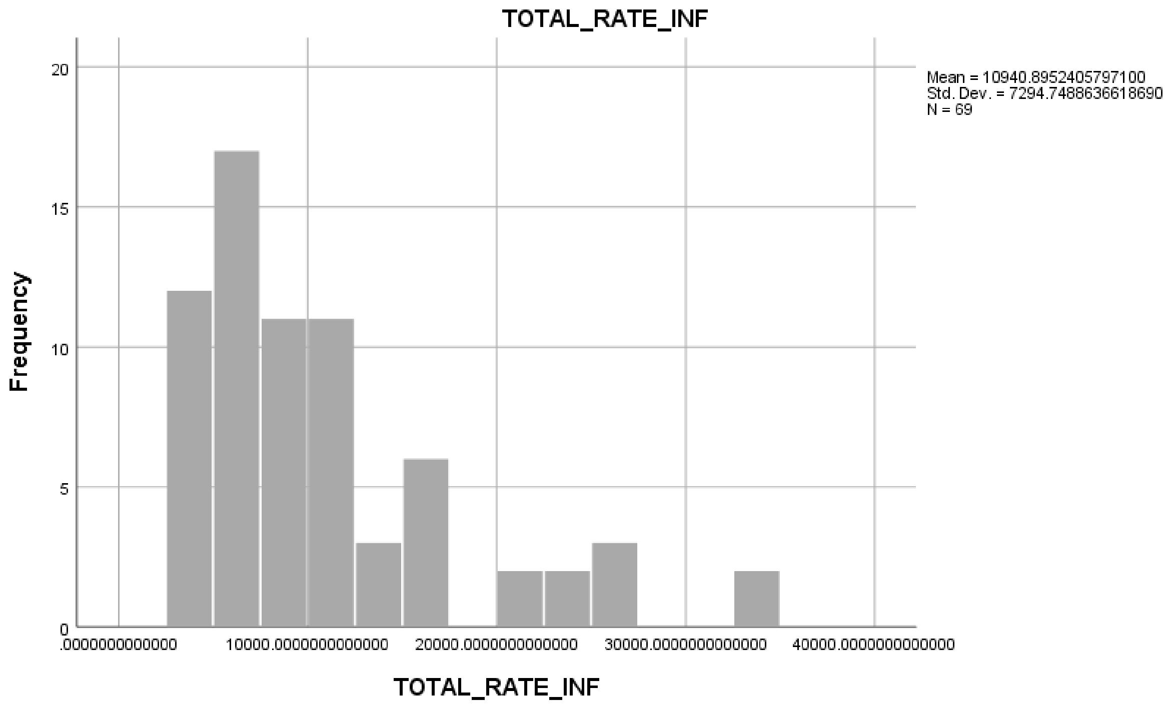
10
20
30
40
-40.00
-30.00
-20.00
-10.00
.00
10.00
20.00
Total_Rating_SCM


TOTAL_RATE_INF
Mean = 10940.8952405797100
Std. Dev. = 7294.7488636618690
N = 69
Frequency
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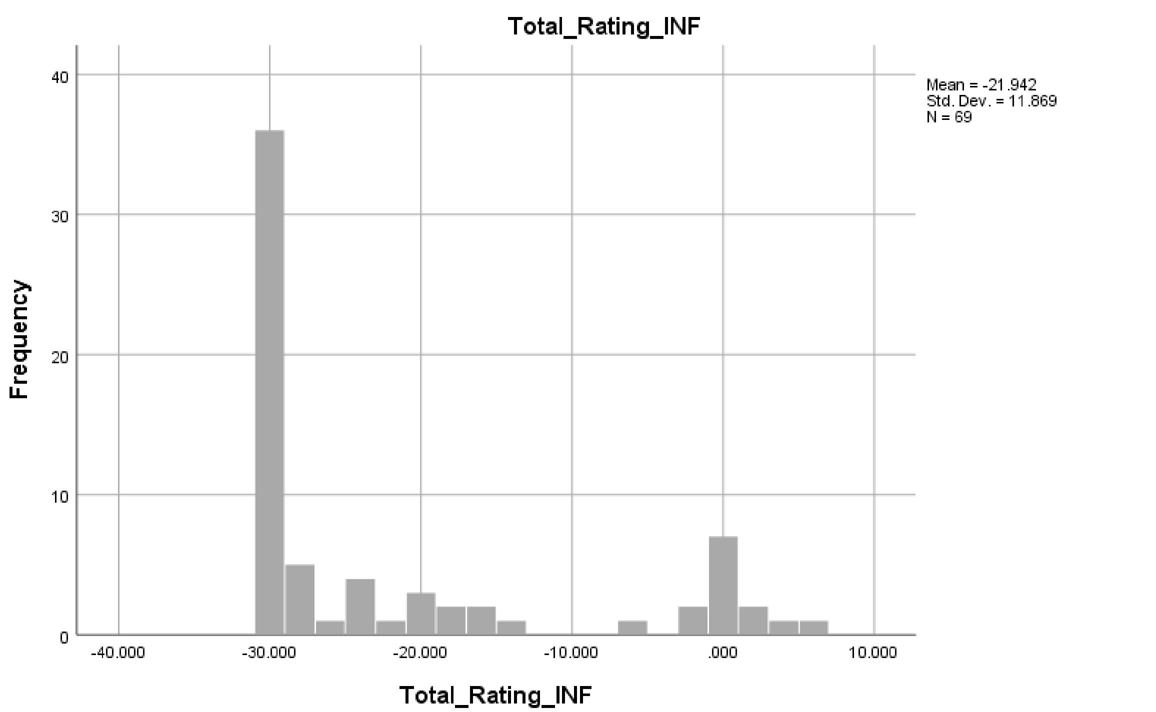
10
15
20
.0000000000000
10000.0000000000000
20000.0000000000000
30000.0000000000000
40000.0000000000000
TOTAL_RATE_INF


Total_Rating_INF
Mean = -21.942
Std. Dev. = 11.869
N = 69
Frequency
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10
20
30
40
-40.000
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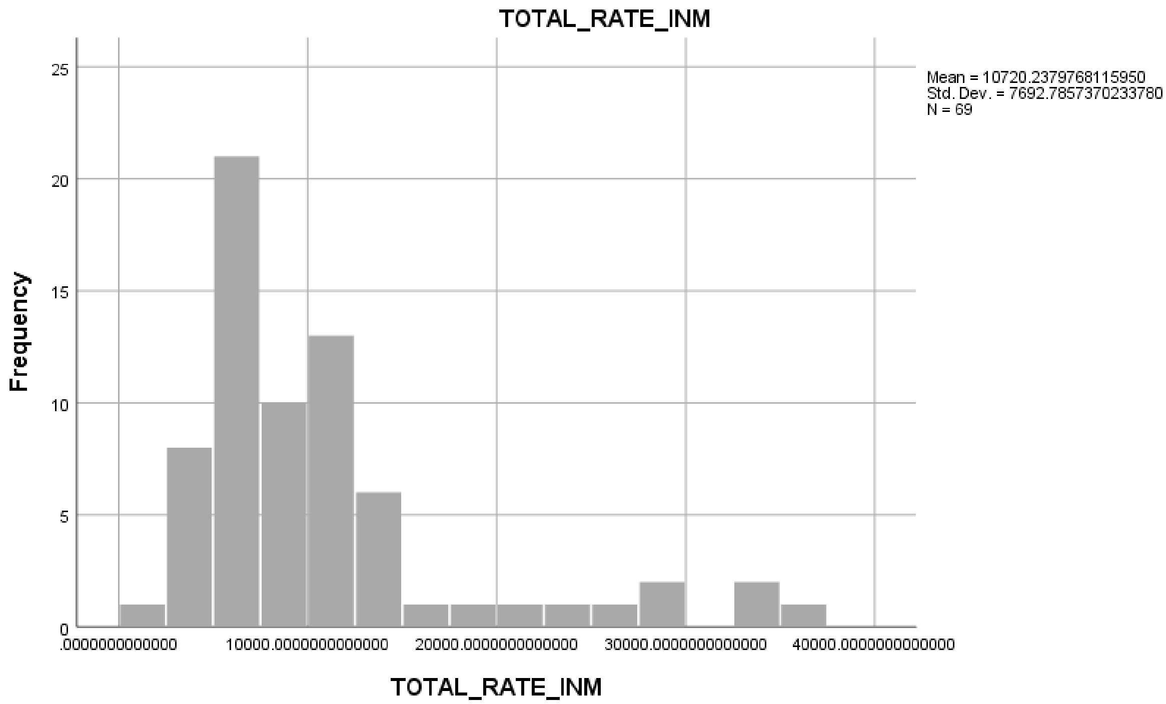
.000
10.000
Total_Rating_INF



TOTAL_RATE_INM
Mean = 10720.2379768115950
Std. Dev. = 7692.7857370233780
N = 69
Frequency
25
20
15
10
5
0
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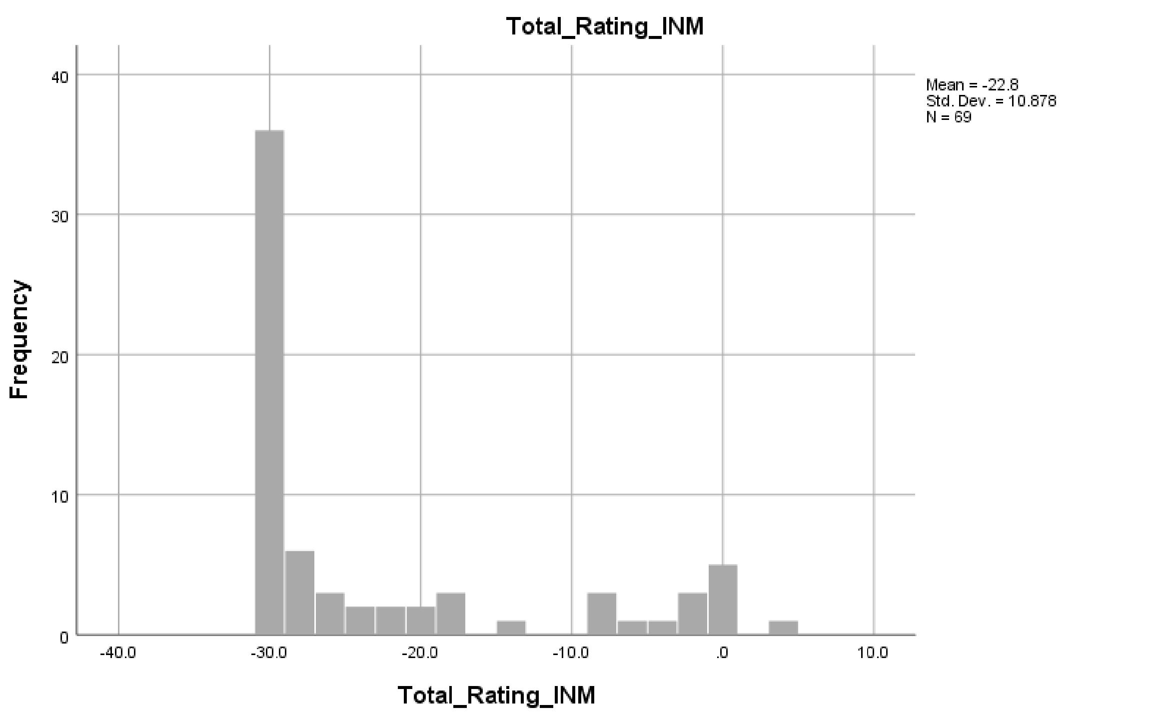
10000.0000000000000
20000.0000000000000
30000.0000000000000
40000.0000000000000
TOTAL_RATE_INM

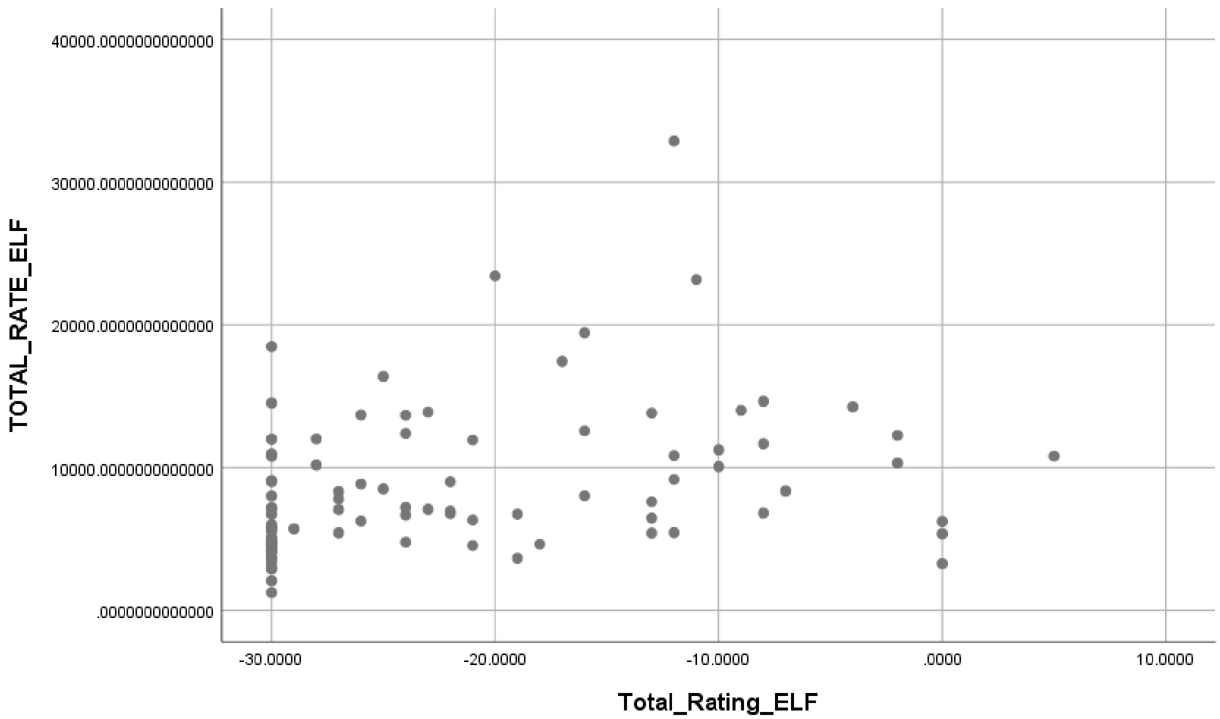


Total_Rating_INM
Mean = -22.8
Std. Dev. = 10.878
N = 69
Frequency
40
30
20
10
0
-40.0
-30.0
-20.0
-10.0
.0
10.0
Total_Rating_INM

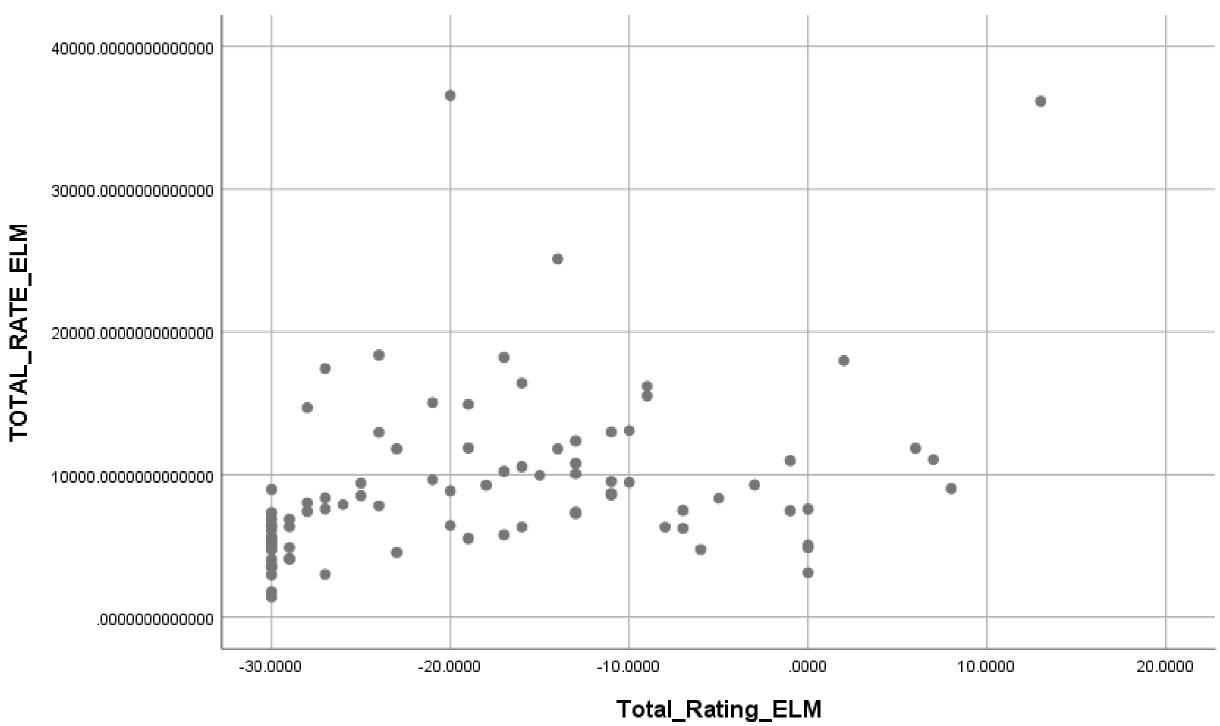
APPENDIX C

Scatterplots of Female Participants

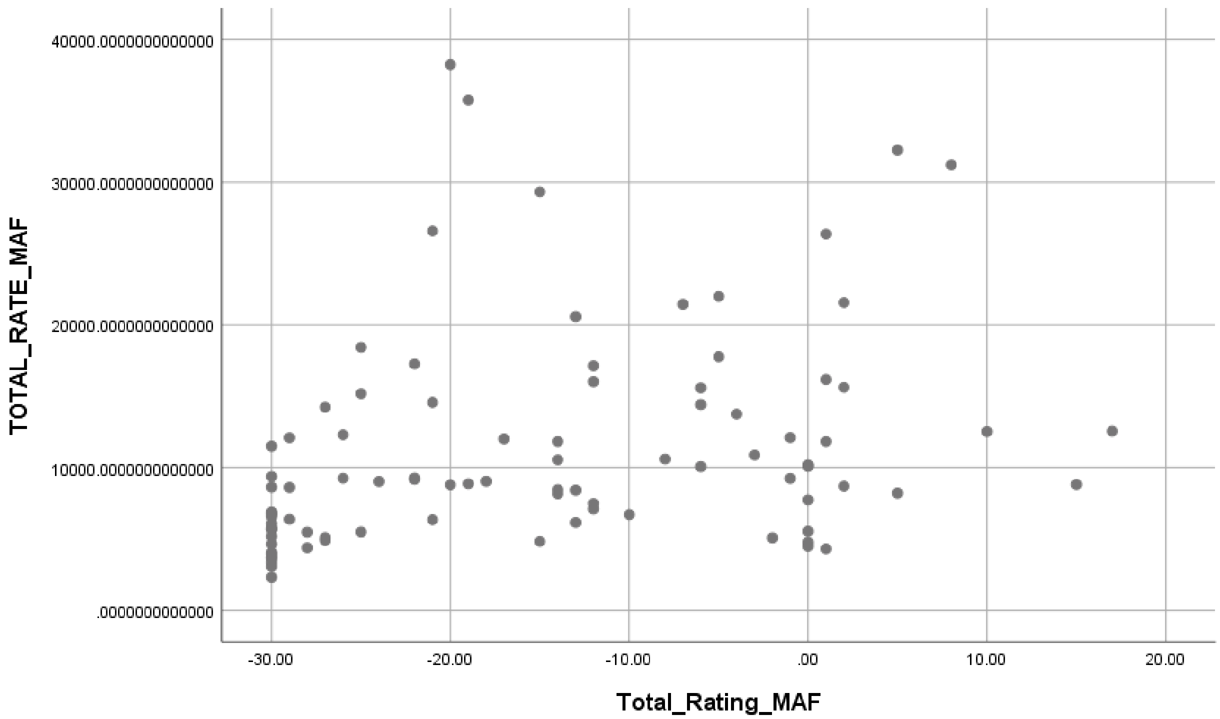
The following scatterplots portray the Rate-time and Ratings for all female participants across each LOOK category: ELF/M (Elderly Female/Male), MAF/M (Mature Adult Female/Male), ADF/M (Adult Female/Male), JUF/M (Juvenile Female/Male), PJF/M (Pre-juvenile Female/Male), SCF/M (Small Child Female/Male), INF/M (Infant Female/Male).

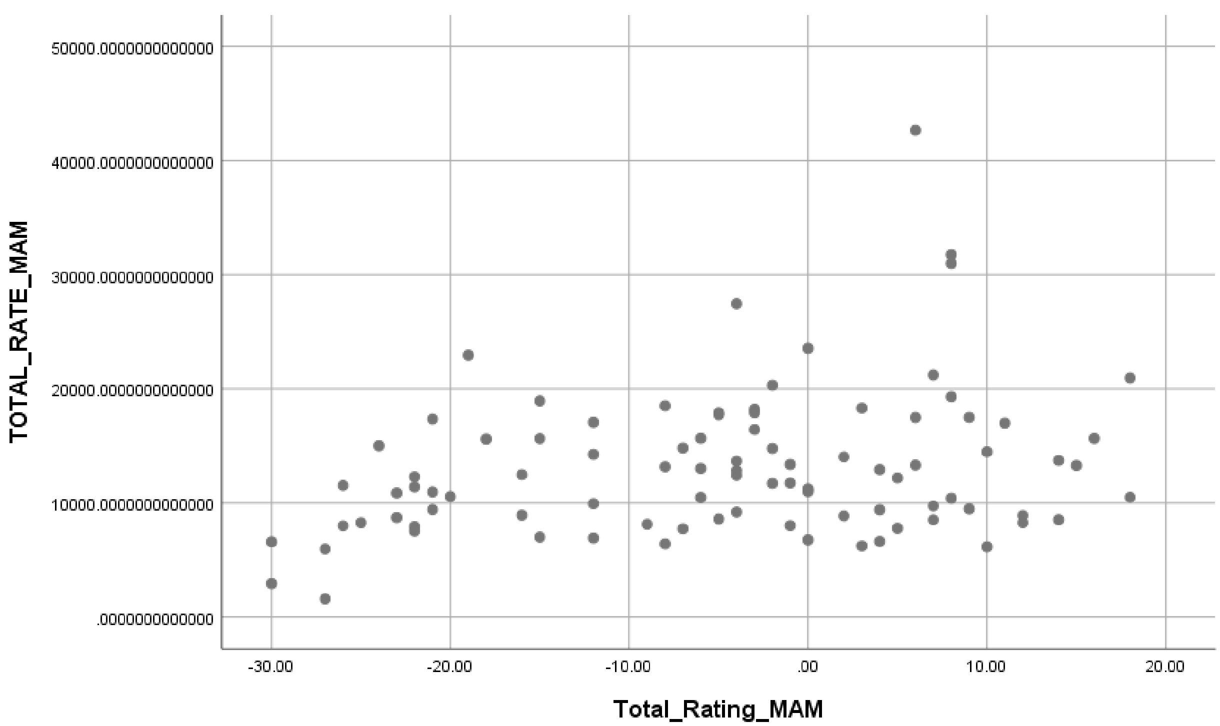


40000.0000000000000
30000.0000000000000
20000.0000000000000
10000.0000000000000
.0000000000000
TOTAL_RATE_ELF
-30.0000
-20.0000
-10.0000
.0000
10.0000
Total_Rating_ELF



40000.0000000000000
30000.0000000000000
20000.0000000000000
10000.0000000000000
.0000000000000
TOTAL_RATE_ELM
-30.0000
-20.0000
-10.0000
.0000
10.0000
20.0000
Total_Rating_ELM


40000.0000000000000
30000.0000000000000
20000.0000000000000
10000.0000000000000
.0000000000000
TOTAL_RATE_MAF
-30.00
-20.00
-10.00
.00
10.00
20.00
Total_Rating_MAF


50000.0000000000000
40000.0000000000000
30000.0000000000000
20000.0000000000000
10000.0000000000000
.0000000000000
TOTAL_RATE_MAM
-30.00
-20.00
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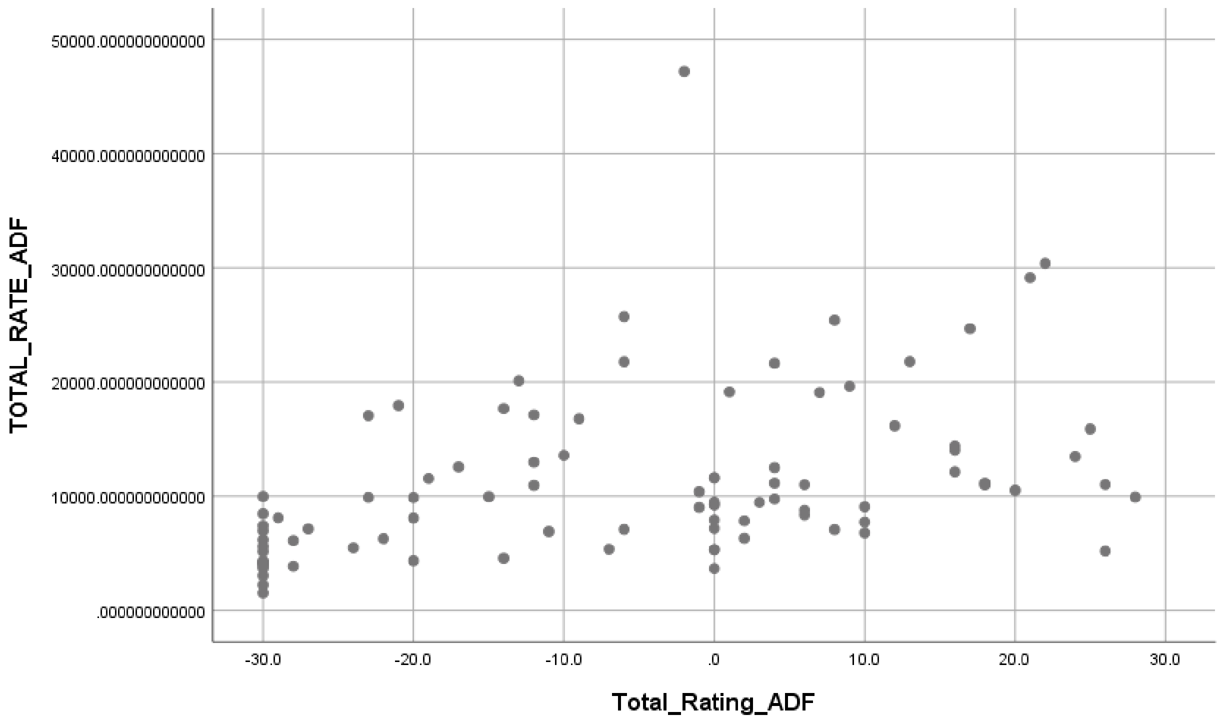
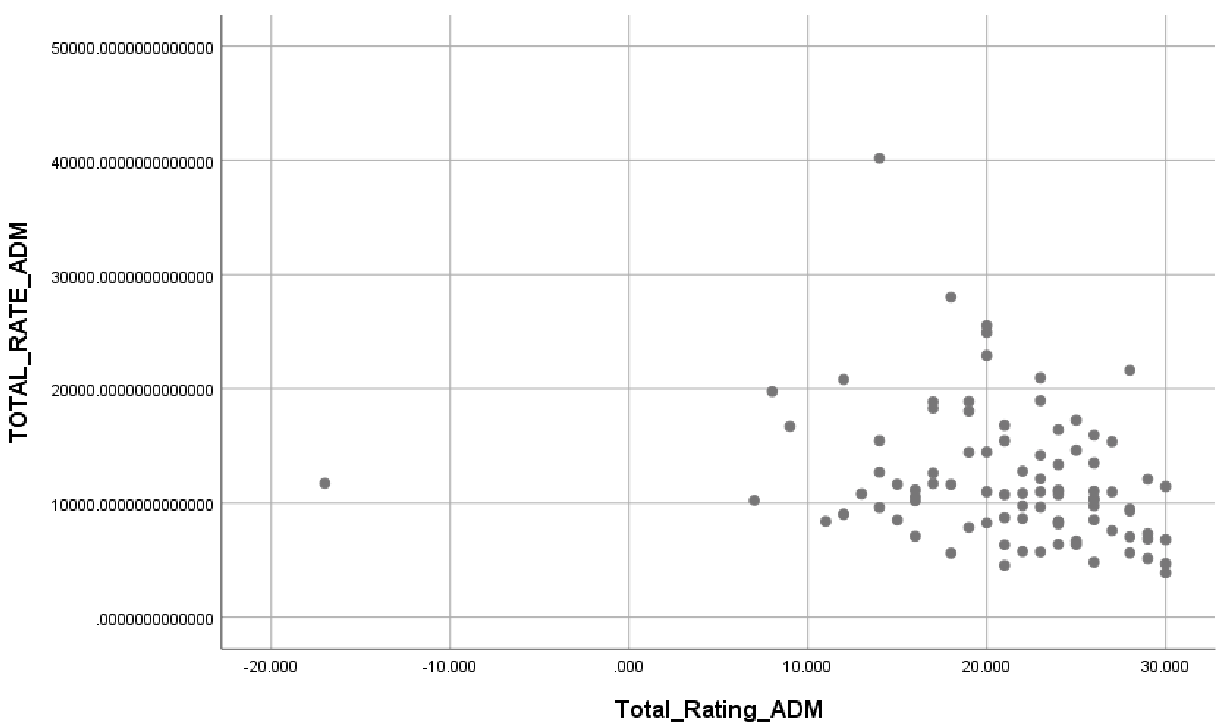
10.00
20.00
Total_Rating_MAM


50000.000000000000
40000.000000000000
30000.000000000000
20000.000000000000
10000.000000000000
.000000000000
TOTAL_RATE_ADF
-30.0
-20.0
-10.0
.0
10.0
20.0
30.0
Total_Rating_ADF


50000.0000000000000
40000.0000000000000
30000.0000000000000
20000.0000000000000
10000.0000000000000
.0000000000000
TOTAL_RATE_ADM
-20.000
-10.000
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10.000
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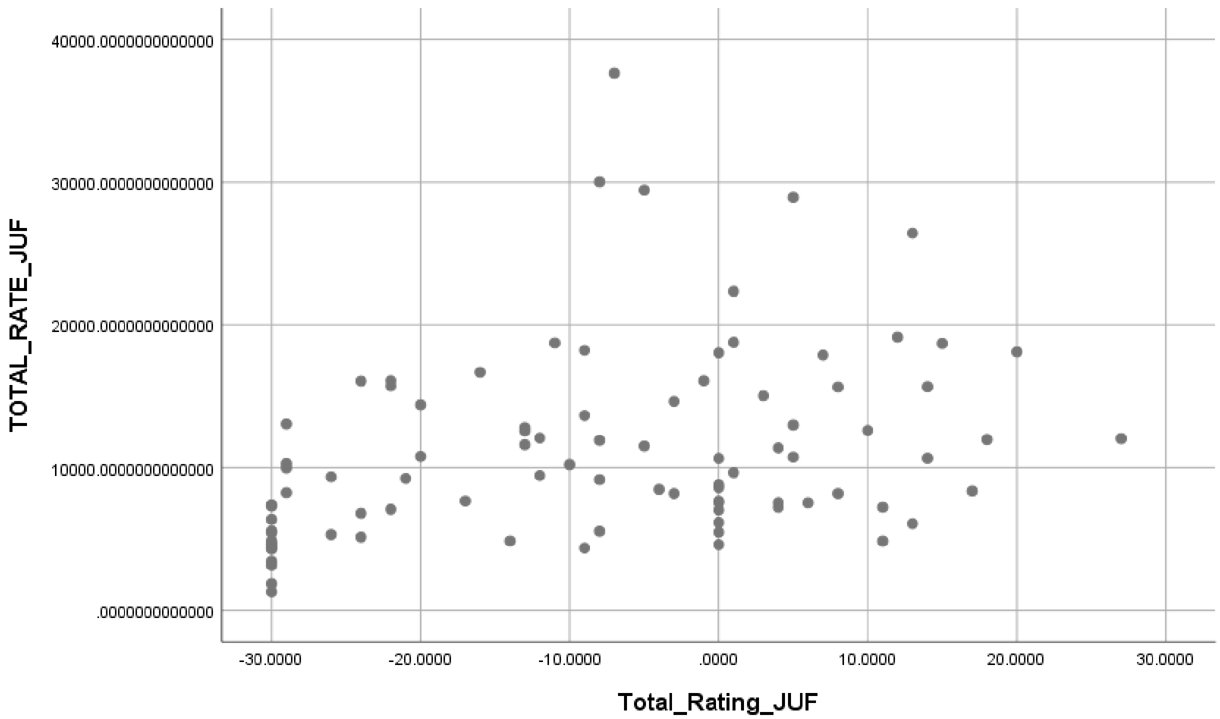
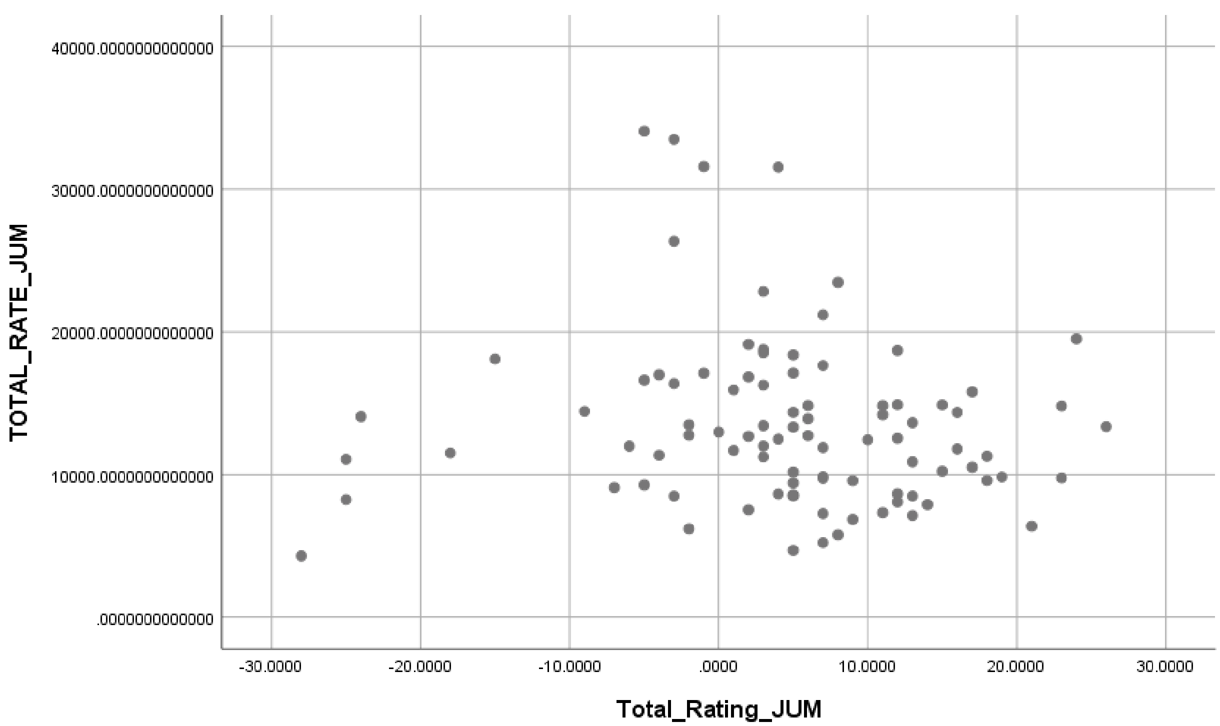
30.000
Total_Rating_ADM


TOTAL_RATE_JUF
40000.0000000000000
30000.0000000000000
20000.0000000000000
10000.0000000000000
.0000000000000
-30.0000
-20.0000
-10.0000
.0000
10.0000
20.0000
30.0000
Total_Rating_JUF


TOTAL_RATE_JUM
40000.0000000000000
30000.0000000000000
20000.0000000000000
10000.0000000000000
.0000000000000
-30.0000
-20.0000
-10.0000
.0000
10.0000
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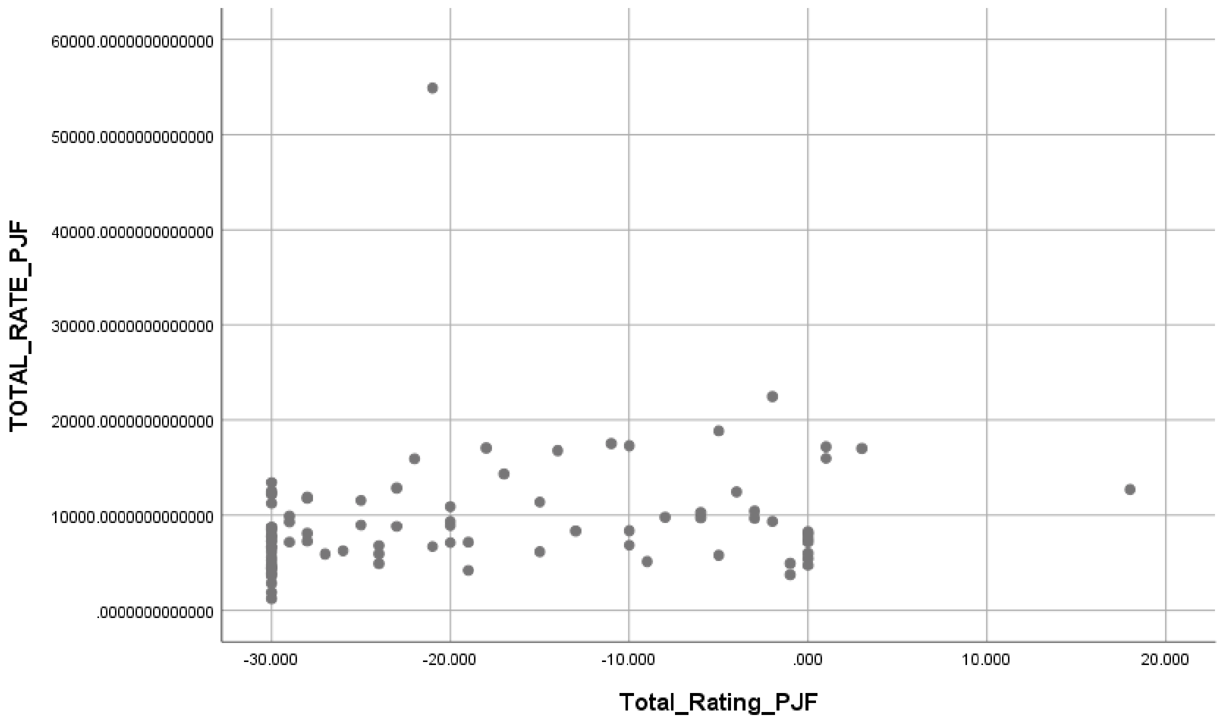
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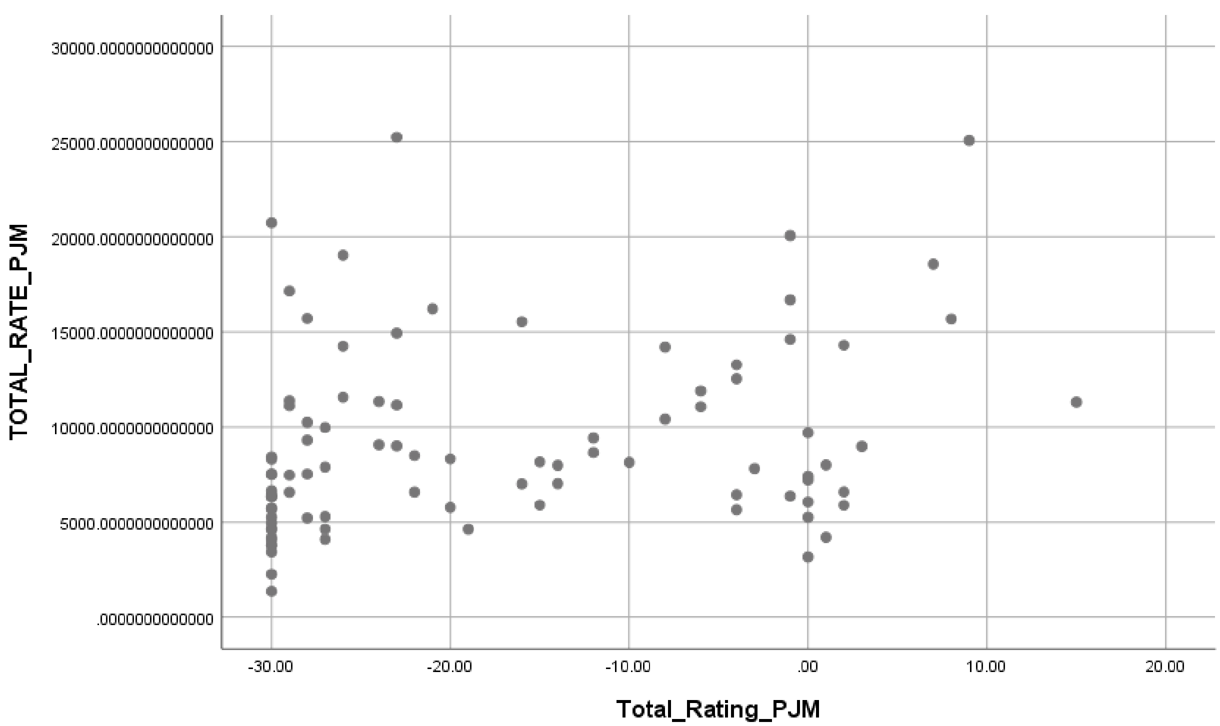
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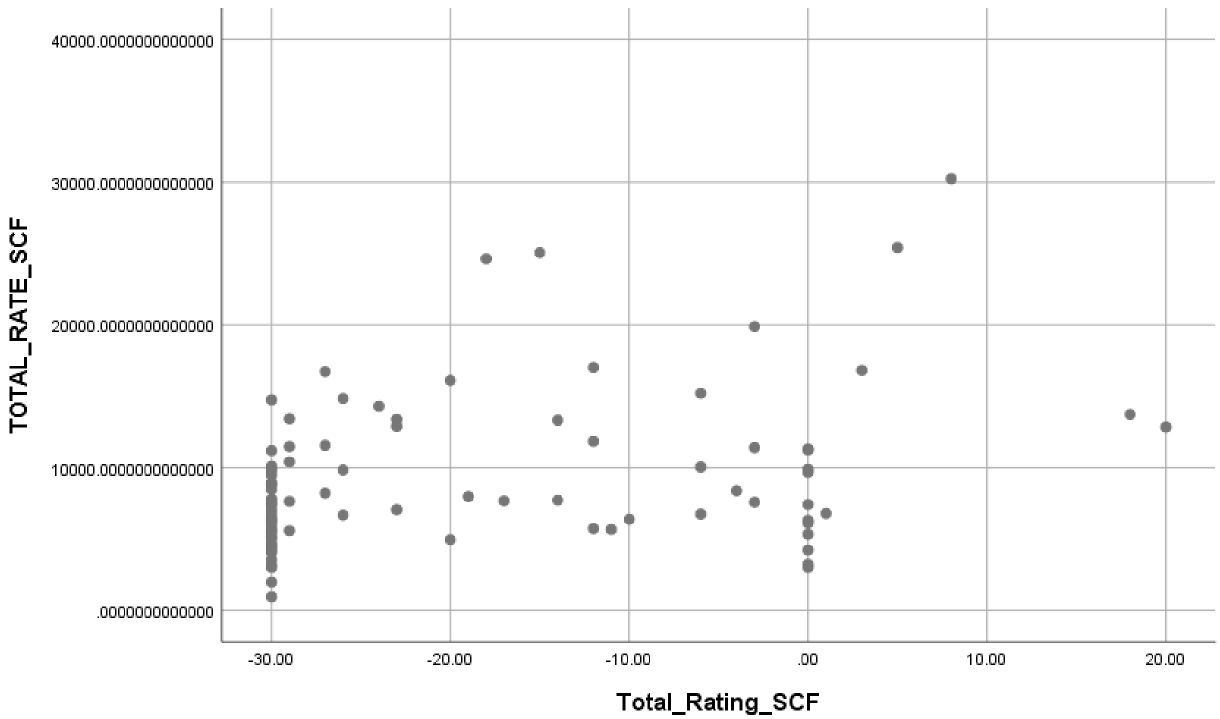

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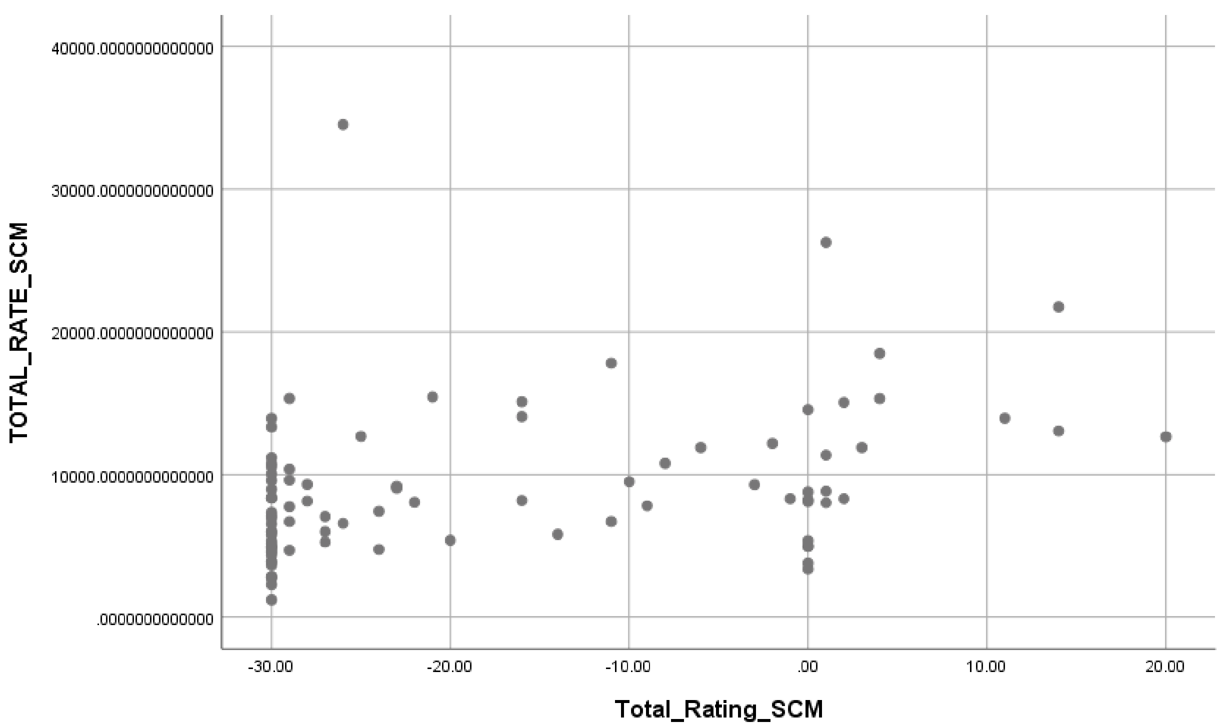

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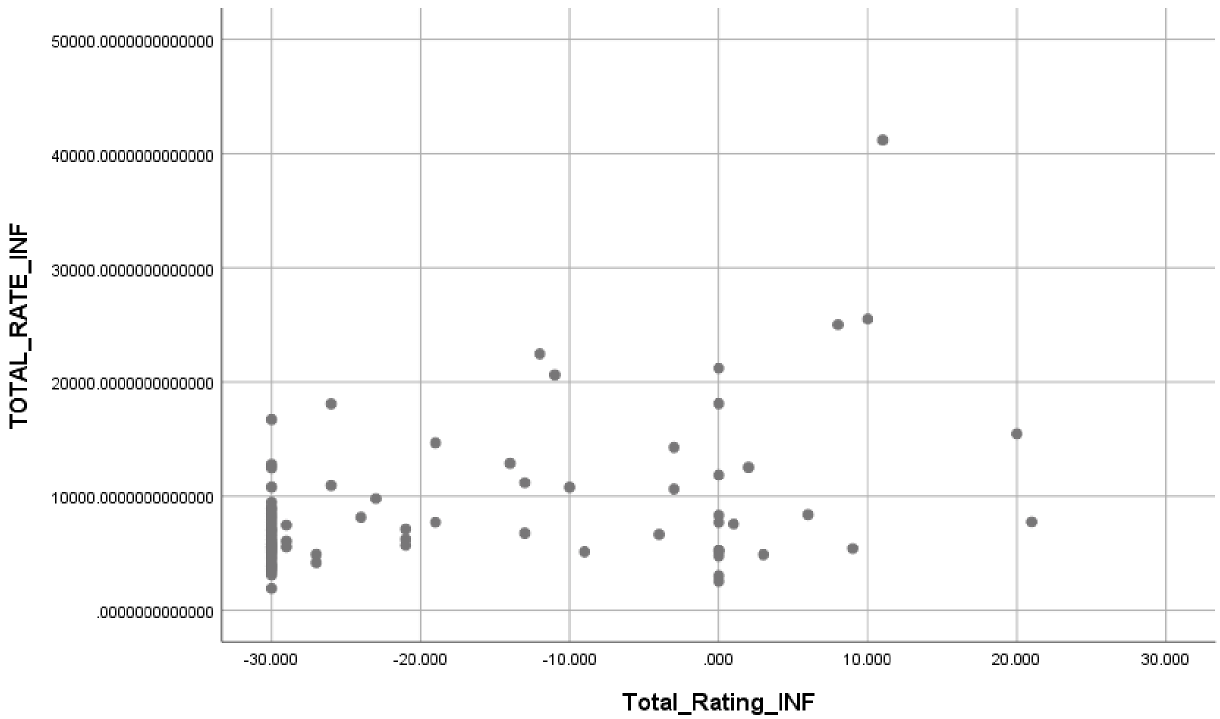
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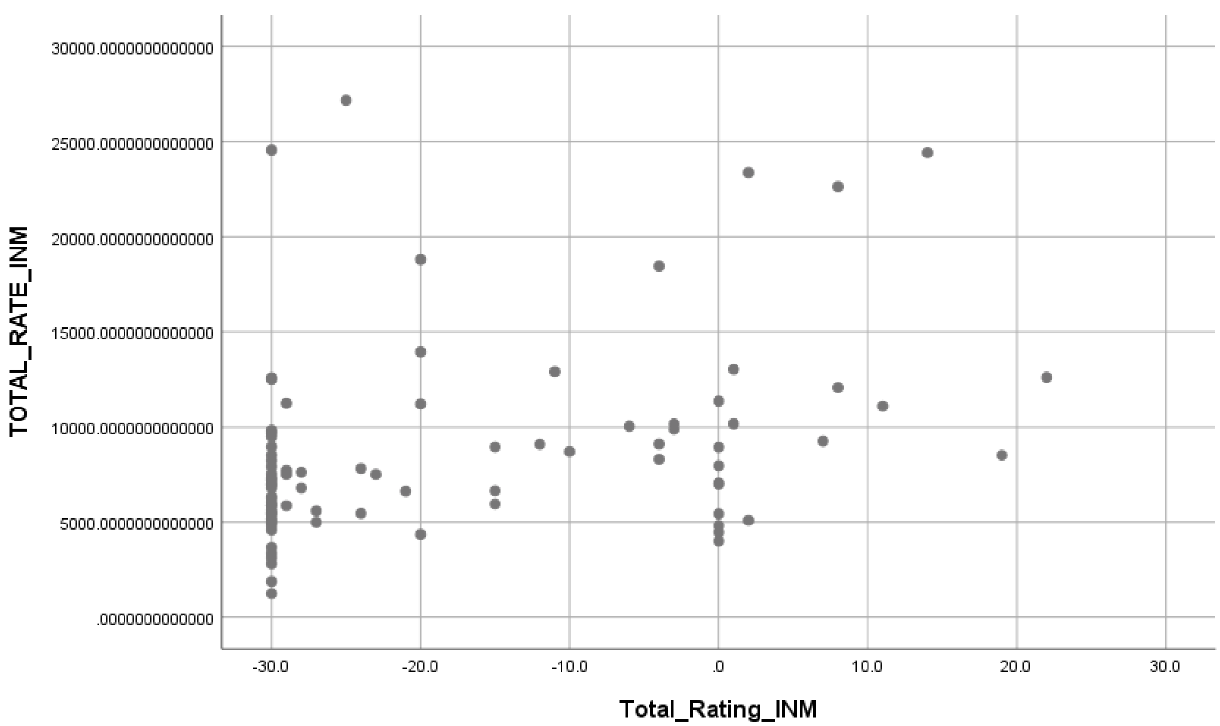
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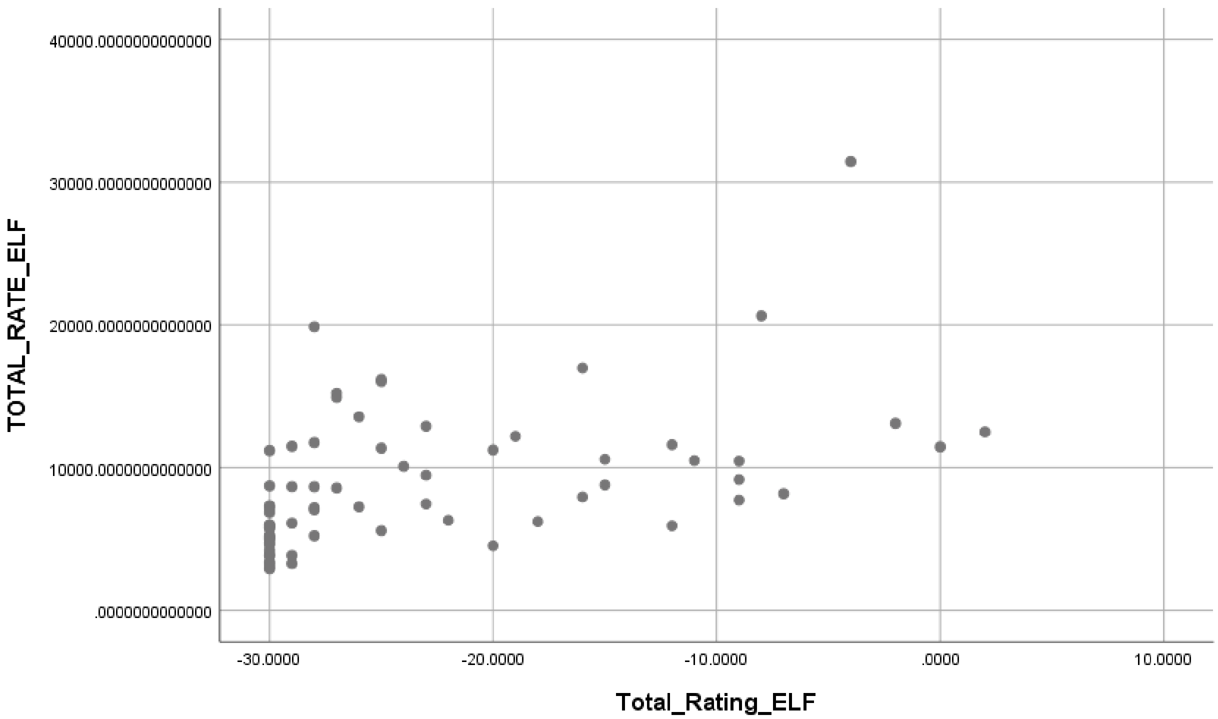
APPENDIX D

Scatterplots of Male Participants

The following scatterplots portray the Rate-time and Ratings for all male participants across each LOOK category: ELF/M (Elderly Female/Male), MAF/M (Mature Adult Female/Male), ADF/M (Adult Female/Male), JUF/M (Juvenile Female/Male), PJF/M (Pre-juvenile Female/Male), SCF/M (Small Child Female/Male), INF/M (Infant Female/Male).



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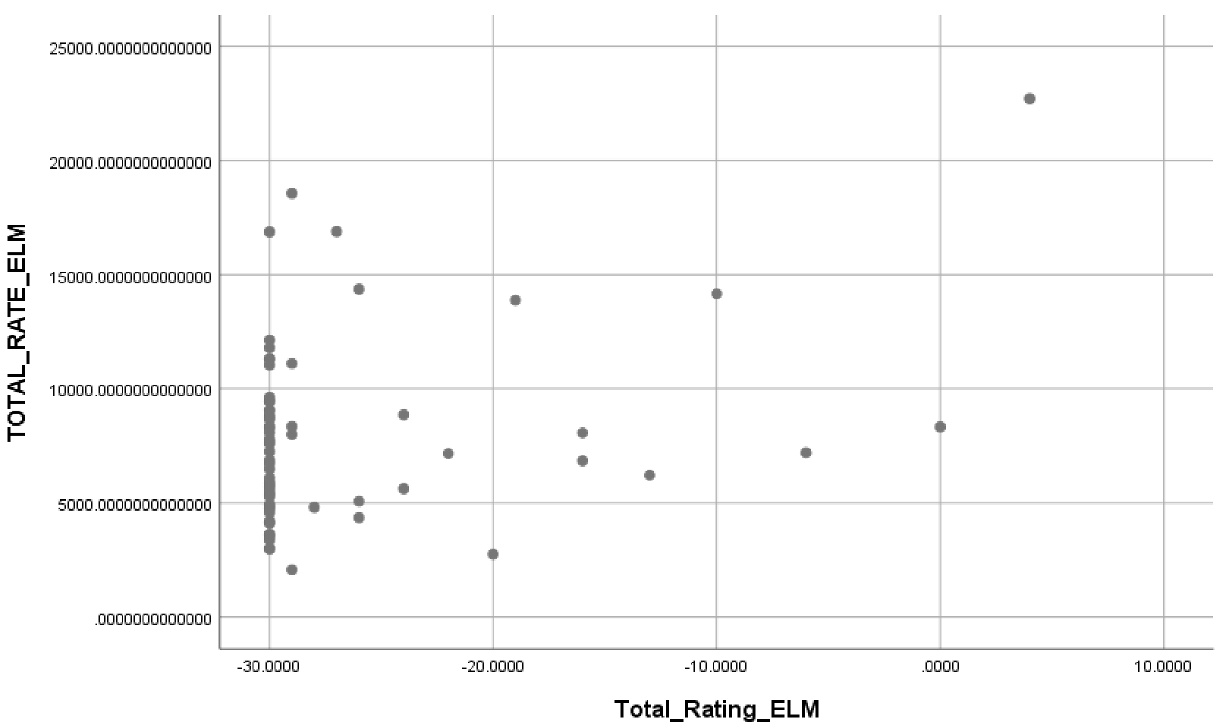

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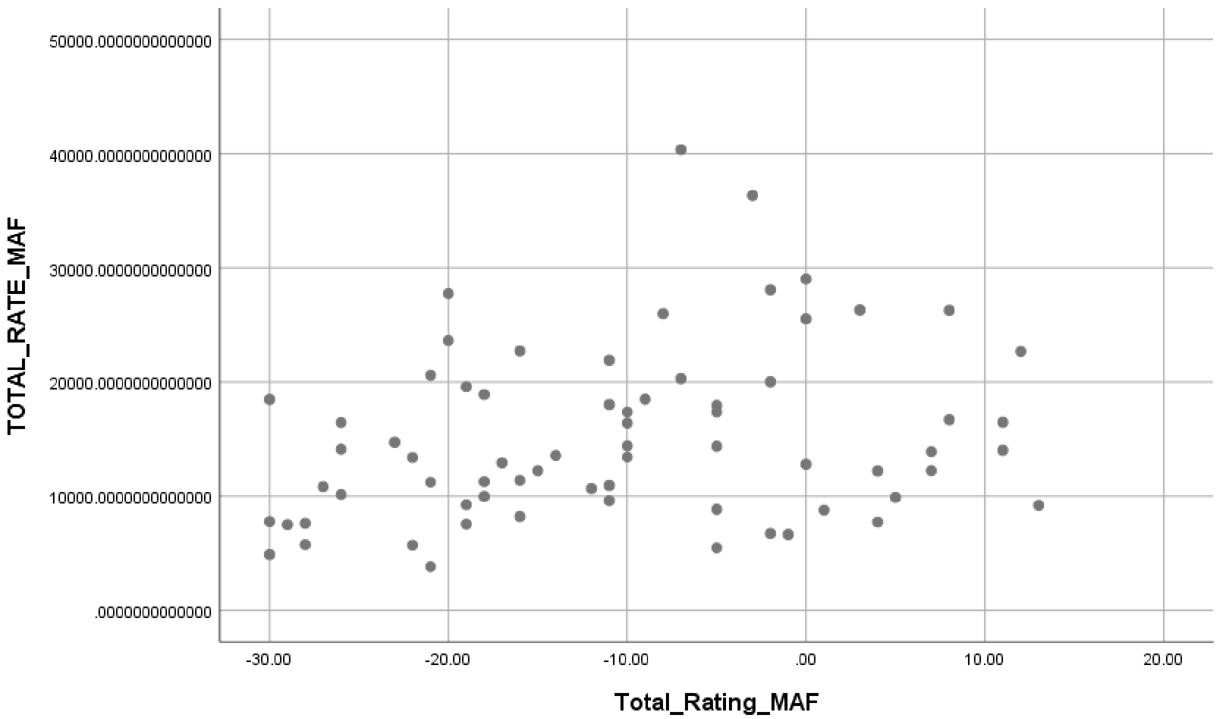
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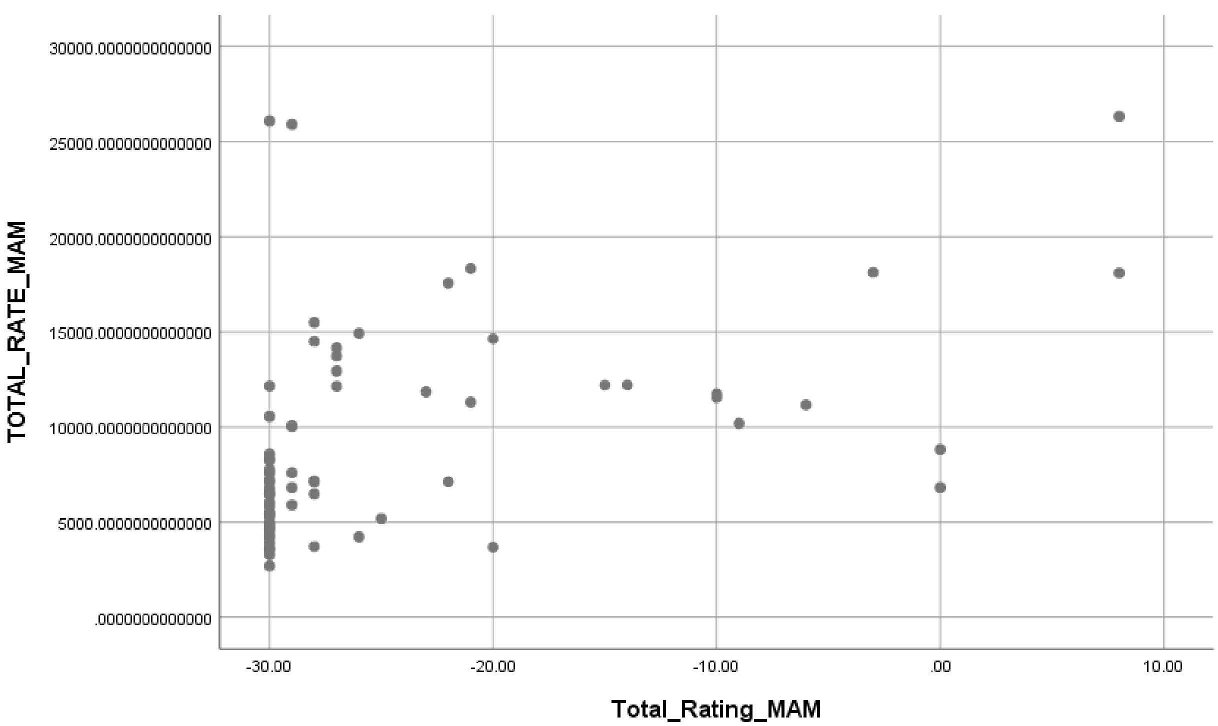
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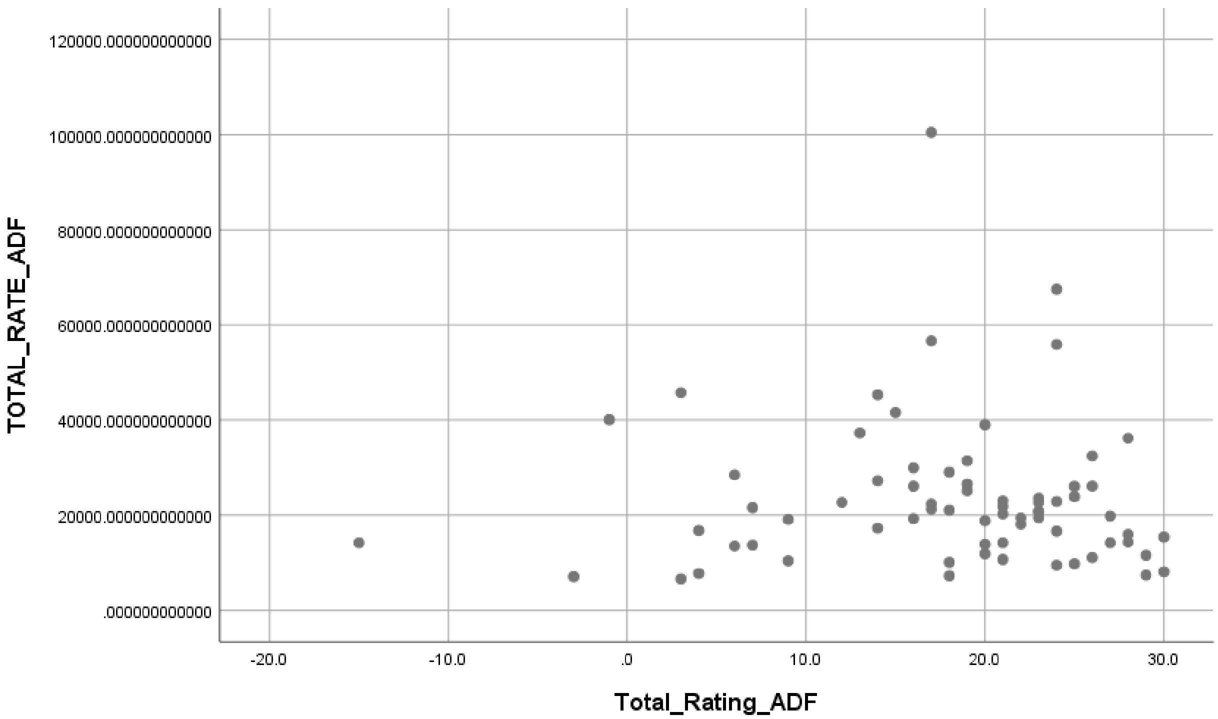
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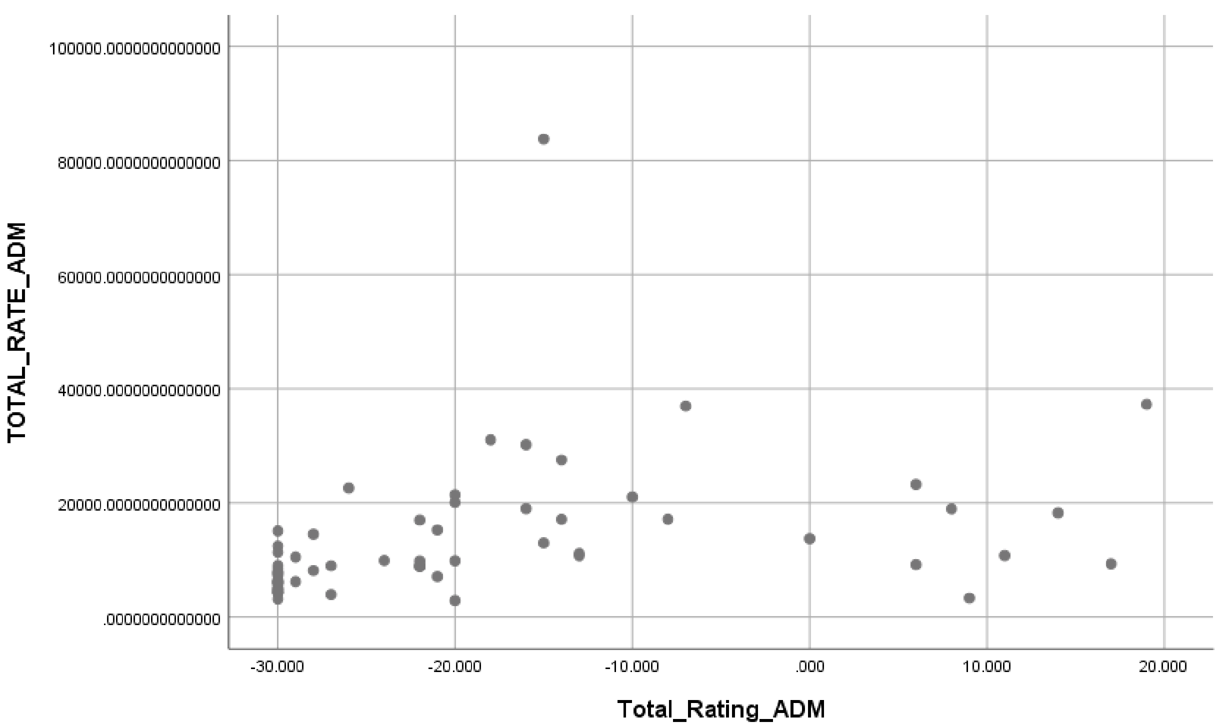
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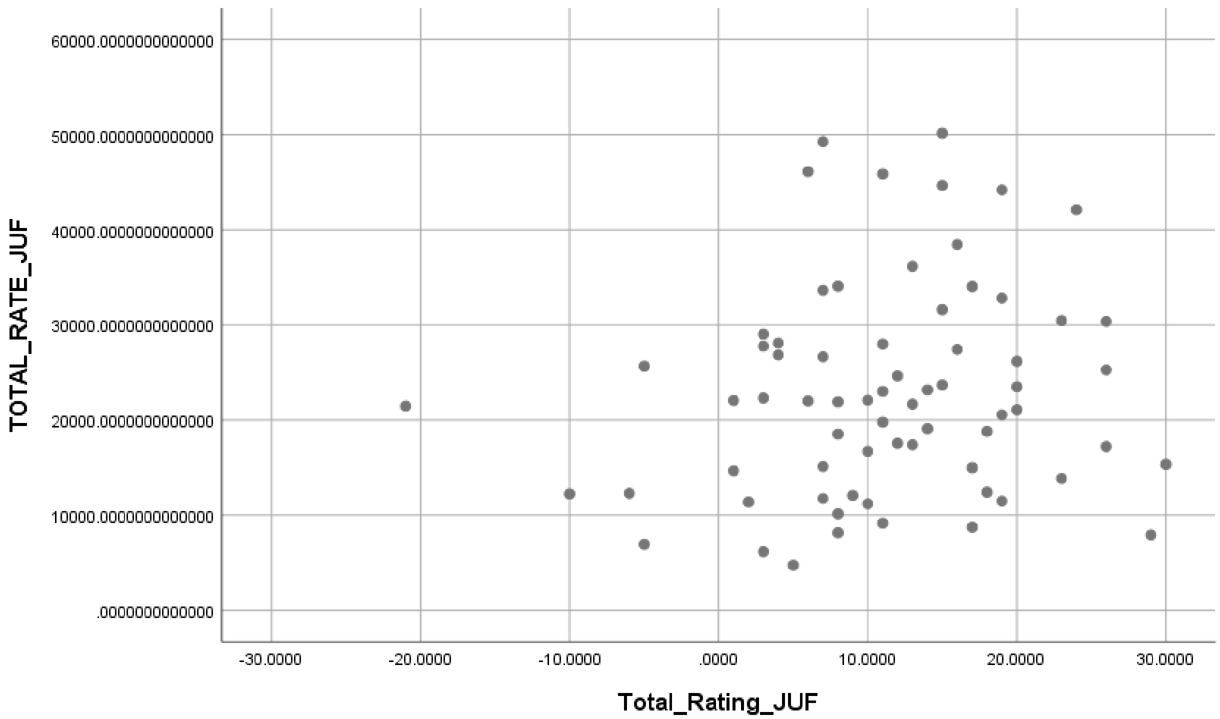
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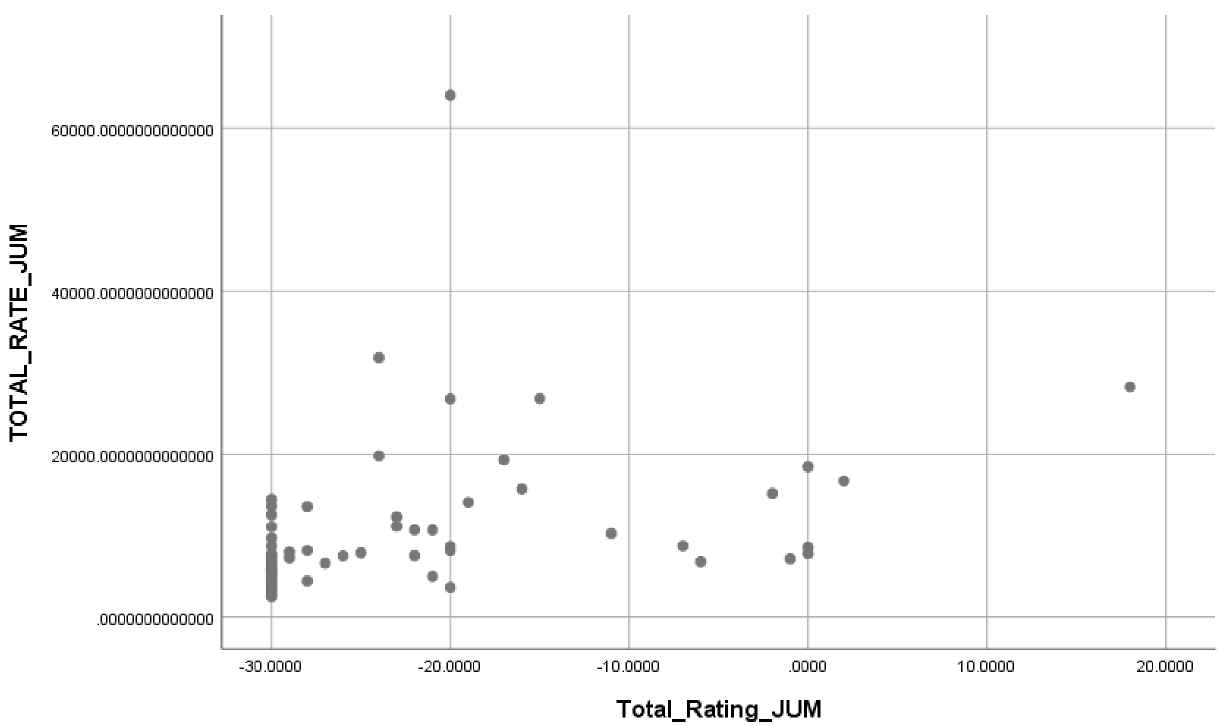
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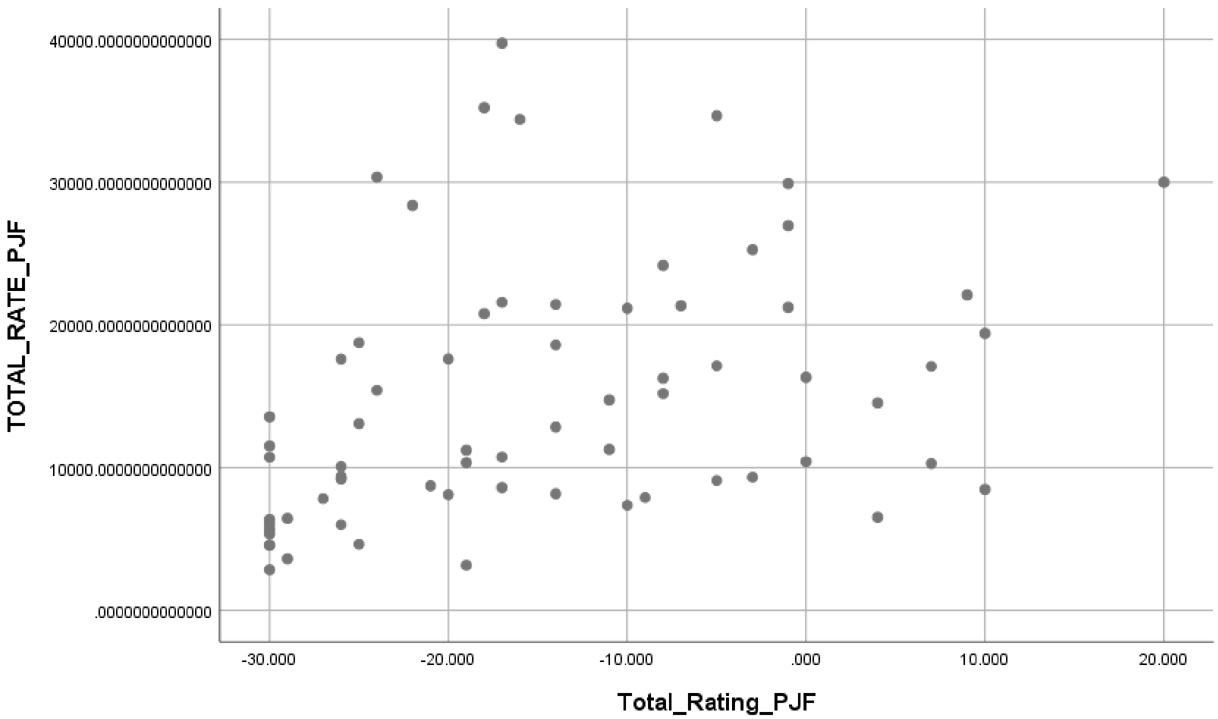
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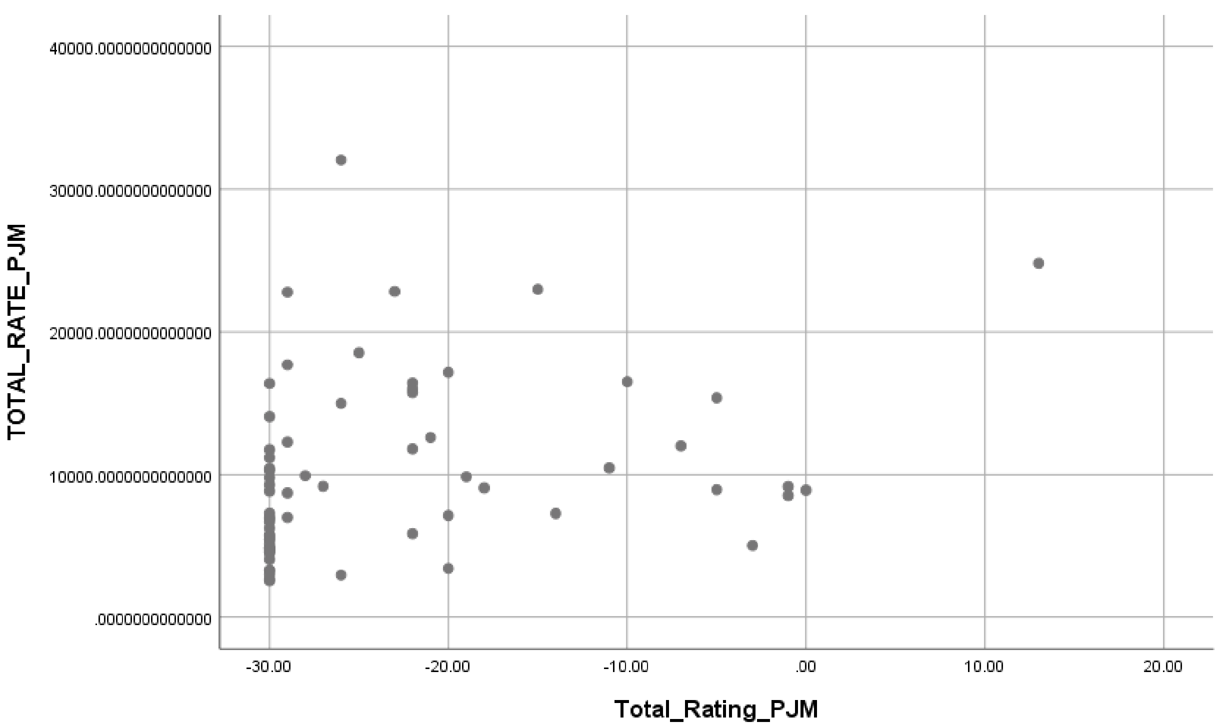
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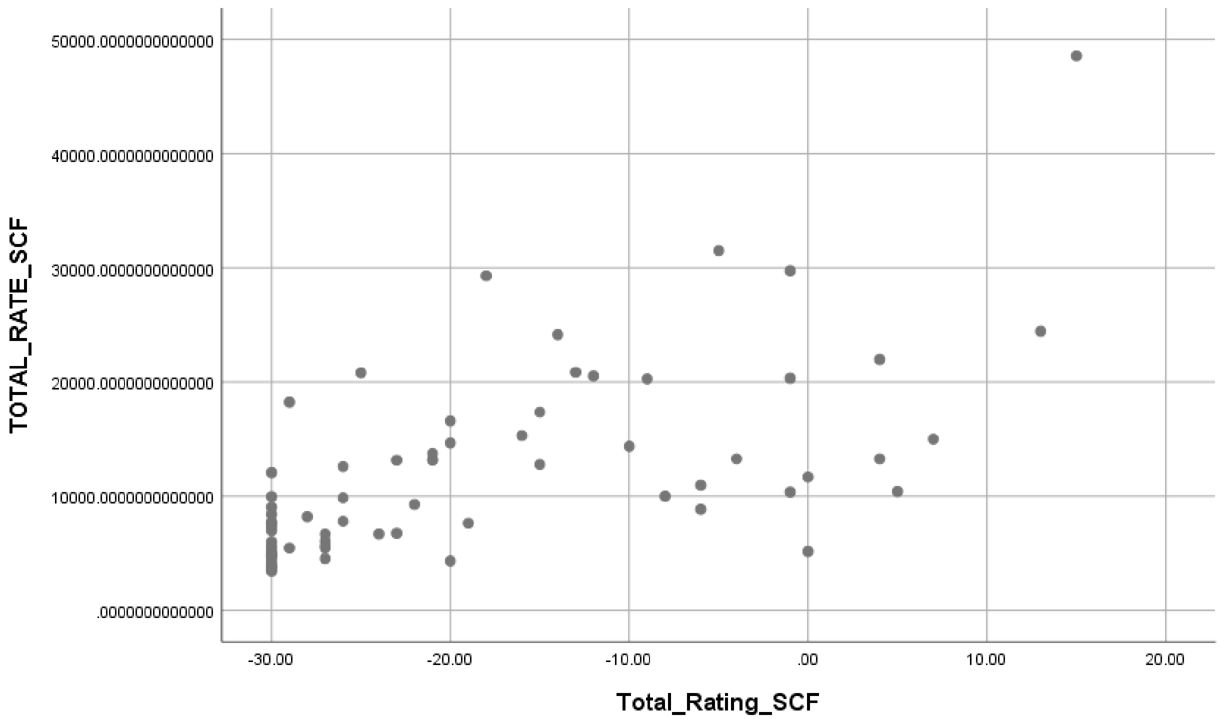
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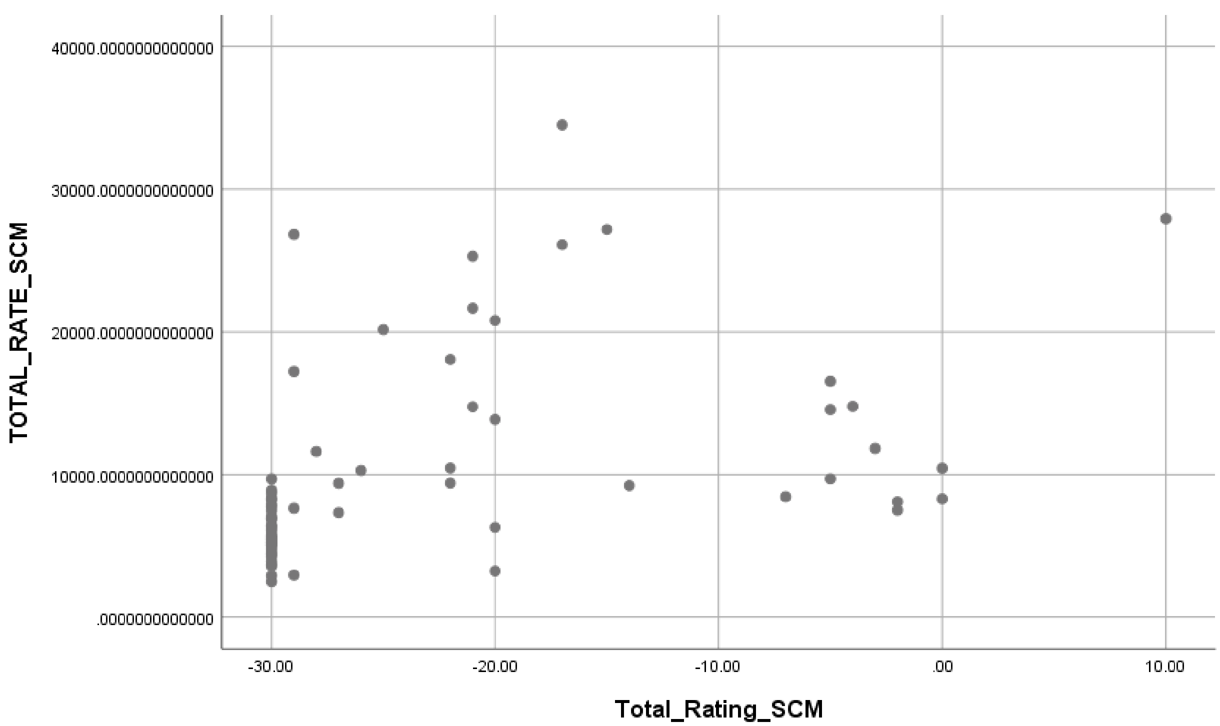
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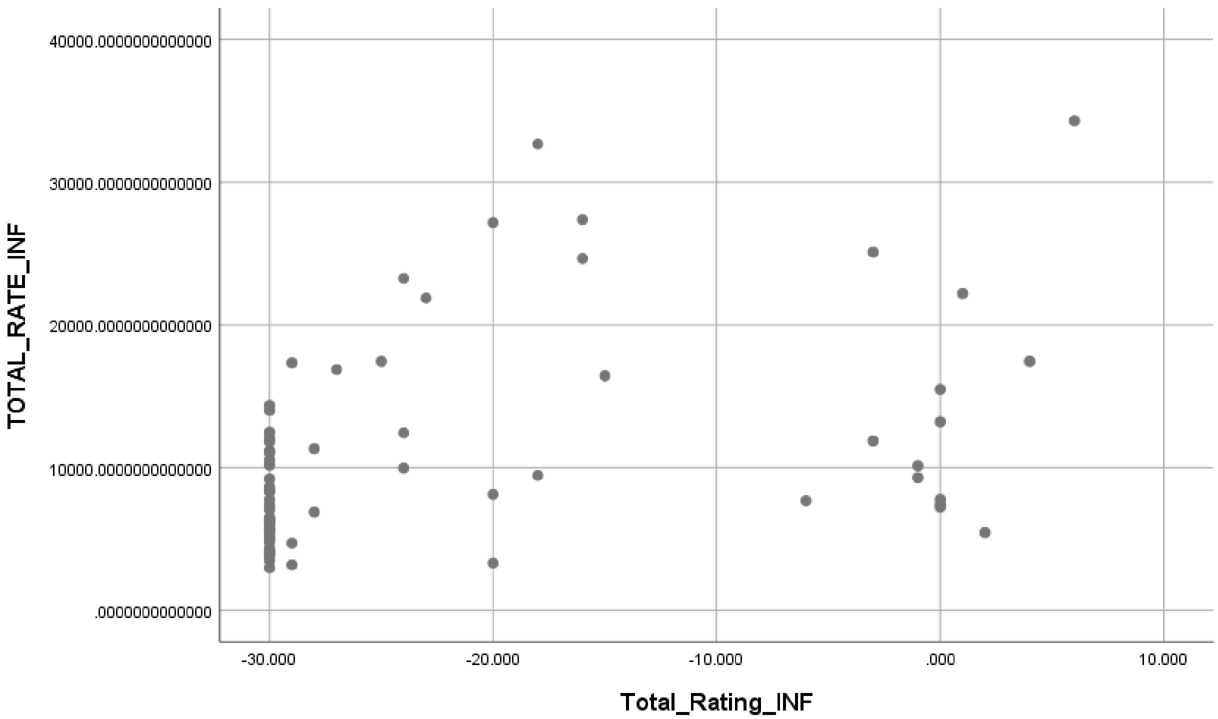
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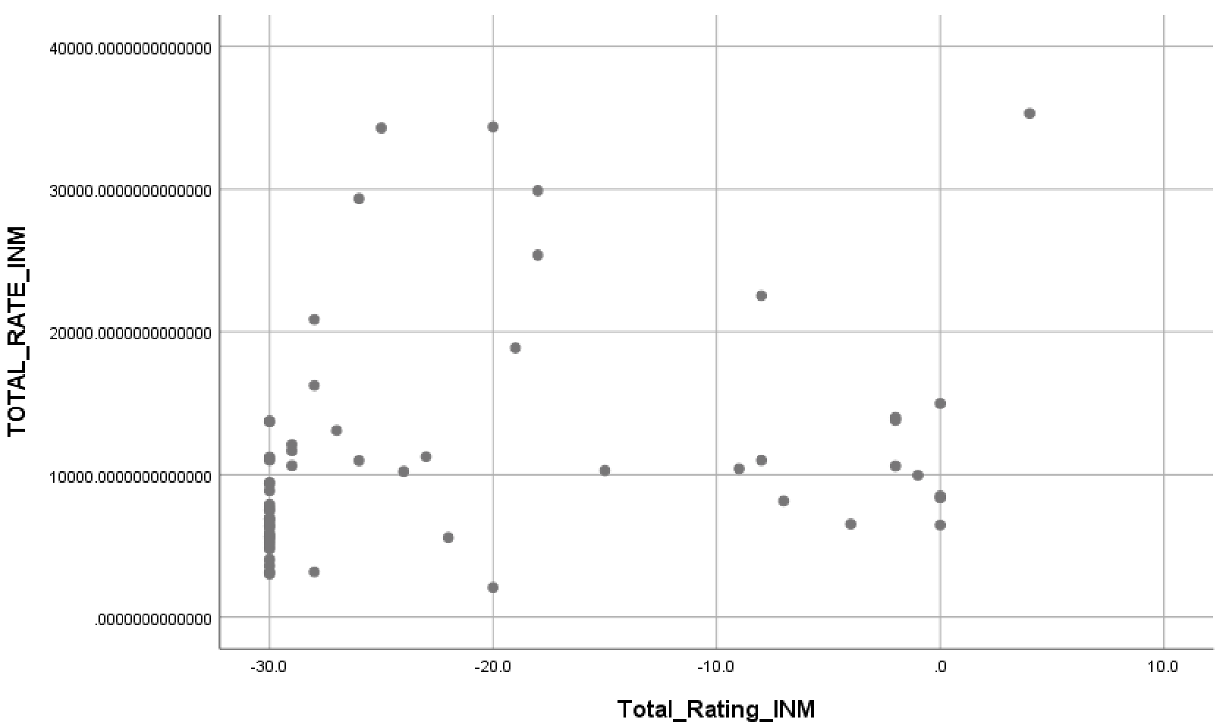
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