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FACTORS AFFECTING ADHERENCE TO ANTIRETROVIRAL THERAPY IN HIV POSITIVE INJECTION DRUG USERS (IDUs) AND NON-IDUs.

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ABSTRACT

The study of adherence to antiretroviral therapy among HIV positive Injection Drug Users (IDUs) has been largely neglected. Many clinicians believe that this group is too unreliable to take these medications, particularly in the early stage of their recovery from drug abuse when they are vulnerable to relapse. This is the first study of its kind to compare medication adherence rates between HIV positive injection drug users and non-users.

The medication adherence among IDUs and non-IDUs was compared in an HIV infected population (n=143) who were currently on antiretroviral therapy. The factors affecting medication adherence were also examined in the same population. Data on demographics, clinical characteristics, mood status, physical functioning and social support was obtained. Medication adherence was measured using the "Temptation to skip antiretroviral medication scale" and "Percent of doses missed in the past week, month and three months".

Multiple T-tests conducted on the data revealed that IDUs and non-IDUs had no distinction in medication adherence behavior ($p<0.05$). Therefore, further group difference analyses such as multiple T-tests and Chi-Square tests were done on all other independent variables to look for possible confounders.

These bivariate analyses showed that IDUs were older, sicker, less educated and had a longer duration of HIV positive status than non-IDUs. IDUs were also found to have worse mental health, more severity of bodily pain and more interference of pain with normal work than non-IDUs.

Multiple ANCOVAs conducted to control for these possibly confounding factors, however showed no significant differences in medication adherence between IDUs and non-IDUs. These results suggested that age, severity of disease, educational level, duration of seropositive status, general mental health, severity of bodily pain and pain interfering with normal work did not affect medication adherence in HIV positive IDUs and non-IDUs.

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I dedicate this thesis to my parents who never lost faith in their daughter.

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INTRODUCTION

A. Importance of Adherence to Antiretroviral Therapy

Adherence, often used interchangeably with compliance, is the act, action, or quality of being consistent with administration of prescribed medications [Altice FL et al, Ann Intern Med, 1998]. Non-adherence may mean not taking medication at all, taking reduced amounts, not taking doses at prescribed frequencies or intervals, or not matching medication to food requirements [Altice FL et al, Ann Intern Med, 1998]. Critical data on exactly how much adherence to antiretroviral therapy is enough, and how little is too little, are lacking [Sherer R, JAMA, 1998]. However, the association between poor adherence and virologic failure with resistance has been clearly established [Sherer R, JAMA, 1998; Montaner J et al, 1996].

Adherence to HIV therapies presents special issues that result from the biology of HIV, the magnitude of therapeutic effort, and the changing demography of HIV infection [Altice FL et al, Ann Intern Med, 1998]. The replication of the virus is rapid and highly error-prone, resulting in great species diversity and new drug-resistant mutants unless replication is completely suppressed. Cross-resistance among drugs within a therapeutic class limits future treatment options. Thus, the development and transmission of antiretroviral-resistant species carries potentially disastrous public health consequences. In theory, if patients are 100% adherent to potent combination therapy, viral replication will most likely be halted and development of drug-resistant mutants is unlikely. However, in patients who intermittently or irregularly take drugs,

the likelihood of selection of mutants that are resistant to drugs increases, a consequence of both continuing viral replication and selective automicrobial pressure [Friedland G, JAMA, 1998]. Thus, improvement in adherence is thought to be key to preventing the emergence of drug-resistant viruses that compromise therapeutic benefit and may be transmitted to others. The cost of interventions to enhance adherence is minimal compared with the cost of the therapies themselves and should be weighed against the costs to individual patients and to society resulting from compromised therapeutic benefit [Altice FL et al, Ann Intern Med, 1998].

The study of adherence to antiretroviral therapy among HIV positive injection drug users (IDUs) has been largely neglected. Many clinicians believe that this group is too unreliable to take these medications, particularly in the early stage of their recovery from drug abuse when they are vulnerable to relapse [Bangsberg D et al, JAMA, 1997; Malow RM et al, Psyc Serv, 1998]. However, no studies have clearly demonstrated this association. Several complex factors influence adherence to antiretroviral medications in HIV positive IDUs. In order to develop interventions that would maximize adherence to antiretroviral therapy in IDUs, it is essential to consider the factors affecting adherence in this group of people.

This study will determine if IDUs are less adherent than non-IDUs towards HIV therapies and will identify factors associated with adherence.

B. Determinants of Adherence

Over the years, researchers have determined several factors associated with medication adherence in general. These factors can be broadly categorized as patient characteristics, clinical characteristics and psychological and emotional characteristics.

Patient Characteristics: Sociodemographic variables such as age, sex, education, income, race and ethnicity have shown some correlation with adherence but not consistently and not at significant levels [Freeman et al, 1996; Cummings et al 1982; Davis, 1968; Haynes et al, 1979]. Majority of the studies on medication adherence show no association between noncompliance and lower socioeconomic status, poor education and older age [Haynes et al, 1979]. Social support is probably the most important factor among patient characteristics associated with adherence [Friedland G, 1998].

Clinical Characteristics: Haynes (1979) has commented after critically reviewing the literature that there are few obvious associations between disease features and compliance. The one association between illness and nonadherence that is consistently reported is that when patients get better from an illness they are less likely to adhere to the treatment [Heinzelman, 1962; Johnson, 1973; Prien & Caffey, 1977].

Psychological and Emotional Characteristics: These are said to play a greater role in determining medication adherence than demographic characteristics. One of the important characteristics in this group is Mood Status.

Mood Status: A level of anxiety either too low or too great may well be related to noncompliance [Evans L et al, Drugs, 1983]. Studies in HIV suggest that psychosocial

stress associated with the illness adversely affects the quality of life in HIV patients [Fawzy et al, 1989; Holland et al, 1985; Solomon et al, 1989]. Many of the cognitive, psychological, social and environmental factors that determine the individual's psychosocial well-being and quality of life also have an impact on compliance.

The SF-36 (Short-Form-36) derived from the work of the Rand Corporation of Santa Monica during 1970 is a generic indicator of health status. It was designed to be applicable to a wide range of types and severities of condition. These were useful for monitoring patients with multiple conditions, for comparing the health status of patients with different conditions, and for comparing patients to the general population. Perceived well-being is subjective and cannot be completely inferred from behavior; hence the SF-36 included questions on feeling states [Mc Dowell I et al, Measuring Health, 2nd edition, p 446].

To summarize, many factors have been associated with medication adherence, including patient characteristics, clinician-patient relationship, type of disease, treatment regimen, and clinical setting [Altice FL, et al, 1998; Ickovics JR, et al, 1997]. Gender, age, race, socioeconomic status, educational level, and a history of past substance use are not predictors of poor adherence to treatment, although active drug or alcohol use are [Sherer R, 1998; Klaus BD, 1997]. Adherence improves with a relationship with a trusted, accessible physician; this is particularly critical for the care of IDUs [Sherer R, 1998; O'Connor PG, 1994]. Asymtomatic and chronic diseases are less likely to have high rates of adherence, and complex treatment regimens decrease

adherence [Altice FL, et al, 1998]. The organization of clinical services can affect adherence, including availability of expertise, linkages with drug treatment and mental health services, flexibility in the hours of operation, and the presence of nonjudgmental and supportive staff [Altice FL, et al, 1998; Morse EV, 1991]. Compared with therapies for other chronic diseases, which are often forgiving of lapses in adherence, HIV therapy is unforgiving [Altice FL, et al, 1998]. This is because, under the selective pressure conferred by imperfect adherence to antiretroviral therapy, drug-resistant mutants rapidly emerge.

C. Assessment of Adherence

There is no ideal method to assess drug compliance. Four methods, commonly used to measure compliance, are as follows:

Self-Reported Questionnaire: This method is commonly used as it a relatively simple and an inexpensive method. Sometimes it may be the only method available. The interview method is particularly useful in evaluating problems the patient may have and the factors that enhance adherence. Highly accurate data should not be expected, however, particularly if adherence data is being assessed over a fairly long time period. Though this method may not be accurate there may be reason to believe it is useful because patients reporting noncompliance are usually at least as noncompliant as indicated by interview [Norell SE, Soc Sci Med, 1981]. When compared with other measures the interview tends to overestimate adherence [Dunbar J, 1984]. A review conducted by Adams and Soumerai states that in 87% of 37 comparisons, self-reported

adherence rates exceeded the objective rates, resulting in a median overestimation of adherence of 27% [Adams AS et al, 1999]. Using face-to-face interviews for patients' reports about medication-taking behavior have been found to get higher quality information than do survey instruments [Ickovics JR et al, 1997].

Pill Count: Corrigan and Strauss described the method of counting tablets to determine patient medication behavior in 1936 in a study of iron treatment for anemia [Davis MS et al, 1966]. Since then, several techniques based on the same principle have been described. This method involves a comparison of the medicine left in the patient's bottle and the quantity that should have been left if the medication had been taken. Though this method is being used extensively, it is not believed to be very accurate. Patients may empty the pillbox, or take all the remaining pills before their clinic visit [Gray L et al, 1998].

Drug Assay: The accuracy of this method depends in part on the half-life of the drug [Gray L et al, 1998]. This means that it depends on how soon the drug reaches the systemic circulation so as to be detected in a drug assay. Longer-acting indicators have been used, but testing will show only past ingestion and not frequency or dosing interval. These studies are very inconvenient and can be expensive. Patient-to-patient variability is another disadvantage of this method. Some patients may object to having their blood specimen taken, regarding this as unnecessary and intrusive. Again the value of assessing compliance in this way depends greatly on the reliability of the

method by which the drug is identified or quantified in body fluids [Eldred et al, 1998].

Medication Event Monitoring System (MEMS): This method provides a computer chip in the cap of the medicinal bottle. Information is recorded each time the bottle is opened. Data from the MEMS allows calculation of 1) the compliance rate, 2) prescribed frequency, and 3) prescribed interval. This method also does not directly measure whether the medication was taken by the patient; hence the accuracy of this method is suspect [Gray L et al, 1998]. A study of adherence in patients on antiretroviral therapy revealed that while the overall compliance rate was 82% to 86%, more detailed measures of the fraction of doses taken at the prescribed daily interval (55-77%) and fraction of doses taken at the prescribed dosing interval (27%) were lower [Friedland G, JAMA 1997].

3. ***Veterans' Affairs Medical Center in Providence, RI,*** which currently provides care to approximately 60 HIV seropositive men.

For the purposes of this study, we were interested only in persons taking antiretroviral medications. Therefore two subjects who were on a protease inhibitor alone were dropped from the study population. This reduced the population size to 143 subjects.

B. Data Collection

Patients meeting the above criteria who visited one of the three sites were asked to fill out a standardized questionnaire. The patients were told that the questionnaire was about how they think and feel about the HIV related medications that they were taking, and about different strategies that people use to take their medications. They were given the choice of filling out the questionnaire at home and mailing it in or returning it to the clinic, or filling it out at the clinic. They were also told that they would each receive a gift certificate of $20 after they had filled out the questionnaire. The data was collected during the year 1996-97.

The survey questionnaire administered to patients included data on demographics, living arrangements, education, employment, income, insurance coverage, social support, side effects and psychological measurements scales. It was a self-reported questionnaire. All the questionnaires were checked for completeness.

C. Measures and Variables assessed

Patients were asked to complete questionnaire items concerning the following:

Demographics: age, gender, race, educational level, health insurance coverage, family income, number of people in household.

Clinical Characteristics: The following questions assessed clinical variables:

1. T-cell count when last tested
2. Cause of contracting HIV infection
3. Duration since HIV positive.

Mood Status: The scale was taken from the SHORT-FORM-36 HEALTH SURVEY developed by Rand Corporation and John E. Ware (1990). It was designed as a generic indicator of health status for use in population surveys and evaluative studies of health policy.

This scale measured the following dimensions:

General Mental Health, covering psychological distress and well-being (five item: questions b, c, d, f and h)

Vitality, Energy or Fatigue (four item: questions a, e, g and i)

The questions were measured on a six point likert scale from none of the time (score of 1) to all of the time (score of 6).

The questions were as follows:

a. Did you feel full of pep?

b. Have you been a very nervous person?

c. Have you felt so down in the dumps that nothing could cheer you up?

d. Have you felt calm and peaceful?

e. Did you have a lot of energy?

f. Have you felt downhearted and blue?

g. Did you feel worn out?

h. Have you been a happy person?

i. Did you feel tired?

Scoring: Answers on questions a, d, e and h were recoded (i.e. score of 1 was changed to score of 6, score of 2 was changed to score of 5 and so on) such that low values represented more favorable states. Further, scores on questions b, c, d f and h were summed up to obtain the raw score for each individual's General Mental Health. Similarly, scores on questions a, e, g and i were added to get the raw score of each individual on Vitality, Energy or Fatigue. Finally, transformed scores on each of the two measures were obtained by using the following formula:

$$\text{Transformed scale} = \frac{\text{(actual score – lowest possible score)}}{\text{Possible raw score range}} * 100$$

Physical Functioning: The following questions assessed physical functioning:

1. Severity of bodily pain

2. Number of days in bed in the past two weeks

3. Number of hospitalizations in the past year

4. Interference of pain with normal work in the past four weeks.

Social support: Support in the form of financial support and emotion support was assessed using the following two questions:

1. How many of your family or friends can you count on for emotional support?

2. How many of your family or friends can you count on for financial help?

D. Assessment of Medication Adherence:

Two measures were used to assess medication adherence. They are as follows:

1. *Temptation to skip medication:* This scale was developed to measure the self-reported likelihood of non-compliance (Willey, C et al, manuscript in progress). The items on the temptation scale were based upon predictors of compliance from the literature and included situations that might affect you taking your antiretroviral medications as directed. Responses for each situation rated how tempted you would be to skip your antiretroviral medication. The responses were measured on a five-point likert (continuous) scale with 1 = not tempted to 5 = extremely tempted.

Examples of items on this scale are as follows:

- When you feel good and you don't need it
- When you are anxious about side effects
- When you want to save on cost of medication
- When your doctor doesn't seem interested in whether you take your medication
- When you start feeling better

Three subscales were developed for this scale as follows:

a. Temptation to skip medication due to side effects

- When you are anxious about side effects
- When you experience minor side effects
- When you feel you should give your body a rest
- When you worry that the chemicals in the medication might harm or hurt your body

b. Temptation to skip medication due to lack of social support

- When your family and friends don't seem concerned enough about your condition
- When your doctor doesn't seem concerned enough about your condition
- When your insurance doesn't cover the cost of your medication
- When you lose confidence in your doctor

c. Temptation to skip medication when feeling good

- When you good and think you don't need it
- When your medical condition doesn't seem that bad
- When it seems too complex to keep track of all your medications
- When you aren't sure if the medicine is really helping you

Scores on each subscale were obtained by adding items under each subscale.

For example, Score on temptation to skip medication due to side effects = (QIII24 + QIII28 + QIII51 + QIII52).

d. Total scale

Scores on the total scale were obtained by summing all scores under all the subscales.

2. *Percent of doses missed:* This measure was divided into three subgroups:

a. Percent of doses missed during the past week

b. Percent of doses missed during the past month

c. Percent of doses missed during the past three months

This variable was continuous and calculated using the self-reported answer to the question on 'number of doses missed'. The question 'how often do you take this medication' was used to determine to total doses prescribed for each medication.

For example:

For patients answering 'two times a week' to 'how often do you take your medication';

$$\% \text{ of doses missed during past 1 week} = \frac{(100 * \# \text{ of doses missed during past 1 week})}{2}$$

$$\% \text{ of doses missed during past month} = \frac{(100 * \# \text{ of doses missed during past month})}{8}$$

$$\% \text{ of doses missed during past 3 months} = \frac{(100 * \# \text{ of doses missed during past 3 mths.})}{24}$$

Similarly, the percent of doses missed were calculated for each response to the question 'how often do you take your medication'. This however led to the loss of data on five subjects who answered 'other'. Percent of doses missed were separately calculated for each medication for patients on multiple medications and summed i.e. % of doses of Medication 1 missed + % of doses of Medication 2 missed + % of doses of Medication 3 missed and so on, to get one value for the total percent of doses missed. Higher numbers of percent of doses missed indicated worse compliance.

E. Selection of Variables for Data Analysis:

The following variables were determined to be of interest and were further categorized for use in additional analyses:

Dependent Variables:

1. Percent of doses missed:

a. In the past week

b. In the past one month

c. In the past three months

2.Temptation to skip medication: continuous

a. Total scale

b. Due to side effects

c. Due to lack of support

d. When feeling good

Independent Variables: (Categorical variables were dummy coded).

The IV of primary interest was **IDU/non-IDU** (1/0). The question 'how do you think you got your HIV infection' was used to code this variable. Persons who checked 'injection drug use' were assigned the code IDU = 1 and all others were assigned the code IDU = 0.

1. Demographic Variables

Age: continuous

Gender:

0 = Male

1 = Female

Current health status:

0 = Fair to Poor

1 = Excellent to Good

Race:

0 = Non-whites

1 = Whites

Years of education: continuous

Insurance coverage:

0 = No insurance

1 = Some insurance

Annual income:

0 = <$15,000

1 = $15,000+

Number of persons in household: continuous

2. Clinical Variables:

Duration since HIV positive:

0 = <5 years

1 = 5+ years

T-cell count when last tested:

0 = >200

= </= 200

3. Mood Status Scale:

General Mental Health: continuous (GMH)

Vitality, Energy or Fatigue: continuous (VEF)

4. Physical Functioning Variables:

Bodily pain in past 4 weeks:

0 = None

1 = Very Mild to Very Severe

Pain interfering with normal work in past 4 weeks:

0 = Not At All

1 = A Little Bit to Extremely

Number of days in bed in past 2 weeks: continuous

Number of hospitalizations in past year: continuous

5. Support Variables:

Persons giving emotional support: continuous

Persons giving financial support: continuous

F. Data Analysis

The categories mentioned above constitute the independent and the dependent variables. The data was analyzed using the Statistical Analysis System (SAS) Version 8 on an IBM compatible computer at the University of Rhode Island. Bivariate and multivariate statistical techniques were used to examine the association between the dependent (DV) and the independent (IV) variables. Pre-analysis screening procedures were used to assess the normality, linearity and homoscedasticity of the data. Plots of DVs versus IVs were plotted to check for outliers. PROC UNIVARIATE procedures were carried out to check for skewness and kurtosis. Collinearity diagnostic procedures were carried out to check for possible cases of multicollinearity. The variable 'insurance' consisted of ten categories of insurance type (e.g. Medicaid, Medicare, Blue Cross, etc). Since we were interested only in whether our patients had some insurance coverage as opposed to none and not in what type of insurance coverage, two new categories were created under this variable (no insurance vs. some insurance).

Multiple T tests were carried out to test for group differences between IDUs and non-IDUs on all the dependent variables. This was done the see whether IDUs differed significantly from non-IDUs in their medication adherence behavior.

Multiple T tests were also performed on all continuous IVs to check for group differences between the two groups – IDUs and non-IDUs. Chi-Square Tests were

used to evaluate group differences between IDUs and non-IDUs for all dichotomized IVs. Follow up ANCOVAs were conducted on those IVs (continuous and dichotomous) that showed significant ANOVAs

The Bonferroni correction would be applied where necessary. This is a method developed to deal with problems arising from multiple tests. In any significance test the probability of making a Type I error is equal to the significance level. Thus, at a significance level of 0.05 there is a 1 in 20 chance of making a Type I error.

The correction consists of adjusting the significance level by correcting for the number of tests. The adjusted significance level is *alpha/k*, where *alpha* is the desired significance level and *k* is the number of hypotheses being tested.

RESULTS

A total of 145 patients were enrolled in the study. One hundred and forty three (143) patients were on antiretroviral therapy, which comprised the study population. As seen from **Table 1**, the study sample was predominantly male (70.63%). The median age was 39 years and it ranged between 24-57 years. Only 4% (6/143) patients reported poor health status. Sixty three percent (90/142) were white, 16% were African American, 11% were Hispanics and only 3% were Native Americans. Thirty four percent (48/143) had less than 12 years of education. Fifty-three percent (71/143) lived alone or had one other person living with them. More than half the study population (63%) had annual income less than $15,000. Majority of the patients (82%) had no insurance coverage of any kind.

Thirty nine percent (56/143) patients reported having used injection drugs [**Table 2**]. Only 13% (19/136) patients had T-cell counts less than fifty. More than half the study sample (66%) had been diagnosed as HIV positive for a period of 5 years or more.

Descriptive statistics for the mood status variables of the study population are given in **Table 3**. The median score on both the General mental health variable and the Vitality, energy or fatigue variable was 0.392 and the values ranged from 0 to 1.

Only 4% (5/143) patients reported having very severe bodily pain in the past four weeks. Thirty three percent (47/143) patients reported that pain had not interfered with their normal work in the past four weeks [**Table 4**].

As seen from **Table 5**, the median value for number of persons giving emotional support was 8 and it ranged from 0 to 60. The median value for number of persons giving financial support was 3 and it ranged from 0 to 22.

A. Table 6 summarizes the results of the Multiple T-tests carried out on all the continuous IVs to check for group differences between the two groups – IDUs and Non-IDUS:

The variables age (p=0.0127), years of education (p=0.0373) and general mental health (p=0.0084) were found to be significantly different between IDUs and non-IDUs at the 0.05 level of significance.

B. Table 7 summarizes the results of the Multiple Chi Square tests carried out on all the dichotomous IVs to check for group differences between the two groups – IDUs and Non-IDUS:

The variables current health status (p=0.0097), race (p=0.0090), annual income (p=0.0002), duration since HIV positive (p=0.0327), severity of bodily pain (p=0.0240), and pain interfering with normal work (p=0.0119) were found to be significantly different between IDUs and non-IDUs at the 0.05 level of significance.

C. Table 8 summarizes the results of Multiple T-tests for the variable of primary interest (IDU/non-IDU) and all the dependent variables:

Injection drug users and non-users showed no significant differences in medication adherence at the p value of less than 0.05 on the temptation to skip medication due to side effects, due to lack of social support, when feeling good, and the total scale. Neither did they show significantly different medication adherence behavior (α=0.05) when measured using percent of doses missed during past week, during the past month and during the past three months.

D. Table 9 summarizes the results of multiple ANCOVAs for the Temptation to skip medication due to side effects scale and the variable of primary interest (IDU/non-IDU):

The ANCOVAs were found to be non-significant at the p-value of 0.05.

E. Table 10 summarizes the results of multiple ANCOVAs for the Temptation to skip medication due to lack of social support scale and the variable of primary interest (IDU/non-IDU):

The ANCOVAs were found to be non-significant at the p-value of 0.05.

F. Table 11 summarizes the results of multiple ANCOVAs for the Temptation to skip medication when feeling good scale and the variable of primary interest (IDU/non-IDU):

The ANCOVAs were found to be non-significant at the p-value of 0.05

G. Table 12 summarizes the results of multiple ANCOVAs for the Temptation to skip medication Total scale and the variable of primary interest (IDU/non-IDU):

The ANCOVAs were found to be non-significant at the p-value of 0.05.

H. Table 13 summarizes the results of multiple ANCOVAs for the Percent of doses missed during the past week and the variable of primary interest (IDU/non-IDU):

The ANCOVAs were found to be non-significant at the p-value of 0.05.

I. Table 14 summarizes the results of multiple ANCOVAs for the Percent of doses missed during the past month and the variable of primary interest (IDU/non-IDU):

The ANCOVAs were found to be non-significant at the p-value of 0.05.

J. Table 15 summarizes the results of multiple ANCOVAs for the Percent of doses missed during the past three months and the variable of primary interest (IDU/non-IDU):

The ANCOVAs were found to be non-significant at the p-value of 0.05.

K. Table 16 summarizes the results of multiple ANCOVAs for the Health Model using health related variables as covariates versus IDU/Non-IDU:

The ANCOVAs were found to be non-significant at the p-value of 0.05.

L. Table 17 summarizes the results of multiple ANCOVAs for the Full Model using all the independent variables as covariates versus IDU/Non-IDU:

The ANCOVAs were found to be non-significant at the p-value of 0.05.

DISCUSSION

This study examined differences in adherence to antiretroviral therapy among HIV positive injection drug users and non-injection drug users. Two measures of medication adherence were employed for this purpose. They were 'Temptation to skip medication' (due to side effects, due to lack of social support, when feeling good, and Total scale) and 'Percent of doses missed' (during the past week, during the past month, and during the past three months).

A. Differences in medication adherence among IDUs and non-IDUs:

Interestingly, there were found to be no significant differences in medication adherence between IDUs and non-IDUs for this study population on any of the adherence measures used. This result is in absolute opposition to what has been hypothesized by several clinicians in the past, who believe that HIV positive IDUs are less adherent to their medication regimens than non-users. This disparity was thought to be due to confounding variables in the data, which in all probability could be masking the relationship between medication adherence and injection drug use.

Therefore, differences in IDUs and non-IDUs on all other variables such as demographics, clinical characteristics, mood status variables, physical functioning variables and support variables were examined.

B. Differences in demographic characteristics among IDUs and non-IDUs:

There were significant differences in age, current health status, race, years of education and annual income between IDUs and non-IDUs. Injection drug users were found to be older, sicker, less educated, mostly Hispanics and having less annual income than non-users. All or any of these factors, individually or in combination, could be confounding the relationship between medication adherence and injection drug use.

C. Differences in clinical characteristics among IDUs and non-IDUs:

Injection drug users were found to have longer duration of HIV positive status than non-users. Many studies in the past have reported that duration since diagnosis of a disease may have a significant effect on medication adherence rates.

D. Differences in mood status variables among IDUs and non-IDUs:

General mental health as measured by the Mood Status Scale (Ware JE, 1990) was found to be worse in IDUs than in non-IDUs. Various studies have shown that psychological factors have a greater effect on medication adherence than demographics or clinical characteristics.

E. Differences in physical functioning variables among IDUs and non-IDUs:

Injection drug users reported more severity of bodily pain and more interference of pain with normal work than non-users. Pain can have a physical and emotional impact

on an individual. It can limit activities of daily living or cause negative psychological responses such as depression, agitation and decreased alertness. Thus, we can expect an HIV positive individual experiencing pain to be physically incapable of taking his/her medication or psychologically depressed due to pain to want to take his/her medication.

F. Differences in support variables among IDUs and non-IDUs:

No differences were seen in support variables between IDUs and non-IDUs.

All the variables that showed significant differences between IDUs and non-IDUs were thought of as being possible confounders.

Hence, the relationship between medication adherence and injection drug use was again examined after controlling for all the variables that showed significant differences between the two groups (IDUs & non-IDUs) of individuals.

However, no significant differences were found between IDUs and non-IDUs on any of the measures of medication adherence, even after controlling for the possibly confounding factors.

G. Limitations:

The limitations of this study include use of cross-sectional and self-reported data, small sample size and skewed data (probably due to selection bias). In addition, there

is no gold standard to measure compliance and researchers are still debating over the acceptable range of values for compliance rates in the case of HIV positive patients.

***Self reported data*:** People may be inaccurate in reporting their behavior. There may be multiple factors influencing them in terms of their ability and desire to provide a valid response. These factors may include clarity of questions, setting, memory, literacy and mood status.

***Measurement*:** Although there seems to be no gold standard or satisfactory way to measure medication adherence, the questionnaire has been designed to cover every aspect of the patients' moods, disease status, demographics, temptations, etc. which can help us in determining the factors affecting medication adherence to the best of our ability.

Selection Bias: The data obtained from the questionnaires were found to be very compliant. This could be the result of selection bias due to which only the more compliant HIV positive individuals filled out the survey questionnaires.

CONCLUSIONS

The objective of this study was to compare medication adherence rates in injection drug users and non-users. This study is the first of its kind to compare medication adherence between HIV positive injection drug users and non-injection drug users. This study reported no significant differences in medication adherence between injection drug users and non-users. While in the past researchers have held the belief that there exists a negative relationship between injection drug use and medication adherence, no study has been carried until now which actually compares medication adherence rates between IDUs and non-IDUs.

In the past, several studies have reported that HIV positive injection drug users are under-prescribed potent antiretroviral therapy in comparison with non-users. This is because clinicians have concerns about the ability of this group of individuals to comply with the complex medication regimens. Incomplete adherence or nonadherence could lead the development of drug resistant strains of the virus and to cross resistance among drugs within a therapeutic class limiting future treatment options for all HIV positive individuals. It is thus evident why medication adherence is such an important issue in HIV positive injection drug users. The results of this study indicate that although injection drug users are no less adherent than non-users, they are not being given the optimum treatment required due to erroneous beliefs about their ability to comply with complex medication regimens.

However, the results of this study cannot be generalized to the entire population due to limitations such as cross-sectional, self-reported data and small sample size. In addition, it could be due to selection bias that this study found no differences in medication adherence between IDUs and non-IDUs.

Hence in conclusion, further studies, preferably longitudinal, with large, randomized samples of the general population and in-depth analyses are required in order to accurately understand the relationship between injection drug use and medication adherence.

TABLES

Table 1: Demographics of Patient Population (N=143)

Demographic Variables	N (%)	
Age	--	Mean=39.15 Min=24.00 S.D.=7.48 Max=57.00
Sex		
Females	41 (28.67%)	--
Males	101 (70.63%)	
Current Health Status		
Excellent	10 (6.99%)	
Very Good	33 (23.08%)	Mean=2.94
Good	61 (42.66%)	S.D.=0.96
Fair	33 (23.08%)	Min=1.00
Poor	6 (4.20%)	Max=5.00
Race		
White, non-Hispanic	90 (63.38%)	
Native American	4 (2.82%)	Mean=2.22
Hispanic	16 (11.27%)	S.D.=1.79
Asian	0 (0.00%)	Min=1.00
African American	23 (16.20%)	Max=6.00
Other	9 (6.34%)	
Education		
<12yrs	48 (33.57%)	Mean=2.14
12yrs	47 (31.47%)	S.D.=1.03
13-15yrs	32 (22.38%)	Min=1.00
16+yrs	18 (12.59%)	Max=4.00
# In Household		
0-1 person	71 (52.99%)	Mean=1.47 Min=1.00
2+ persons	63 (47.01%)	S.D.=0.50 Max=2.00
Annual Income		
Less Than $15,000	84 (62.69%)	Mean=1.71
$15,000 to $24,000	25 (18.66%)	S.D.=1.12
$25,000 to $34,000	9 (6.72%)	Min=1.00
$35,000 to $44,000	12 (8.96%)	Max=5.00
$45,000 or more	4 (2.99%)	
Insurance		
Some	26 (18.18%)	Mean=1.18 Min=1.00
No	117 (81.82%)	S.D.=0.39 Max=2.00

Note: S.D. = Standard Deviation, Min = Minimum Value, Max = Maximum Value.

Table 2: Clinical Characteristics of Patient Population (N=143)

Clinical Variables	N (%)	
T-Cell Count		
>500	20 (13.79%)	Mean=2.90
201-500	53 (36.55%)	S.D.=0.85
50-200	44 (30.34%)	Min=1.00
<50	19 (13.10%)	Max=4.00
Duration since HIV+		
<1month	1 (0.71%)	
1-6mths	4 (2.86%)	Mean=5.39
>6mths-<1yr	4 (2.86%)	S.D.=1.05
1-2 yrs	14 (10.00%)	Min=1.00
3-4 yrs	25 (17.86%)	Max=6.00
5yrs or more	92 (65.71%)	
IV Drug Users		
Yes (Current or Past)	56 (39.16%)	Mean=0.39 Min=0.00
No	87 (60.84%)	S.D.=0.49 Max=1.00

Note: S.D. = Standard Deviation, Min = Minimum Value, Max = Maximum Value.

Table 3: Mood Status of Patient Population (N=143)

Mood Status Variables	N (%)	
General Mental Health	--	**Mean=0.39 Min=0.00 S.D.=0.49 Max=1.00**
Vitality, Energy or Fatigue	--	**Mean=0.39 Min=0.00 S.D.=0.49 Max=1.00**
Note: S.D. = Standard Deviation, Min = Minimum Value, Max = Maximum Value.		

Table 4: Physical Functioning Characteristics of Patient Population (N=143)

Physical Functioning Variables	N (%)	
Bodily pain in past 4 weeks None Very Mild Mild Moderate Severe Very Severe	 37 (25.87%) 27 (18.88%) 19 (13.29%) 41 (28.67%) 14 (9.79%) 5 (3.50%)	 Mean=2.88 S.D.=1.49 Min=1.00 Max=6.00
Pain Interfering with normal work in past 4 weeks Not at all A little bit Moderately Quite a bit Extremely	 47 (33.10%) 41 (28.87%) 23 (16.20%) 25 (17.61%) 6 (4.23%)	 Mean=2.31 S.D.=1.22 Min=1.00 Max=5.00
# of days in bed in the past 2 weeks	--	Mean=1.88 Min=0.00 S.D.=2.89 Max=20.00
# of hospitalizations in the past year	--	Mean=0.76 Min=1.00 S.D.=1.39 Max=8.00
Note: S.D. = Standard Deviation, Min = Minimum Value, Max = Maximum Value.		

Table 5: Emotional and Financial Support for Patient Population (N=143)

Support Variables	N (%)	Mean
Emotional Support	--	**Mean=7.80 Min=0.00 S.D.=8.73 Max=60.00**
Financial Support	--	**Mean=2.62 Min=0.00 S.D.=3.70 Max=22.00**
Note: S.D. = Standard Deviation, Min = Minimum Value, Max = Maximum Value.		

Table 6: Multiple T-tests done on the IV of primary interest (IDUs/non-IDUs) and all other continuous IVs (N=143).

Continuous IVs	Mean (IDU)	Mean (Non-IDU)	p Value
Age (continuous)	**41.00**	**37.97**	**0.01***
Yrs. of Education (continuous)	**11.39**	**12.38**	**0.04***
# In Household (continuous)	**13.04**	**6.76**	NS
General Mental Health (continuous)	**34.82**	**28.39**	**0.01***
Vitality, Energy or Fatigue (continuous)	**37.79**	**35.50**	NS
# Days in Bed in past 2 weeks (continuous)	**2.37**	**1.60**	NS
# Hospitalizations in past year (continuous)	**0.76**	**0.76**	NS
Emotional Support (continuous)	**16.57**	**16.83**	NS
Financial Support (continuous)	**17.80**	**16.14**	NS

Note: α=0.05, *p value is significant, NS = Non Significant.

Table 7: Multiple Chi-Square Tests done on the IV of primary interest (IDUs/non-IDUs) and all other dichotomous IVs (N=143).

Dichotomous IVs	IDU %	Non-IDU %	p Value
Sex			
Male	65.45	74.71	NS
Female	34.55	25.29	
Current Health Status			
Fair-Poor	51.79	27.59	0.01*
Excellent-Good	48.21	72.41	
Race			
Non-Whites	82.35	50.60	0.01*
Whites	17.65	49.40	
Annual Income			
<$15,000	82.35	50.60	0.00*
$15,000+	17.65	49.40	
Insurance			
None	80.36	82.76	NS
Some	19.64	17.24	
T-Cell Count			
>200	50.00	59.77	NS
</= 200	50.00	40.23	
Duration since HIV +			
<5 years	23.64	41.18	0.03*
5+ years	76.36	58.82	
Bodily Pain in past 4 weeks			
None	46.43	65.52	0.02*
Very Mild-Very Severe	53.57	34.48	
Pain Interfering with normal work in past 4 weeks			
Not At All	49.09	70.11	0.01*
A Little Bit-Extremely	50.91	29.89	

Note: α=0.05, *p value is significant, NS = Non Significant.

Table 8: Multiple T-tests using the IV of Primary Interest (IDU/non-IDU) as the Grouping Variable (N=143)

Compliance Variable	Mean (IDU)	Mean (Non-IDU)	p Value
Temptation to Skip Medication due to Side Effects	**7.54**	**6.78**	**0.28** (NS)
Temptation to Skip Medication due to Lack of Support	**5.95**	**5.98**	**0.96** (NS)
Temptation to Skip Medication when Feeling Good	**6.32**	**5.78**	**0.36** (NS)
Temptation to Skip Medication on Total Scale	**19.80**	**18.54**	**0.46** (NS)
Percent of Doses Missed in the Past Week	**1.56**	**2.19**	**0.41** (NS)
Percent of Doses Missed in the Past Month	**2.85**	**4.41**	**0.08** (NS)
Percent of Doses Missed in the Past Three Months	**2.87**	**3.52**	**0.41** (NS)

Note: α=0.05, NS = Non Significant.

Table 9: Analysis of Covariance for the Temptation to skip medication due to side effects scale among IDUs and Non-IDUs.

Covariates	IDUs		Non-IDUs				
	Mean	N	Mean	N	R^2	F	P
Age (continuous)	**7.54**	**56**	**6.78**	**87**	**0.045814**	**2.43**	NS
Current Health Status (0= fair-poor, 1= excellent-good)	**7.54**	**56**	**6.78**	**87**	**0.060960**	**0.24**	NS
Race (0= non-whites, 1=whites)	**7.60**	**55**	**6.78**	**87**	**0.023885**	**0.68**	NS
# Of Years of Education (continuous)	**7.54**	**56**	**6.81**	**86**	**0.018254**	**0.62**	NS
Annual Income (0= <$15,000, 1= $15,000+)	**7.35**	**51**	**6.76**	**83**	**0.009726**	**0.33**	NS
Duration since HIV positive (0= <5 years, 1= 5+ years)	**7.36**	**55**	**6.81**	**85**	**0.004798**	**0.64**	NS
General Mental Health (continuous)	**7.45**	**51**	**6.65**	**82**	**0.048265**	**0.37**	NS
Pain Interfering with Normal Work in past 4 weeks (0= not at all, 1= a little bit-extremely)	**7.60**	**55**	**6.78**	**87**	**0.011549**	**1.11**	NS
Bodily Pain in past 4 weeks (0=none, 1=very mild-very severe)	**7.54**	**56**	**6.78**	**87**	**0.012934**	**0.86**	NS

Note: α=0.05, NS= Non Significant.

Table 10: Analysis of Covariance for the Temptation to skip medication due to lack of social support scale among IDUs and Non-IDUs.

Covariates	IDUs		Non-IDUs				
	Mean	N	Mean	N	R^2	F	P
Age (continuous)	5.95	56	5.98	87	0.021847	0.09	NS
Current Health Status (0= fair-poor, 1= excellent-good)	5.95	56	5.98	87	0.001328	0.02	NS
Race (0= non-whites, 1=whites)	5.98	55	5.98	87	0.005653	0.04	NS
# Of Years of Education (continuous)	5.95	56	6.00	86	0.001161	0.02	NS
Annual Income (0= <$15,000, 1= $15,000+)	5.80	51	6.17	83	0.026101	1.23	NS
Duration since HIV positive (0= <5 years, 1= 5+ years)	5.69	55	5.93	85	0.005065	0.06	NS
General Mental Health (continuous)	5.76	51	5.77	82	0.039200	0.29	NS
Pain Interfering with Normal Work in past 4 weeks (0= not at all, 1= a little bit-extremely)	5.98	55	5.98	87	0.008647	0.06	NS
Bodily Pain in past 4 weeks (0=none, 1=very mild-very severe)	5.95	56	5.98	87	0.002338	0.00	NS

Note: α=0.05, NS= Non Significant.

Table 11: Analysis of Covariance for the Temptation to skip medication when feeling good scale among IDUs and Non-IDUs.

Covariates	IDUs		Non-IDUs				
	Mean	N	Mean	N	R^2	F	P
Age (continuous)	**6.32**	**56**	**5.78**	**87**	**0.023603**	**1.50**	NS
Current Health Status (0= fair-poor, 1= excellent-good)	**6.32**	**56**	**5.78**	**87**	**0.044591**	**0.16**	NS
Race (0= non-whites, 1=whites)	**6.36**	**55**	**5.78**	**87**	**0.070018**	**0.07**	NS
# Of Years of Education (continuous)	**6.32**	**56**	**5.79**	**86**	**0.012592**	**0.48**	NS
Annual Income (0= <$15,000, 1= $15,000+)	**6.39**	**51**	**5.90**	**83**	**0.021621**	**0.09**	NS
Duration since HIV positive (0= <5 years, 1= 5+ years)	**6.20**	**55**	**5.84**	**85**	**0.004098**	**0.29**	NS
General Mental Health (continuous)	**6.22**	**51**	**5.70**	**82**	**0.016265**	**0.33**	NS
Pain Interfering with Normal Work in past 4 weeks (0= not at all, 1= a little bit-extremely)	**6.36**	**55**	**5.78**	**87**	**0.007007**	**0.97**	NS
Bodily Pain in past 4 weeks (0=none, 1=very mild-very severe)	**6.32**	**56**	**5.78**	**87**	**0.005999**	**0.83**	NS
Note: α=0.05, NS= Non Significant.							

Table 12: Analysis of Covariance for the Temptation to skip medication Total scale among IDUs and Non-IDUs.

Covariates	IDUs		Non-IDUs				
	Mean	N	Mean	N	R^2	F	P
Age (continuous)	**19.80**	**56**	**18.54**	**87**	**0.036661**	**1.37**	NS
Current Health Status (0= fair-poor, 1= excellent-good)	**19.80**	**56**	**18.54**	**87**	**0.034371**	**0.08**	NS
Race (0= non-whites, 1=whites)	**19.95**	**55**	**18.54**	**87**	**0.031563**	**0.12**	NS
# Of Years of Education (continuous)	**19.80**	**56**	**18.60**	**86**	**0.010375**	**0.25**	NS
Annual Income (0= <$15,000, 1= $15,000+)	**19.55**	**51**	**18.83**	**83**	**0.018232**	**0.01**	NS
Duration since HIV positive (0= <5 years, 1= 5+ years)	**19.26**	**55**	**18.58**	**85**	**0.001352**	**0.18**	NS
General Mental Health (continuous)	**19.43**	**51**	**18.11**	**82**	**0.041215**	**0.07**	NS
Pain Interfering with Normal Work in past 4 weeks (0= not at all, 1= a little bit-extremely)	**19.95**	**55**	**18.54**	**87**	**0.005335**	**0.74**	NS
Bodily Pain in past 4 weeks (0=none, 1=very mild-very severe)	**19.80**	**56**	**18.54**	**87**	**0.003949**	**0.51**	NS
Note: α=0.05, NS= Non Significant.							

Table 13: Analysis of Covariance for the percent of doses missed during the past week among IDUs and Non-IDUs.

Covariates	IDUs		Non-IDUs				
	Mean	N	Mean	N	R^2	F	P
Age (continuous)	**1.56**	**54**	**2.19**	**85**	**0.004416**	**0.58**	NS
Current Health Status (0= fair-poor, 1= excellent-good)	**1.56**	**54**	**2.19**	**85**	**0.004419**	**0.58**	NS
Race (0= non-whites, 1=whites)	**1.58**	**53**	**2.19**	**85**	**0.006196**	**0.34**	NS
# Of Years of Education (continuous)	**1.56**	**54**	**1.99**	**84**	**0.004230**	**0.19**	NS
Annual Income (0= <$15,000, 1= $15,000+)	**1.71**	**49**	**2.30**	**81**	**0.017280**	**0.03**	NS
Duration since HIV positive (0= <5 years, 1= 5+ years)	**1.58**	**53**	**2.24**	**83**	**0.004830**	**0.65**	NS
General Mental Health (continuous)	**1.47**	**49**	**2.26**	**80**	**0.008403**	**0.62**	NS
Pain Interfering with Normal Work in past 4 weeks (0= not at all, 1= a little bit-extremely)	**1.58**	**53**	**2.19**	**85**	**0.009953**	**0.27**	NS
Bodily Pain in past 4 weeks (0=none, 1=very mild-very severe)	**1.56**	**54**	**2.19**	**85**	**0.011444**	**0.31**	NS
Note: α=0.05, NS= Non Significant.							

Table 14: Analysis of Covariance for the percent of doses missed during the past one month among IDUs and Non-IDUs.

Covariates	IDUs		Non-IDUs				
	Mean	N	Mean	N	R^2	F	P
Age (continuous)	**2.85**	**54**	**4.41**	**85**	**0.020528**	**2.84**	NS
Current Health Status (0= fair-poor, 1= excellent-good)	**2.85**	**54**	**4.41**	**85**	**0.020607**	**2.20**	NS
Race (0= non-whites, 1=whites)	**2.74**	**53**	**4.41**	**85**	**0.030121**	**3.83**	NS
# Of Years of Education (continuous)	**2.85**	**54**	**4.38**	**84**	**0.027893**	**3.27**	NS
Annual Income (0= <$15,000, 1= $15,000+)	**2.88**	**49**	**4.47**	**81**	**0.019202**	**2.17**	NS
Duration since HIV positive (0= <5 years, 1= 5+ years)	**2.91**	**53**	**4.52**	**83**	**0.020337**	**2.69**	NS
General Mental Health (continuous)	**2.86**	**49**	**4.48**	**80**	**0.029402**	**3.36**	NS
Pain Interfering with Normal Work in past 4 weeks (0= not at all, 1= a little bit-extremely)	**2.91**	**53**	**4.41**	**85**	**0.036632**	**3.58**	NS
Bodily Pain in past 4 weeks (0=none, 1=very mild-very severe)	**2.85**	**54**	**4.41**	**85**	**0.020377**	**2.83**	NS
Note: α=0.05, NS= Non Significant.							

Table 15: Analysis of Covariance for the percent of doses missed during the past three months among IDUs and Non-IDUs.

Covariates	IDUs		Non-IDUs				
	Mean	N	Mean	N	R^2	F	P
Age (continuous)	**2.87**	**54**	**3.52**	**86**	**0.004492**	**0.56**	NS
Current Health Status (0= fair-poor, 1= excellent-good)	**2.87**	**54**	**3.52**	**86**	**0.006393**	**0.42**	NS
Race (0= non-whites, 1=whites)	**2.79**	**53**	**3.52**	**86**	**0.022040**	**0.25**	NS
# Of Years of Education (continuous)	**2.87**	**54**	**3.53**	**85**	**0.009745**	**0.35**	NS
Annual Income (0= <$15,000, 1= $15,000+)	**2.88**	**49**	**3.50**	**82**	**0.009106**	**0.90**	NS
Duration since HIV positive (0= <5 years, 1= 5+ years)	**2.92**	**53**	**3.61**	**84**	**0.005003**	**0.67**	NS
General Mental Health (continuous)	**2.84**	**49**	**3.65**	**81**	**0.007557**	**0.69**	NS
Pain Interfering with Normal Work in past 4 weeks (0= not at all, 1= a little bit-extremely)	**2.92**	**53**	**3.52**	**86**	**0.003960**	**0.54**	NS
Bodily Pain in past 4 weeks (0=none, 1=very mild-very severe)	**2.87**	**54**	**3.52**	**86**	**0.004662**	**0.64**	NS
Note: α=0.05, NS= Non Significant.							

Table 17: Analysis of Covariance for the Full Model using all the independent variables as covariates versus IDU/Non-IDU

Dependent Variables	IDUs		Non-IDUs				
	Mean	N	Mean	N	R^2	F	P
Temptation to Skip Medication due to Side Effects	7.88	17	7.32	34	0.384356	1.11	NS
Temptation to Skip Medication due to Lack of Support	6.12	17	6.59	34	0.571710	2.37	NS
Temptation to Skip Medication when Feeling Good	6.47	17	6.18	34	0.486722	1.69	NS
Temptation to Skip Medication – Total Scale	20.47	17	20.09	34	0.474725	1.61	NS
Percent of Doses Missed during past Week	1.31	16	2.88	33	0.246919	0.55	NS
Percent of Doses Missed during past one month	3.69	16	4.94	33	0.161825	0.32	NS
Percent of Doses Missed during past three months	2.81	16	3.00	33	0.156837	0.32	NS

Note: α=0.05, NS= Non Significant.

REFERENCES

Adams AS et al., Predicting Medication Compliance in a Psychotic Population, Journal of Nervous and Mental Disease, 1993; 181:558-560.

Altice FL et al., The Era of Adherence to HIV Therapy, Annals of Internal Medicine, 1998; 129:503-505.

Bangsberg D et al., Protease Inhibitors in the Homeless, Journal of the American Medical Association, 1997; 278:63-65.

Cummings et al., Coping with Chronic Illness: A Study of Illness Controllability and the Influence of Coping Strategies on Psychological Adjustment, Journal of Consulting and Clinical Psychology, 1982; 52:343-353.

Davis MS, Variation in Patients' Compliance with Doctors' Orders: Analysis of Congruence between Survey Responses and Results of Empirical Observations, Journal of Medical Education, 1966; 41:1037.

Dunbar J, Overview of Adherence to Medical Treatment. In: Program Summary of the Adherence to New HIV Treatments, A Research Conference. Washington, DC, the Forum of Collaborative HIV research (FCHR), the National Minority AIDS Council (NMAC), and the National Institute of Health Office of AIDS Research (OAR), 1997; 20-21.

Eldred L et al., Update on Adherence to HIV Therapy, The Hopkins HIV Report, The John Hopkins University AIDS Service, 1998.

Evans L et al., The Problem of Non-Compliance with Drug Therapy, Drugs, 1983; 5(1):63-76.

Fawzy FL et al., The Relationship between Medical and Psychological Status in Newly Diagnosed Gay Men with AIDS, Psychiatric Medicine, 1989a; 7:23-33.

Freeman RC et al., Compliance with AZT Treatment Regimen of HIV-seropositive Injection Drug Users: A Neglected Issue, AIDS Education and Preventive, 1996; 8(1):58-71.

Friedland G., Adherence: The Achilles Heel of Highly Active Antiretroviral Therapy, Journal of the American Medical Association, 1997.

Gray L et al, HIV Treatment Adherence: A Guide for Program Development, HIV/AIDS Project Development and Evaluation Unit, University of Washington School of Social Work, Seattle, Washington, 1998; 1-60.

Haynes RB, A Critical Review of the 'Determinants' of Patient Compliance with Therapeutic Regimen, Sackett and Haynes (Eds.) Compliance with Therapeutic Regimens, 24-40 (John Hopkins University Press, Baltimore 1979)

Haynes RB, Introduction, in Haynes et al., (Eds.) Compliance in Health Care, 1-7 (John Hopkins University Press, Baltimore 1979).

Heinzelman F, Factors in Prophylaxis Behavior in Treating Rheumatic Fever, Journal on Health and Human Behavior, 1962; 3:72.

Holland JC et al., The Psychological and Neuropsychiatric Sequel of Immunodeficiency Syndrome and Related Disorders, Annals of Internal Medicine, 1985; 103:765-767.

Ickovics JR et al., Adherence in AIDS Clinical Trials: a framework for clinical research and clinical care, Journal of Clinical Epidemiology, 1997; 50:385-91.

Johnson, D.A.W.: A Study of the Use of Antidepressant Medication in General Practice, British Journal of Psychiatry, 1974; 125:186.

Klaus BD et al., Assessing and Enhancing Compliance with Antiretroviral Therapy, Nurse Practitioner, 1997; 22:211-19.

Malow RM et al., Adherence to Complex Combination Antiretroviral Therapies by HIV-Positive Drug Abusers, Psychiatric Services, 1998; 49(8):1021-1024.

McDowell I et al., Measuring Health, 2nd edition, p 446

Montaner JS et al., A randomized double-blind trial comparing combinations of nevirapine, didanosine, and zidovudine for HIV-infected patients: the INCAS Trial. Italy, The Netherlands, Canada and Australia Study, Journal of the American Medical Association, 1998; 279:930-7.

Morse EV et al., Determinants of subject compliance within an experimental anti-HIV drug protocol, Social Science and Medicine.1991; 32:1161-7.

Norell SE et al., Methods of Assessing Drug Compliance, Social Science Medicine, 1981; 6:35-40.

O'Connor PG et al., Medical Care for Injection Drug Users with Human Immunodeficiency Virus Infection, New England Journal of Medicine, 1994; 331(7):450-459.

Prien RF et al., Long Term Maintenance Drug Therapy in Recurrent Affective Illness; Current Status and Issues, Disease of the Nervous System, 1977; 38(12):991.

Sherer R, Adherence and Antiretroviral Therapy in Injection Drug Users, Journal of the American Medical Association, 1998; 280(6):567-8.

Solomon GF, Psychoneuroimmunology and Human Immunodeficiency Virus Infection, Psychiatric Medicine, 1985; 7:47-57.

APPENDIX

- Questionnaire

- Plots

Managing Your Medications Questionnaire

Please answer the following questions thoughtfully and completely. This questionnaire is about how you think and feel about the HIV related medications that you are taking, and about the different strategies that people use to take their medications. It will take about 45 minutes for you to fill this out. You may fill it out at home and mail it in or you may return it to this clinic. When you turn it in, we will give you a gift certificate for $20 to thank you for your participation. If you have the time to fill it out here, you may turn it in to the person who handed it to you, and receive your gift certificate now.

CODE FOR THIS QUESTIONNAIRE:

A) What are the first 3 letters of your mother's first name? _____ (1/1-3)

B) What is your birth date? ☐☐/☐☐/☐☐ (1/4-9)
mm dd yy

SECTION I
BACKGROUND INFORMATION

The first section of this questionnaire asks about your background.

→ Please circle or fill in the correct response for each question.

1. What is your age? ☐☐ years (1/10-11)

2. What is your gender? M F

3. How would you describe your current health status? *(Please check one answer)* (1/12)
☐ Excellent ☐ Very Good ☐ Good ☐ Fair ☐ Poor

4. Which of the following best describes your ethnic background? (1/13)
☐ White, non-Hispanic ☐ Hispanic ☐ African American
☐ Native American ☐ Asian ☐ Other

5. How many years of education have you finished? ☐☐ (1/14-15)

6. Do you currently work either part-time or full time? (1/16)
☐ Full-time ☐ Part-time ☐ I am not currently employed

7. Do you live by yourself or with other people? (1/17)
☐ By myself ☐ With others

8. If you live with others, how many (besides you) are in your household? ☐☐ (1/18-19)

9. If you live with others, what is their relationship to you? *(Check all that apply)* (1/20-26)
☐ Husband or wife ☐ Grandparents
☐ Intimate partner ☐ Children under age 18
☐ Other adults 18 or older ☐ Children over age 18
☐ Parents

10. Do you have any children? If so, how many? *(If none, put 0)* ☐☐ (1/27-28)

11. Do any of your adult children live nearby (within a half hour drive)? (1/29)
☐ Yes ☐ No ☐ Not applicable

12. How many of your family or friends can you count on for emotional support? ☐☐ (1/30-31)

13. How many of your family or friends can you count on for financial help? ☐☐ (1/32-33)

14. How many of your family or friends can you count on for physical assistance, or a place to stay? ☐☐ (1/34-35)

15. Do you feel confident that your family or friends will continue to help you with your everyday needs? (1/36)
☐ Very confident
☐ Fairly confident
☐ Somewhat confident
☐ Less than somewhat confident
☐ Not at all confident

16. If you were to need more help with every day needs, do you feel confident that your family or friends could provide it? (1/37)
☐ Very confident
☐ Fairly confident
☐ Somewhat confident
☐ Less than somewhat confident
☐ Not at all confident

17. How many of your family & friends have you told about your HIV infection? (1/38)
☐ None ☐ Less than half ☐ About half ☐ More than half ☐ All

18. What type of health insurance coverage do you currently have? (1/39-48)
☐ NONE
☐ Blue Cross ☐ HCHP ☐ Medicaid
☐ Ocean State ☐ Other private insurer ☐ Medicare
☐ RIGHA ☐ HMO ☐ Other

19. Which of the following best estimates your total (family) income during the past 12 months? (1/49)
☐ Less than $15,000
☐ $15,000 to $24,000
☐ $25,000 to $34,000
☐ $35,000 to $44,000
☐ 45,000 or more

20. About how far do you live from this treatment center? (1/50)
☐ Within walking distance
☐ Within a ten minute drive or less
☐ Within a twenty minute drive or less
☐ Within a thirty minute drive
☐ More than thirty minutes away

21. When you have questions about medications for your HIV infection, who do you usually ask? *(Please check all that apply)* (1/51-58)

☐ Pharmacist
☐ Physician
☐ Social Worker
☐ Nurse
☐ Other persons with HIV infection
☐ Family members
☐ Friends
☐ Other; please specify _____ (1/59-78)

22. Which health care provider is most helpful to you in taking your medications as directed? (1/79)

☐ Nurse
☐ Pharmacist
☐ Physician
☐ Social Worker
☐ Other; please specify_____ (2/1-20)

23. Is there someone living with you or close to you who helps or reminds you to take your medications on time? (2/21)

☐ Yes ☐ No

24. How much bodily pain have you had during the past four weeks? (2/22)

☐ None
☐ Very mild
☐ Mild
☐ Moderate
☐ Severe
☐ Very Severe

25. During the past 4 weeks, how much did pain interfere with your normal work (including both work outside the home and housework)? (2/23)

☐ Not at all ☐ A little bit ☐ Moderately ☐ Quite a bit ☐ Extremely

26. During the past two weeks, how many days did you stay in bed all or most of the day? ☐☐ (2/24-25)

27. How many times have you been hospitalized in the past year? *(If none, put 0)* ☐☐ (2/26-27)

28. *These questions are about how you feel and how things have been with you during the past 4 weeks.*

For each question, please give the one answer that comes closest to the way you have been feeling. How much of the time during the past 4 weeks...

	NONE OF THE TIME	A LITTLE BIT OF THE TIME	SOME OF THE TIME	A GOOD BIT OF THE TIME	MOST OF THE TIME	ALL OF THE TIME	
a. Did you feel full of pep?	☐	☐	☐	☐	☐	☐	(2/28)
b. Have you been a very nervous person?	☐	☐	☐	☐	☐	☐	(2/29)
c. Have you felt so down in the dumps that nothing could cheer you up?	☐	☐	☐	☐	☐	☐	(2/30)
d. Have you felt calm and peaceful?	☐	☐	☐	☐	☐	☐	(2/31)
e. Did you have a lot of energy?	☐	☐	☐	☐	☐	☐	(2/32)
f. Have you felt downhearted and blue?	☐	☐	☐	☐	☐	☐	(2/33)
g. Did you feel worn out?	☐	☐	☐	☐	☐	☐	(2/34)
h. Have you been a happy person?	☐	☐	☐	☐	☐	☐	(2/35)
i. Did you feel tired?	☐	☐	☐	☐	☐	☐	(2/36)

29. How long ago were you diagnosed as HIV positive? (2/37)

- ☐ Less than a month
- ☐ One to six months
- ☐ More than six months, but less than a year
- ☐ 1 to 2 years
- ☐ 3 to 4 years
- ☐ 5 years or more

30. How do you think you got your HIV infection? (2/38-42)
Please check all that apply

- ☐ Injection (IV) drug use
- ☐ Heterosexual contact
- ☐ Homosexual contact
- ☐ Blood transfusion
- ☐ Other: _____ (2/43-62)

31. What was your T cell count (CD4 count) the last time you were tested? (2/63)

☐ Greater than 500 ☐ 201-500 ☐ 50-200 ☐ Less than 50

SECTION II
MEDICATION HISTORY

WHICH OF THE FOLLOWING MEDICATIONS ARE YOU TAKING NOW? (2/64-77)
→ PLEASE CHECK ALL THAT APPLY:

- ☐ AZT (Retrovir®, zidovudine)
- ☐ DDI (Videx®, didanosine)
- ☐ DDC (Hivid®, zalcitabine)
- ☐ D4T (Zerit®, stavudine)
- ☐ 3TC (Epivir®, lamivudine)
- ☐ Saquinavir (Invirase®)
- ☐ Ritonavir (Norvir®)
- ☐ Indinavir (Crixivan®)
- ☐ Trimethoprim or Sulfamethoxazole (Bactrim®, Septra®)
- ☐ Clarithromycin (Biaxin®)
- ☐ Dapsone
- ☐ Fluconazole (Diflucan®)
- ☐ Itraconazole (Sporanox®)
- ☐ Rifabutin (Mycobutin®)

☐ Other: _____

_____

We would like to ask you about each medicine that you are currently taking. Please fill out the following 2 page medication form for each medicine that you checked on the above list.

- → *If you are currently taking 1 medication, fill out 2 pages.*
- → *If you are currently taking 2 medications, fill out 4 pages.*
- → *If you are currently taking 3 medications, fill out 6 pages.*

If you are currently taking more than 3 medications, please fill out 6 pages and additional pages in the Supplement at the end of this questionnaire.

Pease go to page 12 after you have filled out these medication forms.

MEDICATION #1

MEDICINE NAME_____ (3/1-20)

1. This medicine is for: (3/21)

- ☐ HIV infection
- ☐ To treat or prevent PCP (*Pneumocystis carinii pneumonia*)
- ☐ To treat or prevent MAI (Mycobacterium avium complex) infection
- ☐ To treat or prevent fungal infections (*Candida* or "thrush")
- ☐ Other: _____ (3/22-41)
- ☐ Don't know

2. How often do you take this medicine? (3/42-50)

- ☐ Two times a week
- ☐ Three times a week
- ☐ Every other day
- ☐ Once a day
- ☐ Two times a day
- ☐ Three times a day
- ☐ Four times a day
- ☐ Five times a day
- ☐ Other: _____ (3/51-70)

3. How long have you been taking this medication? (3/71)

___ Less than 1 month	___ 6 months to 1 year
___ 1 to 3 months	___ 1 to 2 years
___ 4 to 6 months	___ more than 2 years

4. *During the **last 3 months***, have you ever stopped taking this medication because you **felt better?** (3/72)

☐ YES ☐ NO

5. *During the **last 3 months***, have you ever stopped taking this medication because you **felt worse?** (3/73)

☐ YES ☐ NO

6. *During the **last 3 months***, have you ever forgotten to take this medication? (3/74)

☐ YES ☐ NO

7. *During the **last 3 months***, have you at times been careless about taking this medication? (3/75)

☐ YES ☐ NO

8. *During the **last 3 months***, have you ever taken less of this medicine than your doctor prescribed because you **felt better?** (3/76)

☐ YES ☐ NO

9. *During the **last 3 months***, have you ever taken less of this medicine than your doctor prescribed because you **felt worse?** (3/77)

☐ YES ☐ NO

MEDICATION #2

MEDICINE NAME_____ (5/1-20)

1. This medicine is for: (5/21)

- ☐ HIV infection
- ☐ To treat or prevent PCP *(Pneumocystis carinii pneumonia)*
- ☐ To treat or prevent MAI (Mycobacterium avium complex) infection
- ☐ To treat or prevent fungal infections (*Candida* or "thrush")
- ☐ Other: _____ (5/22-41)
- ☐ Don't know

2. How often do you take this medicine? (5/42-50)

- ☐ Two times a week
- ☐ Three times a week
- ☐ Every other day
- ☐ Once a day
- ☐ Two times a day
- ☐ Three times a day
- ☐ Four times a day
- ☐ Five times a day
- ☐ Other: _____ (5/51-70)

3. How long have you been taking this medication? (5/71)

___ Less than 1 month	___ 6 months to 1 year
___ 1 to 3 months	___ 1 to 2 years
___ 4 to 6 months	___ more than 2 years

4. *During the last 3 months*, have you ever stopped taking this medication because you felt better? (5/72)

☐ YES ☐ NO

5. *During the last 3 months*, have you ever stopped taking this medication because you felt worse? (5/73)

☐ YES ☐ NO

6. *During the last 3 months*, have you ever forgotten to take this medication? (5/74)

☐ YES ☐ NO

7. *During the last 3 months*, have you at times been careless about taking this medication? (5/75)

☐ YES ☐ NO

8. *During the last 3 months*, have you ever taken less of this medicine than your doctor prescribed because you felt better? (5/76)

☐ YES ☐ NO

9. *During the last 3 months*, have you ever taken less of this medicine than your doctor prescribed because you felt worse? (5/77)

☐ YES ☐ NO

10. ***Since you began taking*** this medication, have you ever purposely:

	YES	NO	
a) taken more of the medicine than your physician prescribed?	☐	☐	(5/78)
b) taken less of the medicine than your physician prescribed?	☐	☐	(5/79)
c) discontinued or stopped taking your medication?	☐	☐	(5/80)

If yes,

11. a) **How many times have you discontinued your medication for more than 3 days?** _____ (6/1-2)

b) What were your reasons for discontinuing your medication? (6/3-8)
Please check all that apply

- ☐ My doctor recommended it
- ☐ Too many side effects
- ☐ I didn't want to be reminded of my illness
- ☐ Problems with insurance coverage
- ☐ I didn't think it was working
- ☐ Other: _____ (6/9-28)

12. Sometimes it is difficult to take prescribed medicine all the time. **During the past week, how many times** did you miss a dose of MEDICATION 2? _____ (6/29-30)

13. During the **past month**, about **how many times** did you miss a dose of MEDICATION 2?
_____ (6/31-32)

14. During the **past three months**, about **how many times** did you miss a dose MEDICATION 2?
_____ (6/33-34)

15. Please check any side effect(s) you are having that you believe are caused by this medicine: (4/35-50)

☐ nausea	☐ shortness of breath	☐ headaches
☐ dizziness	☐ muscle aches	☐ anxdety/worry
☐ vomiting	☐ fatigue	☐ depression
☐ abdominal pain	☐ tingling in hands/feet	☐ rash
☐ diarrhea	☐ numbness in hands/feet	☐ sensitivity to sun

☐ other: _____ (6/51-70)

MEDICATION #3

MEDICINE NAME_____ (7/1-20)

1. This medicine is for: (7/21)
   - ☐ HIV infection
   - ☐ To treat or prevent PCP (Pneumocystis carinii pneumonia)
   - ☐ To treat or prevent MAI (Mycobacterium avium complex) infection
   - ☐ To treat or prevent fungal infections (Candida or "thrush")
   - ☐ Other: _____ (7/22-41)
   - ☐ Don't know

2. How often do you take this medicine? (7/42-50)
   - ☐ Two times a week
   - ☐ Three times a week
   - ☐ Every other day
   - ☐ Once a day
   - ☐ Two times a day
   - ☐ Three times a day
   - ☐ Four times a day
   - ☐ Five times a day
   - ☐ Other: _____ (7/51-70)

3. How long have you been taking this medication? (7/71)
   - ___ Less than 1 month
   - ___ 1 to 3 months
   - ___ 4 to 6 months
   - ___ 6 months to 1 year
   - ___ 1 to 2 years
   - ___ more than 2 years

4. *During the last 3 months*, have you ever stopped taking this medication because you felt better? (7/72)
   ☐ YES ☐ NO

5. *During the last 3 months*, have you ever stopped taking this medication because you felt worse? (7/73)
   ☐ YES ☐ NO

6. *During the last 3 months*, have you ever forgotten to take this medication? (7/74)
   ☐ YES ☐ NO

7. *During the last 3 months*, have you at times been careless about taking this medication? (7/75)
   ☐ YES ☐ NO

8. *During the last 3 months*, have you ever taken less of this medicine than your doctor prescribed because you felt better? (7/76)
   ☐ YES ☐ NO

9. *During the last 3 months*, have you ever taken less of this medicine than your doctor prescribed because you felt worse? (7/77)
   ☐ YES ☐ NO

10. *Since you began taking* this medication, have you ever purposely:

	YES	NO	
a) taken more of the medicine than your physician prescribed?	☐	☐	(7/78)
b) taken less of the medicine than your physician prescribed?	☐	☐	(7/79)
c) discontinued or stopped taking your medication?	☐	☐	(7/80)

If yes,

11. a) How many times have you discontinued your medication for more than 3 days? (8/1-2)

_____

b) What were your reasons for discontinuing your medication? (8/3-8)
Please check all that apply

☐ My doctor recommended it
☐ Too many side effects
☐ I didn't want to be reminded of my illness
☐ Problems with insurance coverage
☐ I didn't think it was working
☐ Other: _____ (8/9-28)

12. Sometimes it is difficult to take prescribed medicine all the time. **During the past week, how many times** did you miss a dose of MEDICATION 3? _____ (8/29-30)

13. During the **past month**, about **how many times** did you miss a dose of MEDICATION 3?
_____ (8/31-32)

14. During the **past three months**, about **how many times** did you miss a dose MEDICATION 3?
_____ (8/33-34)

15. Please check any side effect(s) you are having that you believe are caused by this medicine: (8/35-50)

☐ nausea	☐ shortness of breath	☐ headaches
☐ dizziness	☐ muscle aches	☐ anxiety/worry
☐ vomiting	☐ fatigue	☐ depression
☐ abdominal pain	☐ tingling in hands/feet	☐ rash
☐ diarrhea	☐ numbness in hands/feet	☐ sensitivity to sun
☐ other: _____		

(8/51-70)

Next, we would like to ask about your attitudes toward taking each of three different kinds of medications. Please fill out each of the following sections ONLY if you have taken or are currently taking any of the medications listed in each section.

SECTION III: ANTIVIRAL MEDICATIONS.....Please go to page 13 .

[AZT (Retrovir®, zidovudine), DDI (Videx®, didanosine), DDC (Hivid®, zalcitabine), D4T (Zerit®, stavudine), or 3TC (Epivir®, lamivudine)]

SECTION IV: ANTI-INFECTIVE MEDICATIONS.....Please go to page 21 .

[Trimethoprim or Sulfamethoxazole (Bactrim®, Septra®,), Clarithromycin (Biaxin®), Fluconazole (Diflucan®), Itraconazole (Sporanox®), or Rifabutin (Mycobutin®)]

SECTION V: PROTEASE INHIBITORS.....Please go to page 29 .

[Saquinavir (Invirase®), Ritonavir (Norvir®), or Indinavir (Crixivan®)]

Please go to page 33 after you have completed these medication sections.

SECTION III
ANTIVIRAL MEDICATIONS

REMINDER: FILL OUT THIS SECTION IF YOU HAVE EVER TAKEN ANY OF THESE ANTIVIRAL MEDICATIONS: AZT (Retrovir®, zidovudine), DDI (Videx®, didanosine), DDC (Hivid®, zalcitabine), D4T (Zerit®, stavudine), or 3TC (Epivir®, lamivudine). If not, skip to page 24.

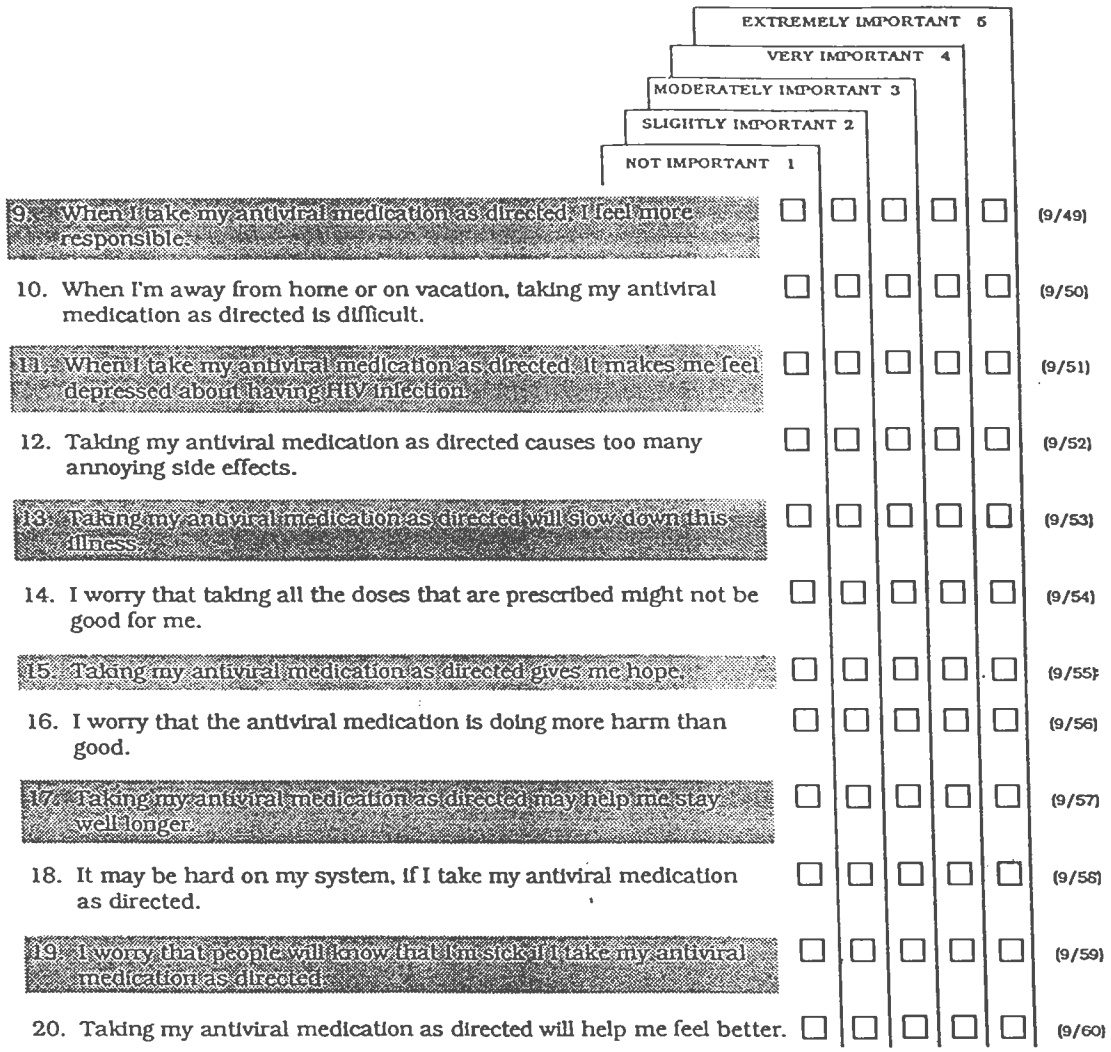
- *If you are taking **more than one antiviral medication NOW**, please answer these questions for the medicine that is most difficult for you to take, and fill in the name of that medicine here* _____ (9/1-20)

- *If you have **discontinued your antiviral medication**, please answer these questions for the medicine that you took most recently, and fill in the name of that medicine here* _____ (9/21-40)

Taking medications as directed (the prescribed amount taken at the right time) is not always easy. At one time or another most people simply forget to take a dose of their medication, and sometimes people discontinue taking their medications for a while. The following is a list of possible advantages and disadvantages of taking antiviral medications as directed.

- *For each numbered statement, please mark one box with an "X" to rate **HOW IMPORTANT** that statement is to you when you are thinking about whether to take your antiviral medication as directed.*

	EXTREMELY IMPORTANT 5	VERY IMPORTANT 4	MODERATELY IMPORTANT 3	SLIGHTLY IMPORTANT 2	NOT IMPORTANT 1	
1. It is a hassle to take my antiviral medication several times a day.	☐	☐	☐	☐	☐	(9/41)
2. Taking my antiviral medication as directed may delay some symptoms of HIV infection.	☐	☐	☐	☐	☐	(9/42)
3. My family or friends approve when I remember to take my antiviral medication as directed.	☐	☐	☐	☐	☐	(9/43)
4. Taking too many medications may not be good for my health.	☐	☐	☐	☐	☐	(9/44)
5. When I take my antiviral medication as directed my doctor approves.	☐	☐	☐	☐	☐	(9/45)
6. Taking all of my antiviral medication as directed is too expensive.	☐	☐	☐	☐	☐	(9/46)
7. If I take my antiviral medication as directed, I can avoid possible complications of HIV infection.	☐	☐	☐	☐	☐	(9/47)
8. Taking my antiviral medication as directed may make up for my unhealthy habits.	☐	☐	☐	☐	☐	(9/48)



Sometimes people take their medications as directed for a while, and then stop taking them for a while.

→ *The following 2 questions are about how you are taking your antiviral medication RIGHT NOW.*

21. Do you consistently take your antiviral medication as directed? ("as directed" means taking your medication at the right time and taking the prescribed amount) (9/61-80)

___ a. No, I do not, and ***I am not considering*** taking my antiviral medication as directed.
___ b. No, I do not, but ***I am considering*** taking my antiviral medication as directed.
___ c. No, I do not, but ***I am planning to start*** taking my antiviral medication as directed within the next month.
___ d. Yes, I consistently take my antiviral medication as directed.

If yes,

→ 22. How long have you been taking your antiviral medication as directed? (10/1)

___ a. 0-3 months
___ b. 4-6 months
___ c. 6-12 months
___ d. more than 12 months

Now here are some situations that might affect whether you take your antiviral medication for HIV infection as directed.

For each situation, please mark one box with an "X" to rate HOW TEMPTED you would be to skip your antiviral medication or take a dose which is different from the one prescribed.

	NOT TEMPTED 1	SLIGHTLY TEMPTED 2	MODERATELY TEMPTED 3	VERY TEMPTED 4	EXTREMELY TEMPTED 5	
23. When you feel good and think you don't need it.	☐	☐	☐	☐	☐	(10/2)
24. When you are anxious about side effects.	☐	☐	☐	☐	☐	(10/3)
25. When you want to save on the cost of your medication.	☐	☐	☐	☐	☐	(10/4)
26. When you wonder whether you really need your medication.	☐	☐	☐	☐	☐	(10/5)
27. When you feel down.	☐	☐	☐	☐	☐	(10/6)
28. When you experience minor side effects.	☐	☐	☐	☐	☐	(10/7)
29. When you start to feel better.	☐	☐	☐	☐	☐	(10/8)
30. When your doctor doesn't seem interested in whether you take your medication.	☐	☐	☐	☐	☐	(10/9)
31. When you have no energy.	☐	☐	☐	☐	☐	(10/10)
32. When side effects are annoying.	☐	☐	☐	☐	☐	(10/11)

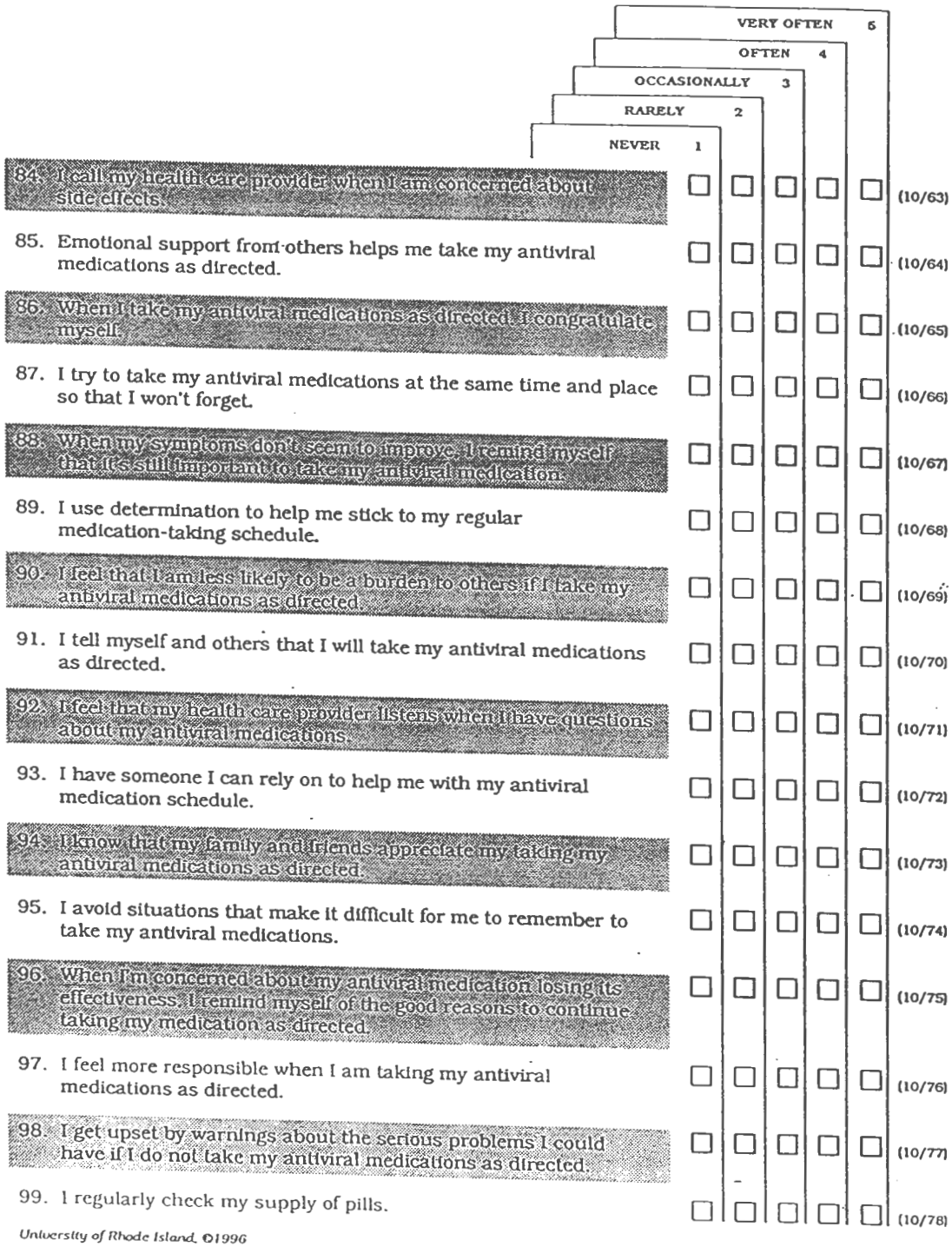
	NOT TEMPTED 1	SLIGHTLY TEMPTED 2	MODERATELY TEMPTED 3	VERY TEMPTED 4	EXTREMELY TEMPTED 5	
33. When someone doesn't remind you to take your medication.	☐	☐	☐	☐	☐	(10/12)
34. When your medical condition doesn't seem that bad.	☐	☐	☐	☐	☐	(10/13)
35. When you are taking several medications at the same time.	☐	☐	☐	☐	☐	(10/14)
36. When it seems too complex to keep track of all your medications.	☐	☐	☐	☐	☐	(10/15)
37. When you feel like giving up.	☐	☐	☐	☐	☐	(10/16)
38. When your doctor doesn't explain why you need to take your medication.	☐	☐	☐	☐	☐	(10/17)
39. When you have to take several medications every day.	☐	☐	☐	☐	☐	(10/18)
40. When you aren't sure if the medicine is really helping you.	☐	☐	☐	☐	☐	(10/19)
41. When you feel that your medication is too expensive.	☐	☐	☐	☐	☐	(10/20)
42. When you don't understand why you need your medication.	☐	☐	☐	☐	☐	(10/21)
43. When you think that you aren't that sick.	☐	☐	☐	☐	☐	(10/22)
44. When your family or friends don't seem concerned enough about your condition.	☐	☐	☐	☐	☐	(10/23)
45. When your doctor doesn't encourage you to take your medication.	☐	☐	☐	☐	☐	(10/24)
46. When your family or friends don't seem interested in whether you take your medication.	☐	☐	☐	☐	☐	(10/25)
47. When your doctor doesn't seem concerned enough about your condition.	☐	☐	☐	☐	☐	(10/26)
48. When your insurance doesn't cover the cost of your medication.	☐	☐	☐	☐	☐	(10/27)
49. When you lose confidence in your doctor.	☐	☐	☐	☐	☐	(10/28)
50. When you worry that taking too many medications might be bad for your health.	☐	☐	☐	☐	☐	(10/29)
51. When you feel you should give your body a rest.	☐	☐	☐	☐	☐	(10/30)
52. When you worry that the chemicals in the medication might harm or hurt your body.	☐	☐	☐	☐	☐	(10/31)

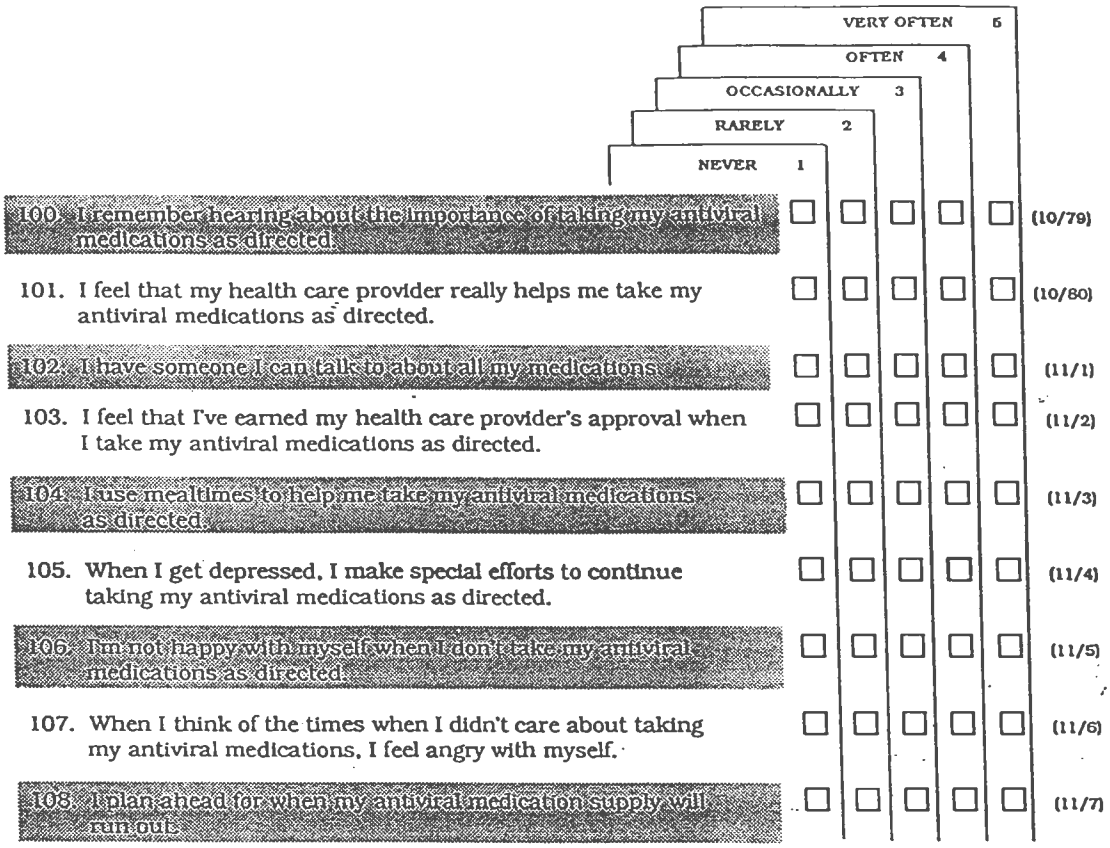
The following statements represent some thoughts and experiences that people have when they are taking <u>antiviral medications</u> on a regular basis. Think about your thoughts and experiences during the past month.

*→ For each numbered statement, please mark one box with an "X" to best describe **HOW OFTEN** that thought occurs or has occurred for you during the past month.*

	NEVER 1	RARELY 2	OCCASIONALLY 3	OFTEN 4	VERY OFTEN 5	
53. I seek out new information on the benefits of taking my antiviral medications.	☐	☐	☐	☐	☐	(10/32)
54. I call my health care provider if I have questions about taking my antiviral medications.	☐	☐	☐	☐	☐	(10/33)
55. I have someone I can count on to help me take my antiviral medications as directed.	☐	☐	☐	☐	☐	(10/34)
56. I reward myself when I take my antiviral medications as directed.	☐	☐	☐	☐	☐	(10/35)
57. I use reminders to help me remember to take my antiviral medications.	☐	☐	☐	☐	☐	(10/36)
58. When I am tempted to skip a dose of my antiviral medication, I remind myself about the importance of staying on schedule.	☐	☐	☐	☐	☐	(10/37)
59. I promise myself and others to take my antiviral medications as directed.	☐	☐	☐	☐	☐	(10/38)
60. I feel good about myself when I remember to take my antiviral medications as directed.	☐	☐	☐	☐	☐	(10/39)
61. I get upset with myself when I think about the times when I've forgotten to take my antiviral medications.	☐	☐	☐	☐	☐	(10/40)
62. I think that taking my antiviral medications as directed may provide knowledge to help others who have HIV infection.	☐	☐	☐	☐	☐	(10/41)
63. I do something special for myself when I take my antiviral medications as directed.	☐	☐	☐	☐	☐	(10/42)
64. When taking my antiviral medications feels like a hassle, I remind myself of all the benefits of continuing to take them regularly.	☐	☐	☐	☐	☐	(10/43)
65. I tell myself that following a regular schedule will help me take my antiviral medications as directed.	☐	☐	☐	☐	☐	(10/44)
66. When I'm unable to take my antiviral medications as directed, I'm disappointed in myself.	☐	☐	☐	☐	☐	(10/45)

	NEVER 1	RARELY 2	OCCASIONALLY 3	OFTEN 4	VERY OFTEN 5	
67. I get upset when I hear about people like me who stop taking their antiviral medications.	☐	☐	☐	☐	☐	(10/46)
68. I think that taking my antiviral medications as directed will help my family and friends by giving them hope.	☐	☐	☐	☐	☐	(10/47)
69. I ask my health care provider for information about my antiviral medications.	☐	☐	☐	☐	☐	(10/48)
70. I talk to my health care provider before changing the way I take my antiviral medications.	☐	☐	☐	☐	☐	(10/49)
71. Someone close to me reminds me to take my antiviral medications as directed.	☐	☐	☐	☐	☐	(10/50)
72. I build taking my antiviral medications into my schedule.	☐	☐	☐	☐	☐	(10/51)
73. I use a pill organizer or timer to help me take my antiviral medications as directed.	☐	☐	☐	☐	☐	(10/52)
74. When I am on vacation or away from home, I make special efforts to continue taking my antiviral medications as directed.	☐	☐	☐	☐	☐	(10/53)
75. I encourage myself to stick to my regular medication schedule.	☐	☐	☐	☐	☐	(10/54)
76. I get upset with myself when I skip my antiviral medications.	☐	☐	☐	☐	☐	(10/55)
77. I feel that when I take my antiviral medications as directed, I am a good role model for others.	☐	☐	☐	☐	☐	(10/56)
78. When I plan my day, I make sure to include taking my antiviral medications.	☐	☐	☐	☐	☐	(10/57)
79. I use everyday events like brushing my teeth or when my alarm clock goes off to remind me to take my antiviral medications on time.	☐	☐	☐	☐	☐	(10/58)
80. When it is difficult to take my antiviral medications as directed, I remind myself that others are counting on me.	☐	☐	☐	☐	☐	(10/59)
81. I stick to my plan for taking my antiviral medications as directed.	☐	☐	☐	☐	☐	(10/60)
82. I think that I am making a contribution to scientific knowledge about HIV by taking my antiviral medications as directed.	☐	☐	☐	☐	☐	(10/61)
83. I think about the benefits of taking my antiviral medications.	☐	☐	☐	☐	☐	(10/62)





SECTION IV
ANTI-INFECTIVE MEDICATIONS

REMINDER: FILL OUT THIS SECTION IF YOU HAVE EVER TAKEN ANY OF THESE MEDICINES TO HELP PREVENT PNEUMONIA OR INFECTION:
Trimethoprim or Sulfamethoxazole (Bactrim®, Septra®,), Clarithromycin (Biaxin®), Fluconazole (Diflucan®), Itraconazole (Sporanox®), or Rifabutin (Mycobutin®).
If not, skip to page 34.

→ *If you are taking **more than one** anti-infective medication NOW, please answer these questions for the medicine that is most difficult for you to take, and fill in the name of that medicine here*

_____ (11/8-27)

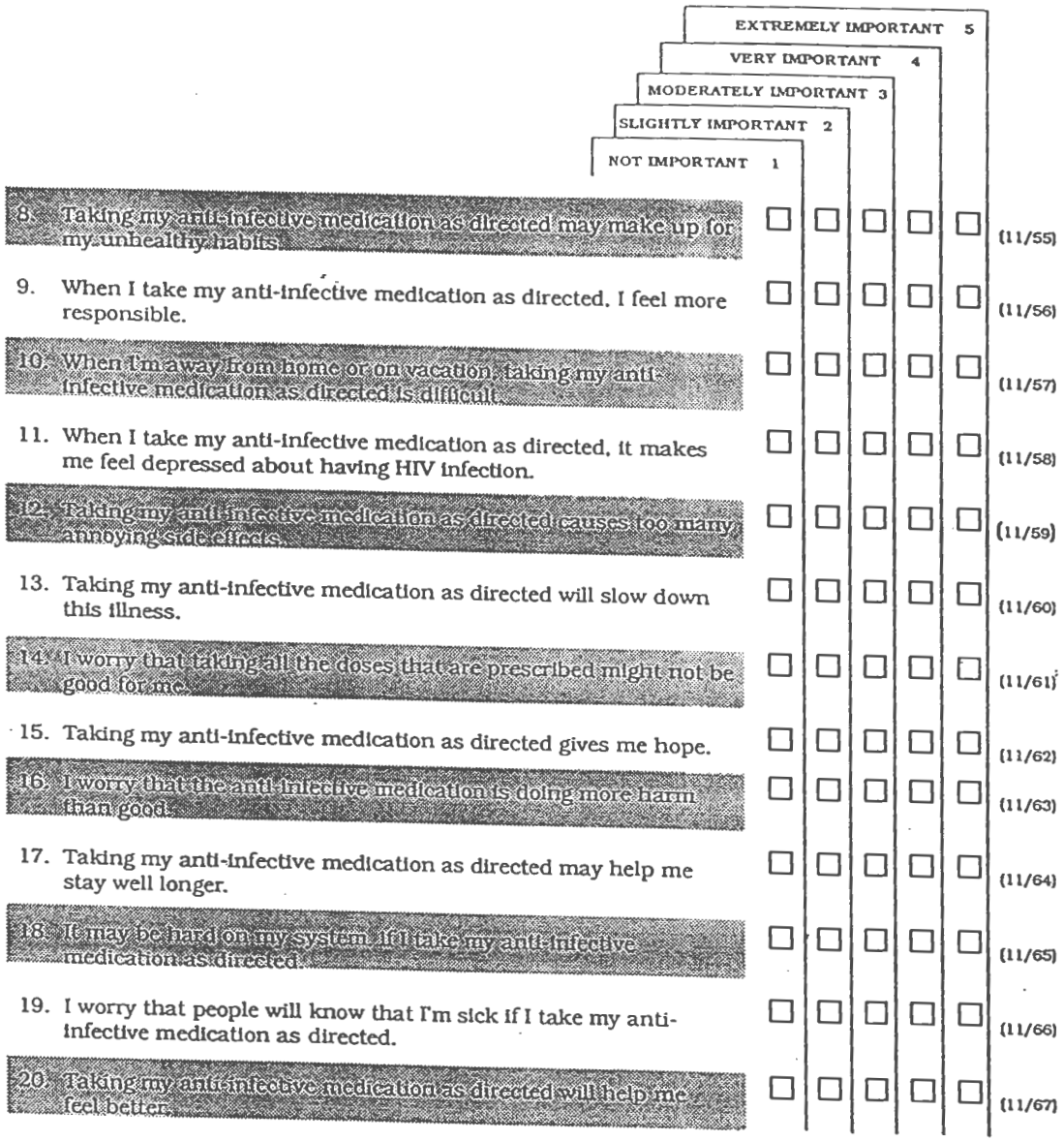
→ *If you have **discontinued** your anti-infective medication, please answer these questions for the medicine that you took most recently, and fill in the name of that medicine here*

_____ (11/28-47)

Taking medications as directed (the prescribed amount taken at the right time) is not always easy. At one time or another most people simply forget to take a dose of their medication, and sometimes people discontinue taking their medications for a while. The following is a list of possible advantages and disadvantages of taking anti-infective medications as directed.

→ *For each numbered statement, please mark one box with an "X" to rate HOW IMPORTANT that statement is to you when you are thinking about whether to take your anti-infective medication as directed.*

	NOT IMPORTANT 1	SLIGHTLY IMPORTANT 2	MODERATELY IMPORTANT 3	VERY IMPORTANT 4	EXTREMELY IMPORTANT 5	
1. It is a hassle to take my anti-infective medication several times a day.	☐	☐	☐	☐	☐	(11/48)
2. Taking my anti-infective medication as directed may delay some symptoms of HIV infection.	☐	☐	☐	☐	☐	(11/49)
3. My family or friends approve when I remember to take my anti-infective medication as directed.	☐	☐	☐	☐	☐	(11/50)
4. Taking too many medications may not be good for my health.	☐	☐	☐	☐	☐	(11/51)
5. When I take my anti-infective medication as directed my doctor approves.	☐	☐	☐	☐	☐	(11/52)
6. Taking all of my anti-infective medication as directed is too expensive.	☐	☐	☐	☐	☐	(11/53)
7. If I take my anti-infective medication as directed, I can avoid possible complications of HIV infection.	☐	☐	☐	☐	☐	(11/54)



Sometimes people take their medications as directed for a while, and then stop taking them for a while.

→ *The following 2 questions are about how you are taking your anti-infective medication **RIGHT NOW.***

21. Do you consistently take your anti-infective medication as directed? ("as directed" means taking **your medication at the right time and taking the prescribed amount)** (11/68)

___ a. No, I do not, and ***I am not considering*** taking my anti-infective medication as directed.
___ b. No, I do not, but ***I am considering*** taking my anti-infective medication as directed.
___ c. No, I do not, but ***I am planning to start*** taking my anti-infective medication as directed within the next month.
___ d. Yes, I consistently take my anti-infective medication as directed.

If yes,

→ 22. How long have you been taking your anti-infective medication as directed? (11/69)

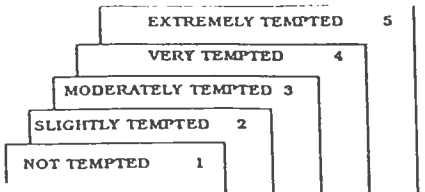
___ a. 0-3 months
___ b. 4-6 months
___ c. 6-12 months
___ d. more than 12 months

Now here are some situations that might affect whether you take your anti-infective medication for HIV infection as directed.

→ *For each situation, please mark one box with an "X" to rate HOW TEMPTED you would be to skip your anti-infective medication or take a dose which is different from the one prescribed.*

	NOT TEMPTED 1	SLIGHTLY TEMPTED 2	MODERATELY TEMPTED 3	VERY TEMPTED 4	EXTREMELY TEMPTED 5	
23. When you feel good and think you don't need it.	☐	☐	☐	☐	☐	(11/70)
24. When you are anxious about side effects.	☐	☐	☐	☐	☐	(11/71)
25. When you want to save on the cost of your medication.	☐	☐	☐	☐	☐	(11/72)
26. When you wonder whether you really need your medication.	☐	☐	☐	☐	☐	(11/73)
27. When you feel down.	☐	☐	☐	☐	☐	(11/74)
28. When you experience minor side effects.	☐	☐	☐	☐	☐	(11/75)
29. When you start to feel better.	☐	☐	☐	☐	☐	(11/76)
30. When your doctor doesn't seem interested in whether you take your medication.	☐	☐	☐	☐	☐	(11/77)

	NOT TEMPTED 1	SLIGHTLY TEMPTED 2	MODERATELY TEMPTED 3	VERY TEMPTED 4	EXTREMELY TEMPTED 5	
31. When you have no energy.	☐	☐	☐	☐	☐	(11/78)
32. When side effects are annoying.	☐	☐	☐	☐	☐	(11/79)
33. When someone doesn't remind you to take your medication.	☐	☐	☐	☐	☐	(11/80)
34. When your medical condition doesn't seem that bad.	☐	☐	☐	☐	☐	(12/1)
35. When you are taking several medications at the same time.	☐	☐	☐	☐	☐	(12/2)
36. When it seems too complex to keep track of all your medications.	☐	☐	☐	☐	☐	(12/3)
37. When you feel like giving up.	☐	☐	☐	☐	☐	(12/4)
38. When your doctor doesn't explain why you need to take your medication.	☐	☐	☐	☐	☐	(12/5)
39. When you have to take several medications every day.	☐	☐	☐	☐	☐	(12/6)
40. When you aren't sure if the medicine is really helping you.	☐	☐	☐	☐	☐	(12/7)
41. When you feel that your medication is too expensive.	☐	☐	☐	☐	☐	(12/8)
42. When you don't understand why you need your medication.	☐	☐	☐	☐	☐	(12/9)
43. When you think that you aren't that sick.	☐	☐	☐	☐	☐	(12/10)
44. When your family or friends don't seem concerned enough about your condition.	☐	☐	☐	☐	☐	(12/11)
45. When your doctor doesn't encourage you to take your medication.	☐	☐	☐	☐	☐	(12/12)
46. When your family or friends don't seem interested in whether you take your medication.	☐	☐	☐	☐	☐	(12/13)
47. When your doctor doesn't seem concerned enough about your condition.	☐	☐	☐	☐	☐	(12/14)
48. When your insurance doesn't cover the cost of your medication.	☐	☐	☐	☐	☐	(12/15)
49. When you lose confidence in your doctor.	☐	☐	☐	☐	☐	(12/16)
50. When you worry that taking too many medications might be bad for your health.	☐	☐	☐	☐	☐	(12/17)

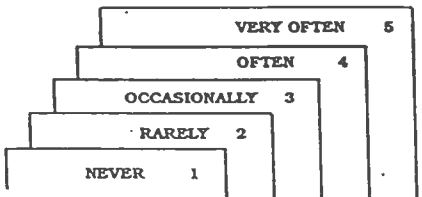


51. When you feel you should give your body a rest. ☐ ☐ ☐ ☐ ☐ (12/18)

52. When you worry that the chemicals in the medication might harm or hurt your body. ☐ ☐ ☐ ☐ ☐ (12/19)

The following statements represent some thoughts and experiences that people have when they are taking anti-infective medications on a regular basis. Think about your thoughts and experiences during the past month.

→ *For each numbered statement, please mark one box with an "X" to best describe HOW OFTEN that thought occurs or has occurred for you during the past month.*



53. I seek out new information on the benefits of taking my anti-infective medications. ☐ ☐ ☐ ☐ ☐ (12/20)

54. I call my health care provider if I have questions about taking my anti-infective medications. ☐ ☐ ☐ ☐ ☐ (12/21)

55. I have someone I can count on to help me take my anti-infective medications as directed. ☐ ☐ ☐ ☐ ☐ (12/22)

56. I reward myself when I take my anti-infective medications as directed. ☐ ☐ ☐ ☐ ☐ (12/23)

57. I use reminders to help me remember to take my anti-infective medications. ☐ ☐ ☐ ☐ ☐ (12/24)

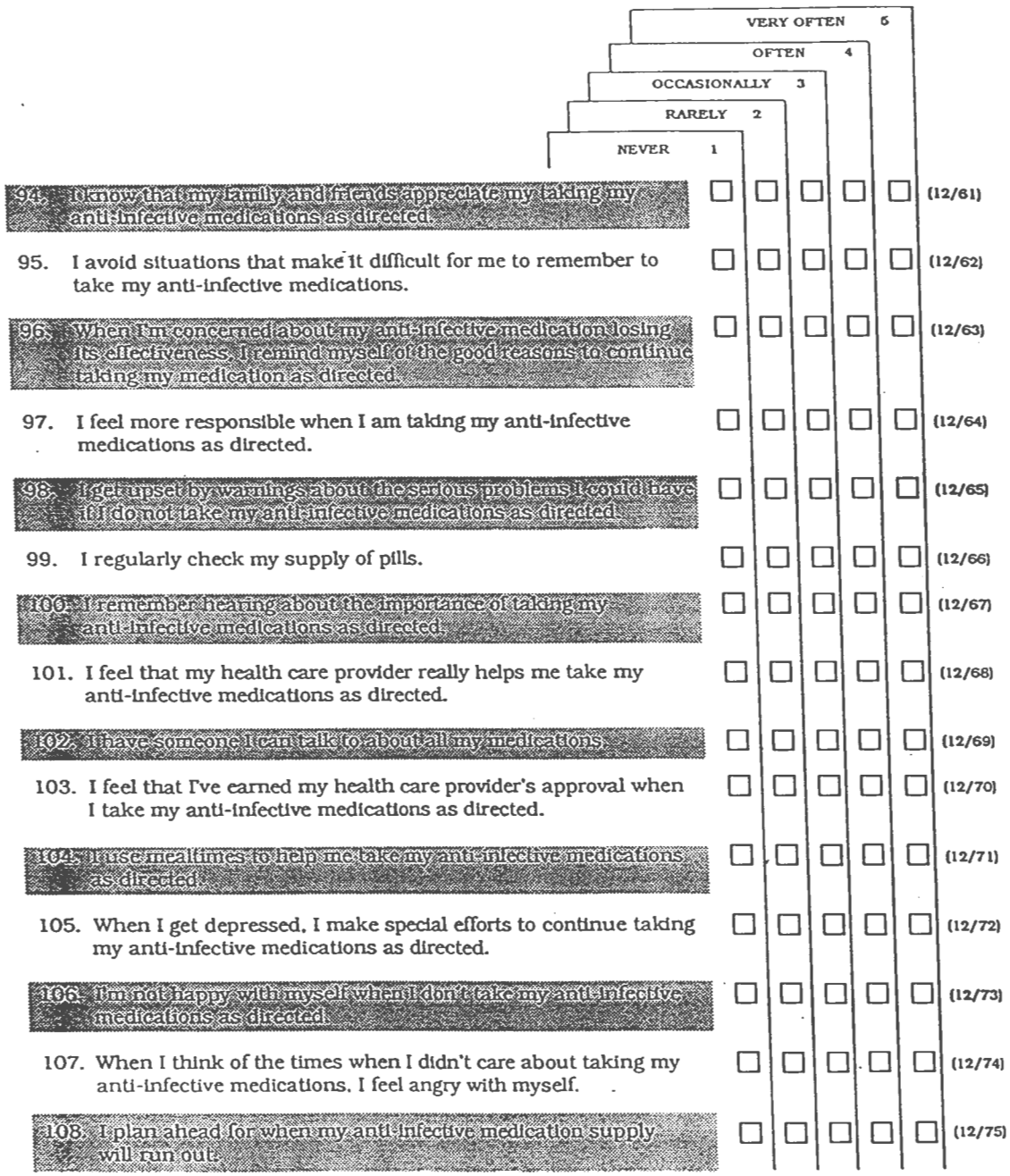
58. When I am tempted to skip a dose of my anti-infective medication, I remind myself about the importance of staying on schedule. ☐ ☐ ☐ ☐ ☐ (12/25)

59. I promise myself and others to take my anti-infective medications as directed. ☐ ☐ ☐ ☐ ☐ (12/26)

60. I feel good about myself when I remember to take my anti-infective medications as directed. ☐ ☐ ☐ ☐ ☐ (12/27)

61. I get upset with myself when I think about the times when I've forgotten to take my anti-infective medications. ☐ ☐ ☐ ☐ ☐ (12/28)

	NEVER 1	RARELY 2	OCCASIONALLY 3	OFTEN 4	VERY OFTEN 5	
62. I think that taking my anti-infective medications as directed may provide knowledge to help others who have HIV infection.	☐	☐	☐	☐	☐	(12/29)
63. I do something special for myself when I take my anti-infective medications as directed.	☐	☐	☐	☐	☐	(12/30)
64. When taking my anti-infective medications feels like a hassle, I remind myself of all the benefits of continuing to take them regularly.	☐	☐	☐	☐	☐	(12/31)
65. I tell myself that following a regular schedule will help me take my anti-infective medications as directed.	☐	☐	☐	☐	☐	(12/32)
66. When I'm unable to take my anti-infective medications as directed, I'm disappointed in myself.	☐	☐	☐	☐	☐	(12/33)
67. I get upset when I hear about people like me who stop taking their anti-infective medications.	☐	☐	☐	☐	☐	(12/34)
68. I think that taking my anti-infective medications as directed will help my family and friends by giving them hope.	☐	☐	☐	☐	☐	(12/35)
69. I ask my health care provider for information about my anti-infective medications.	☐	☐	☐	☐	☐	(12/36)
70. I talk to my health care provider before changing the way I take my anti-infective medications.	☐	☐	☐	☐	☐	(12/37)
71. Someone close to me reminds me to take my anti-infective medications as directed.	☐	☐	☐	☐	☐	(12/38)
72. I build taking my anti-infective medications into my schedule.	☐	☐	☐	☐	☐	(12/39)
73. I use a pill organizer or timer to help me take my anti-infective medications as directed.	☐	☐	☐	☐	☐	(12/40)
74. When I am on vacation or away from home, I make special efforts to continue taking my anti-infective medications as directed.	☐	☐	☐	☐	☐	(12/41)
75. I encourage myself to stick to my regular medication schedule.	☐	☐	☐	☐	☐	(12/42)
76. I get upset with myself when I skip my anti-infective medications.	☐	☐	☐	☐	☐	(12/43)
77. I feel that when I take my anti-infective medications as directed, I am a good role model for others.	☐	☐	☐	☐	☐	(12/44)



SECTION V
PROTEASE INHIBITOR MEDICATIONS

REMINDER: FILL OUT THIS SECTION IF YOU HAVE EVER TAKEN ANY OF THESE PROTEASE INHIBITOR MEDICATIONS: Saquinavir (Invirase®), Ritonavir (Norvir®), or Indinavir (Crixivan®). If not, skip to page 39.

→ *If you are taking **more than** one protease inhibitor medication NOW, please answer these questions for the medicine that is most difficult for you to take, and fill in the name of that medicine here* _____ (13/1-20)

→ *If you have **discontinued** your protease inhibitor medication, please answer these questions for the medicine that you took most recently, and fill in the name of that medicine here* _____ (13/21-40)

Taking medications as directed (the prescribed amount taken at the right time) is not always easy. At one time or another most people simply forget to take a dose of their medication, and sometimes people discontinue taking their medications for a while. The following is a list of possible advantages and disadvantages of taking protease inhibitor medications as directed.

→ *For each numbered statement, please mark one box with an "X" to rate **HOW IMPORTANT** that statement is to you when you are thinking about whether to take your protease inhibitor medication as directed.*

	NOT IMPORTANT 1	SLIGHTLY IMPORTANT 2	MODERATELY IMPORTANT 3	VERY IMPORTANT 4	EXTREMELY IMPORTANT 5	
1. It is a hassle to take my protease inhibitor medication several times a day.	☐	☐	☐	☐	☐	(13/41)
2. Taking my protease inhibitor medication as directed may delay some symptoms of HIV infection.	☐	☐	☐	☐	☐	(13/42)
3. My family or friends approve when I remember to take my protease inhibitor medication as directed.	☐	☐	☐	☐	☐	(13/43)
4. Taking too many medications may not be good for my health.	☐	☐	☐	☐	☐	(13/44)
5. When I take my protease inhibitor medication as directed my doctor approves.	☐	☐	☐	☐	☐	(13/45)
6. Taking all of my protease inhibitor medication as directed is too expensive.	☐	☐	☐	☐	☐	(13/46)
7. If I take my protease inhibitor medication as directed, I can avoid possible complications of HIV infection.	☐	☐	☐	☐	☐	(13/47)
8. Taking my protease inhibitor medication as directed may make up for my unhealthy habits.	☐	☐	☐	☐	☐	(13/48)

	EXTREMELY IMPORTANT 5	VERY IMPORTANT 4	MODERATELY IMPORTANT 3	SLIGHTLY IMPORTANT 2	NOT IMPORTANT 1	
9. When I take my protease inhibitor medication as directed, I feel more responsible.	☐	☐	☐	☐	☐	(13/49)
10. When I'm away from home or on vacation, taking my protease inhibitor medication as directed is difficult.	☐	☐	☐	☐	☐	(13/50)
11. When I take my protease inhibitor medication as directed, it makes me feel depressed about having HIV infection.	☐	☐	☐	☐	☐	(13/51)
12. Taking my protease inhibitor medication as directed causes too many annoying side effects.	☐	☐	☐	☐	☐	(13/52)
13. Taking my protease inhibitor medication as directed will slow down this illness.	☐	☐	☐	☐	☐	(13/53)
14. I worry that taking all the doses that are prescribed might not be good for me.	☐	☐	☐	☐	☐	(13/54)
15. Taking my protease inhibitor medication as directed gives me hope.	☐	☐	☐	☐	☐	(13/55)
16. I worry that the protease inhibitor medication is doing more harm than good.	☐	☐	☐	☐	☐	(13/56)
17. Taking my protease inhibitor medication as directed may help me stay well longer.	☐	☐	☐	☐	☐	(13/57)
18. It may be hard on my system, if I take my protease inhibitor medication as directed.	☐	☐	☐	☐	☐	(13/58)
19. I worry that people will know that I'm sick if I take my protease inhibitor medication as directed.	☐	☐	☐	☐	☐	(13/59)
20. Taking my protease inhibitor medication as directed will help me feel better.	☐	☐	☐	☐	☐	(13/60)

Sometimes people take their medications as directed for a while, and then stop taking them for a while.

→ *The following 2 questions are about how you are taking your protease inhibitor medication* ***RIGHT NOW.***

21. Do you consistently take your protease inhibitor medication as directed? ("as directed" means taking your medication at the right time and taking the prescribed amount) (13/61)

___ a. No, I do not, and ***I am not considering*** taking my protease inhibitor medication as directed.
___ b. No, I do not, but ***I am considering*** taking my protease inhibitor medication as directed.
___ c. No, I do not, but ***I am planning to start*** taking my protease inhibitor medication as directed within the next month.
___ d. Yes, I consistently take my protease inhibitor medication as directed.

If yes,

22. How long have you been taking your protease inhibitor medication as directed? (13/62)

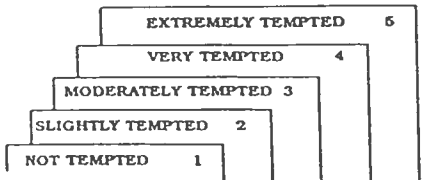
___ a. 0-3 months
___ b. 4-6 months
___ c. 6-12 months
___ d. more than 12 months

Now here are some situations that might affect whether you take your protease inhibitor medication for HIV infection as directed.

→ *For each situation, please mark one box with an "X" to rate* ***HOW TEMPTED*** *you would be to skip your protease inhibitor medication or take a dose which is different from the one prescribed.*

	NOT TEMPTED 1	SLIGHTLY TEMPTED 2	MODERATELY TEMPTED 3	VERY TEMPTED 4	EXTREMELY TEMPTED 5	
23. When you feel good and think you don't need it.	☐	☐	☐	☐	☐	(13/63)
24. When you are anxious about side effects.	☐	☐	☐	☐	☐	(13/64)
25. When you want to save on the cost of your medication.	☐	☐	☐	☐	☐	(13/65)
26. When you wonder whether you really need your medication.	☐	☐	☐	☐	☐	(13/66)
27. When you feel down.	☐	☐	☐	☐	☐	(13/67)
28. When you experience minor side effects.	☐	☐	☐	☐	☐	(13/68)
29. When you start to feel better.	☐	☐	☐	☐	☐	(13/69)
30. When your doctor doesn't seem interested in whether you take your medication.	☐	☐	☐	☐	☐	(13/70)

	NOT TEMPTED 1	SLIGHTLY TEMPTED 2	MODERATELY TEMPTED 3	VERY TEMPTED 4	EXTREMELY TEMPTED 5	
31. When you have no energy.	☐	☐	☐	☐	☐	(13/71)
32. When side effects are annoying.	☐	☐	☐	☐	☐	(13/72)
33. When someone doesn't remind you to take your medication.	☐	☐	☐	☐	☐	(13/73)
34. When your medical condition doesn't seem that bad.	☐	☐	☐	☐	☐	(13/74)
35. When you are taking several medications at the same time.	☐	☐	☐	☐	☐	(13/75)
36. When it seems too complex to keep track of all your medications.	☐	☐	☐	☐	☐	(13/76)
37. When you feel like giving up.	☐	☐	☐	☐	☐	(13/77)
38. When your doctor doesn't explain why you need to take your medication.	☐	☐	☐	☐	☐	(13/78)
39. When you have to take several medications every day.	☐	☐	☐	☐	☐	(13/79)
40. When you aren't sure if the medicine is really helping you.	☐	☐	☐	☐	☐	(13/80)
41. When you feel that your medication is too expensive.	☐	☐	☐	☐	☐	(14/1)
42. When you don't understand why you need your medication.	☐	☐	☐	☐	☐	(14/2)
43. When you think that you aren't that sick.	☐	☐	☐	☐	☐	(14/3)
44. When your family or friends don't seem concerned enough about your condition.	☐	☐	☐	☐	☐	(14/4)
45. When your doctor doesn't encourage you to take your medication.	☐	☐	☐	☐	☐	(14/5)
46. When your family or friends don't seem interested in whether you take your medication.	☐	☐	☐	☐	☐	(14/6)
47. When your doctor doesn't seem concerned enough about your condition.	☐	☐	☐	☐	☐	(14/7)
48. When your insurance doesn't cover the cost of your medication.	☐	☐	☐	☐	☐	(14/8)
49. When you lose confidence in your doctor.	☐	☐	☐	☐	☐	(14/9)
50. When you worry that taking too many medications might be bad for your health.	☐	☐	☐	☐	☐	(14/10)
51. When you feel you should give your body a rest.	☐	☐	☐	☐	☐	(14/11)

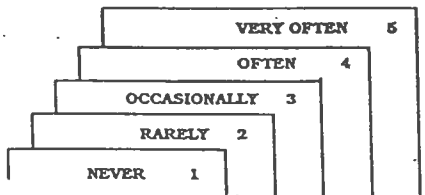


52. When you worry that the chemicals in the medication might harm or hurt your body. ☐ ☐ ☐ ☐ ☐ (14/12)

SECTION VI
WAYS OF COPING WITH HIV

Here are some ways that different people may cope with HIV and its treatments. There are no right or wrong answers.

→ ***In the last month, HOW OFTEN did you think, feel, or do each item?***
(Please circle one number for each item)



In the last month, I

1. concentrated on the next step	1	2	3	4	5	(14/13)
2. felt the only thing to do was wait	1	2	3	4	5	(14/14)
3. did something just to do something	1	2	3	4	5	(14/15)
4. talked to someone to find out more	1	2	3	4	5	(14/16)
5. criticized or lectured myself	1	2	3	4	5	(14/17)
6. tried not to close off options	1	2	3	4	5	(14/18)
7. hoped a miracle would happen	1	2	3	4	5	(14/19)
8. went along with fate	1	2	3	4	5	(14/20)
9. went on as if it were not happening	1	2	3	4	5	(14/21)
10. tried to keep my feelings to myself	1	2	3	4	5	(14/22)
11. looked for the silver lining, looked on the bright side	1	2	3	4	5	(14/23)
12. slept more than usual	1	2	3	4	5	(14/24)
13. looked for sympathy or understanding	1	2	3	4	5	(14/25)
14. was inspired to be creative	1	2	3	4	5	(14/26)
15. tried to forget the whole thing	1	2	3	4	5	(14/27)
16. tried to get professional help	1	2	3	4	5	(14/28)
17. changed or grew as a person in a good way	1	2	3	4	5	(14/29)
18. waited to see what would happen before acting	1	2	3	4	5	(14/30)

	NEVER 1	RARELY 2	OCCASIONALLY 3	OFTEN 4	VERY OFTEN 5	
19. made a plan of action and followed it	1	2	3	4	5	(14/31)
20. let my feelings out somehow	1	2	3	4	5	(14/32)
21. came out of the experience better than before	1	2	3	4	5	(14/33)
22. talked to someone who could do something	1	2	3	4	5	(14/34)
23. tried to make myself feel better by eating, drinking, smoking, or drug use	1	2	3	4	5	(14/35)
24. took a big chance and did something risky	1	2	3	4	5	(14/36)
25. tried not to act too hastily	1	2	3	4	5	(14/37)
26. found new faith	1	2	3	4	5	(14/38)
27. rediscovered what is important in life	1	2	3	4	5	(14/39)
28. changed something so things will turn out	1	2	3	4	5	(14/40)
29. avoided being with people	1	2	3	4	5	(14/41)
30. didn't let it get to me; refused to think about it	1	2	3	4	5	(14/42)
31. asked a friend or relative for advise	1	2	3	4	5	(14/43)
32. kept others from knowing how bad things were	1	2	3	4	5	(14/44)
33. made light of it; refused to get too serious	1	2	3	4	5	(14/45)
34. talked to someone about how I was feeling	1	2	3	4	5	(14/46)
35. took it out on other people	1	2	3	4	5	(14/47)
36. drew on past experiences from similar situations	1	2	3	4	5	(14/48)
37. knew what had to be done, so increased efforts	1	2	3	4	5	(14/49)
38. refused to believe it was happening	1	2	3	4	5	(14/50)
39. came up with different solutions	1	2	3	4	5	(14/51)
40. tried to keep my feelings from interfering	1	2	3	4	5	(14/52)
41. changed something about myself	1	2	3	4	5	(14/53)
42. wished the situation would go away or be over	1	2	3	4	5	(14/54)
43. had fantasies/wishes about how it might turn out	1	2	3	4	5	(14/55)
44. prayed	1	2	3	4	5	(14/56)
45. prepared for the worst	1	2	3	4	5	(14/57)
46. went over in my mind what I would say or do	1	2	3	4	5	(14/58)
47. thought of how a person I admire would act	1	2	3	4	5	(14/59)
48. reminded myself how much worse things could be	1	2	3	4	5	(14/60)
49. tried to find out as much as I could	1	2	3	4	5	(14/61)
50. treated the illness as a challenge	1	2	3	4	5	(14/62)

Now here are some questions about injection (skin popping or IV) drugs.

Please circle or fill in the correct response for each question.

51. Have you ever used injection drugs? (14/63)

☐ No
☐ Yes.

If yes,

→ ***Please fill out the remaining questions only if you have ever used injection drugs.***

52. Do you use injection drugs now? (14/64)

☐ No, not in the past 6 months
☐ Not now, but once or twice in the past 6 months
☐ Yes, occasionally
☐ Yes, regularly

If injected at all during the past 6 months,

→ 53. During the past 6 months, how often have you injected the following:

	NEVER	LESS THAN TWICE PER MONTH	2-4 TIMES PER MONTH	2-7 TIMES PER WEEK	MORE THAN ONCE PER DAY	
a. Heroin by itself	☐	☐	☐	☐	☐	(14/65)
b. Cocaine by itself?	☐	☐	☐	☐	☐	(14/66)
c. Cocaine and heroin, or speedball?	☐	☐	☐	☐	☐	(14/67)
d. Amphetamines, such as uppers, speed, meth, or crack?	☐	☐	☐	☐	☐	(14/68)

→ 54. During the past 6 months, how often did you use a brand new needle or one that you are sure no one else used EACH TIME you shot up? (14/69)

☐ Never ☐ Rarely ☐ Sometimes ☐ Almost always ☐ Always

→ 55. During the past 6 months, how many people did you share needles or works with? (14/70)

☐ None
☐ 1 other person
☐ 2-3 different people
☐ 4-10 different People
☐ More than 10 different people

→ 56. During the past 6 months, how often have:

	NEVER	LESS THAN TWICE PER MONTH	2-4 TIMES PER MONTH	2-7 TIMES PER WEEK	MORE THAN ONCE PER DAY	
a. You used needles or works after someone without cleaning?	☐	☐	☐	☐	☐	(14/71)
b. Others used needles or works after you without cleaning?	☐	☐	☐	☐	☐	(14/72)
c. You used a needle after someone who is HIV positive had used it?	☐	☐	☐	☐	☐	(14/73)
d. You shot up in a shooting gallery, hit house or another place where groups of users shoot up?	☐	☐	☐	☐	☐	(14/74)
e. You shared rinse water?	☐	☐	☐	☐	☐	(14/75)
f. You shared a cooker?	☐	☐	☐	☐	☐	(14/76)
g. You shared cotton?	☐	☐	☐	☐	☐	(14/77)

→ 57. During the past 6 months, where did you get needles?

	SOME of your needles (Answer yes or no to all)		MOST of your needles (Check only one)	
	YES	NO		
a. At a needle exchange?	☐	☐	☐	(14/78)
b. On the street?	☐	☐	☐	(14/79)
c. In a shooting gallery?	☐	☐	☐	(14/80)
d. At a drugstore?	☐	☐	☐	(15/1)
e. At the same place where you buy drugs?	☐	☐	☐	(15/2)
f. From a diabetic?	☐	☐	☐	(15/3)
g. From another person not mentioned?	☐	☐	☐	(15/4)
h. From another place not mentioned?	☐	☐	☐	(15/5)

→ 58. During the past 6 months, if you haven't used a needle exchange, or if you had difficulties getting needles from a needle exchange, how come? (15/6-11)
Please check all that apply

- ☐ Don't know about it
- ☐ Too far
- ☐ Open too few hours
- ☐ Scared of getting arrested
- ☐ Scared someone will see me there
- ☐ Other reason *(please specify)*_____ (15/12-32)

59. Are you planning to use only your own works (needles, syringes, cotton, cooker, rinse water) or a brand new needle EVERY TIME you inject within the next 6 months? If so, how soon? (15/33)

- ☐ NO, I am not planning to start using new needles every time
- ☐ YES, within the next year
- ☐ YES, within the next 6 months
- ☐ YES, within the next month
- ☐ YES, I already use new needles every time

60. Have you been using new needles every time you use IV needles? If so, for how long? (15/34)

- ☐ NO, I have not been using using new needles every time
- ☐ YES, for 30 days or less
- ☐ YES, for MORE than 30 days but LESS than 6 months
- ☐ YES, for MORE than 6 months but LESS than a year
- ☐ YES, for MORE than a year

61. Now, how ready are you to STOP using injection drugs completely? (15/35)

- ☐ Not ready
- ☐ Somewhat ready
- ☐ Ready
- ☐ Very Ready

For information about needle exchange in Rhode Island, call (401) 277-2320.

For information on the "Medication for The Needy–Assistance Program" at The University of Rhode Island, call 1-800-215-9001.

This completes this survey. Thank you for your assistance with this project & for sharing your thoughts on HIV related medications.

SUPPLEMENT TO SECTION II

MEDICATION #4

MEDICINE NAME_____ (15/36-55)

1. This medicine is for: (15/56)
   - ☐ HIV infection
   - ☐ To treat or prevent PCP *(Pneumocystis carinii pneumonia)*
   - ☐ To treat or prevent MAI (Mycobacterium avium complex) infection
   - ☐ To treat or prevent fungal infections (*Candida* or "thrush")
   - ☐ Other: _____
   - ☐ Don't know (15/57-76)

2. How often do you take this medicine? (15/77)
   - ☐ Two times a week
   - ☐ Three times a week
   - ☐ Every other day
   - ☐ Once a day
   - ☐ Two times a day
   - ☐ Three times a day
   - ☐ Four times a day
   - ☐ Five times a day
   - ☐ Other: _____

3. How long have you been taking this medication? (16/1-20)

   ___ Less than 1 month ___ 6 months to 1 year
   ___ 1 to 3 months ___ 1 to 2 years
   ___ 4 to 6 months ___ more than 2 years

4. During the ***last 3 months***, have you ever stopped taking this medication because you felt better? (16/21)

   ☐ YES ☐ NO

5. During the ***last 3 months***, have you ever stopped taking this medication because you felt worse? (16/22)

   ☐ YES ☐ NO

6. During the ***last 3 months***, have you ever forgotten to take this medication? (16/23)

   ☐ YES ☐ NO

7. During the ***last 3 months***, have you at times been careless about taking this medication? (16/24)

   ☐ YES ☐ NO

8. During the ***last 3 months***, have you ever taken less of this medicine than your doctor prescribed because you felt better? (16/25)

   ☐ YES ☐ NO

9. During the ***last 3 months***, have you ever taken less of this medicine than your doctor prescribed because you felt worse? (16/26)

   ☐ YES ☐ NO

10. *Since you began taking* this medication, have you ever purposely:

	YES	NO	
a) taken more of the medicine than your physician prescribed?	☐	☐	(16/27)
b) taken less of the medicine than your physician prescribed?	☐	☐	(16/28)
c) discontinued or stopped taking your medication?	☐	☐	(16/29)

If yes,

→ 11.a) How many times have you discontinued your medication for more than 3 days? (16/30-31)

_____

b) What were your reasons for discontinuing your medication? (16/32-37)
Please check all that apply

- ☐ My doctor recommended it
- ☐ Too many side effects
- ☐ I didn't want to be reminded of my illness
- ☐ Problems with insurance coverage
- ☐ I didn't think it was working
- ☐ Other: _____ (38-57)

12. Sometimes it is difficult to take prescribed medicine all the time. During the past week, how many times did you miss a dose of MEDICATION 4? _____ (16/58-59)

13. During the **past month**, about **how many times** did you miss a dose of MEDICATION 4?
_____ (16/60-61)

14. During the **past three months**, about **how many times** did you miss a dose MEDICATION 4?
_____ (16/62-63)

15. Please check any side effect(s) you are having that you believe are caused by this medicine: (16/64-79)

☐ nausea	☐ shortness of breath	☐ headaches
☐ dizziness	☐ muscle aches	☐ anxiety/worry
☐ vomiting	☐ fatigue	☐ depression
☐ abdominal pain	☐ tingling in hands/feet	☐ rash
☐ diarrhea	☐ numbness in hands/feet	☐ sensitivity to sun
☐ other:	_____	(17/1-20)

_____

_____

MEDICATION #5

MEDICINE NAME_____ (17/21-40)

1. This medicine is for: (17/41)

- ☐ HIV infection
- ☐ To treat or prevent PCP *(Pneumocystis carinii pneumonia)*
- ☐ To treat or prevent MAI (Mycobacterium avium complex) infection
- ☐ To treat or prevent fungal infections (*Candida* or "thrush")
- ☐ Other: _____
- ☐ Don't know (17/42-61)

2. How often do you take this medicine? (17/62)

- ☐ Two times a week
- ☐ Three times a week
- ☐ Every other day
- ☐ Once a day
- ☐ Two times a day
- ☐ Three times a day
- ☐ Four times a day
- ☐ Five times a day
- ☐ Other: _____ (18/1-20)

3. How long have you been taking this medication? (18/21)

____ Less than 1 month	____ 6 months to 1 year
____ 1 to 3 months	____ 1 to 2 years
____ 4 to 6 months	____ more than 2 years

4. During the ***last 3 months***, have you ever stopped taking this medication because you felt better? (18/22)

☐ YES ☐ NO

5. During the ***last 3 months***, have you ever stopped taking this medication because you felt worse? (18/23)

☐ YES ☐ NO

6. During the ***last 3 months***, have you ever forgotten to take this medication? (18/24)

☐ YES ☐ NO

7. During the ***last 3 months***, have you at times been careless about taking this medication? (18/25)

☐ YES ☐ NO

8. During the ***last 3 months***, have you ever taken less of this medicine than your doctor prescribed because you felt better? (18/26)

☐ YES ☐ NO

9. During the ***last 3 months***, have you ever taken less of this medicine than your doctor prescribed because you felt worse? (18/27)

☐ YES ☐ NO

10. *Since you began taking* this medication, have you ever purposely:

	YES	NO	
a) taken more of the medicine than your physician prescribed?	☐	☐	(18/28)
b) taken less of the medicine than your physician prescribed?	☐	☐	(18/29)
c) discontinued or stopped taking your medication?	☐	☐	(18/30)

If yes,

→ 11.a) How many times have you discontinued your medication for more than 3 days? (18/31-32)

_____

b) What were your reasons for discontinuing your medication? (18/33-38)
Please check all that apply

☐ My doctor recommended it
☐ Too many side effects
☐ I didn't want to be reminded of my illness
☐ Problems with insurance coverage
☐ I didn't think it was working
☐ Other: _____ (18/39-58)

12. Sometimes it is difficult to take prescribed medicine all the time. During the past week, how many times did you miss a dose of MEDICATION 5? _____ (18/59-60)

13. During the past month, about how many times did you miss a dose of MEDICATION 5?
_____ (18/61-62)

14. During the past three months, about how many times did you miss a dose MEDICATION 5?
_____ (18/63-64)

15. Please check any side effect(s) you are having that you believe are caused by this medicine: (18/65-80)

☐ nausea	☐ shortness of breath	☐ headaches
☐ dizziness	☐ muscle aches	☐ anxiety/worry
☐ vomiting	☐ fatigue	☐ depression
☐ abdominal pain	☐ tingling in hands/feet	☐ rash
☐ diarrhea	☐ numbness in hands/feet	☐ sensitivity to sun

☐ other: _____ (19/1-20)

_____

_____

MEDICATION #6

MEDICINE NAME_____ (19/21-40)

1. This medicine is for: (19/41)

☐ HIV infection
☐ To treat or prevent PCP *(Pneumocystis carinii pneumonia)*
☐ To treat or prevent MAI (Mycobacterium avium complex) infection
☐ To treat or prevent fungal infections (*Candida* or "thrush")
☐ Other: _____
☐ Don't know (19/42-61)

2. How often do you take this medicine? (19/62)

☐ Two times a week
☐ Three times a week
☐ Every other day
☐ Once a day
☐ Two times a day
☐ Three times a day
☐ Four times a day
☐ Five times a day
☐ Other: _____ (20/1-20)

3. How long have you been taking this medication? (20/21)

___ Less than 1 month ___ 6 months to 1 year
___ 1 to 3 months ___ 1 to 2 years
___ 4 to 6 months ___ more than 2 years

4. During the ***last 3 months***, have you ever stopped taking this medication because you felt better? (20/22)

☐ YES ☐ NO

5. During the ***last 3 months***, have you ever stopped taking this medication because you felt worse? (20/23)

☐ YES ☐ NO

6. During the ***last 3 months***, have you ever forgotten to take this medication? (20/24)

☐ YES ☐ NO

7. During the ***last 3 months***, have you at times been careless about taking this medication? (20/25)

☐ YES ☐ NO

8. During the ***last 3 months***, have you ever taken less of this medicine than your doctor prescribed because you felt better? (20/26)

☐ YES ☐ NO

9. During the ***last 3 months***, have you ever taken less of this medicine than your doctor prescribed because you felt worse? (20/27)

☐ YES ☐ NO

10. *Since you began taking* this medication, have you ever purposely:

	YES	NO	
a) taken more of the medicine than your physician prescribed?	☐	☐	(20/28)
b) taken less of the medicine than your physician prescribed?	☐	☐	(20/29)
c) discontinued or stopped taking your medication?	☐	☐	(20/30)

If yes,

→ 11.a) How many times have you discontinued your medication for more than 3 days? (20/31-32)

_____

b) What were your reasons for discontinuing your medication? (20/33-38)
Please check all that apply

☐ My doctor recommended it
☐ Too many side effects
☐ I didn't want to be reminded of my illness
☐ Problems with insurance coverage
☐ I didn't think it was working
☐ Other: _____ (20/39-58)

12. Sometimes it is difficult to take prescribed medicine all the time. During the past week, how many times did you miss a dose of MEDICATION 6? _____ (20/59-60)

13. During the past month, about how many times did you miss a dose of MEDICATION 6?
_____ (20/61-62)

14. During the past three months, about how many times did you miss a dose MEDICATION 6?
_____ (20/63-64)

15. Please check any side effect(s) you are having that you believe are caused by this medicine:
(20/65-80)

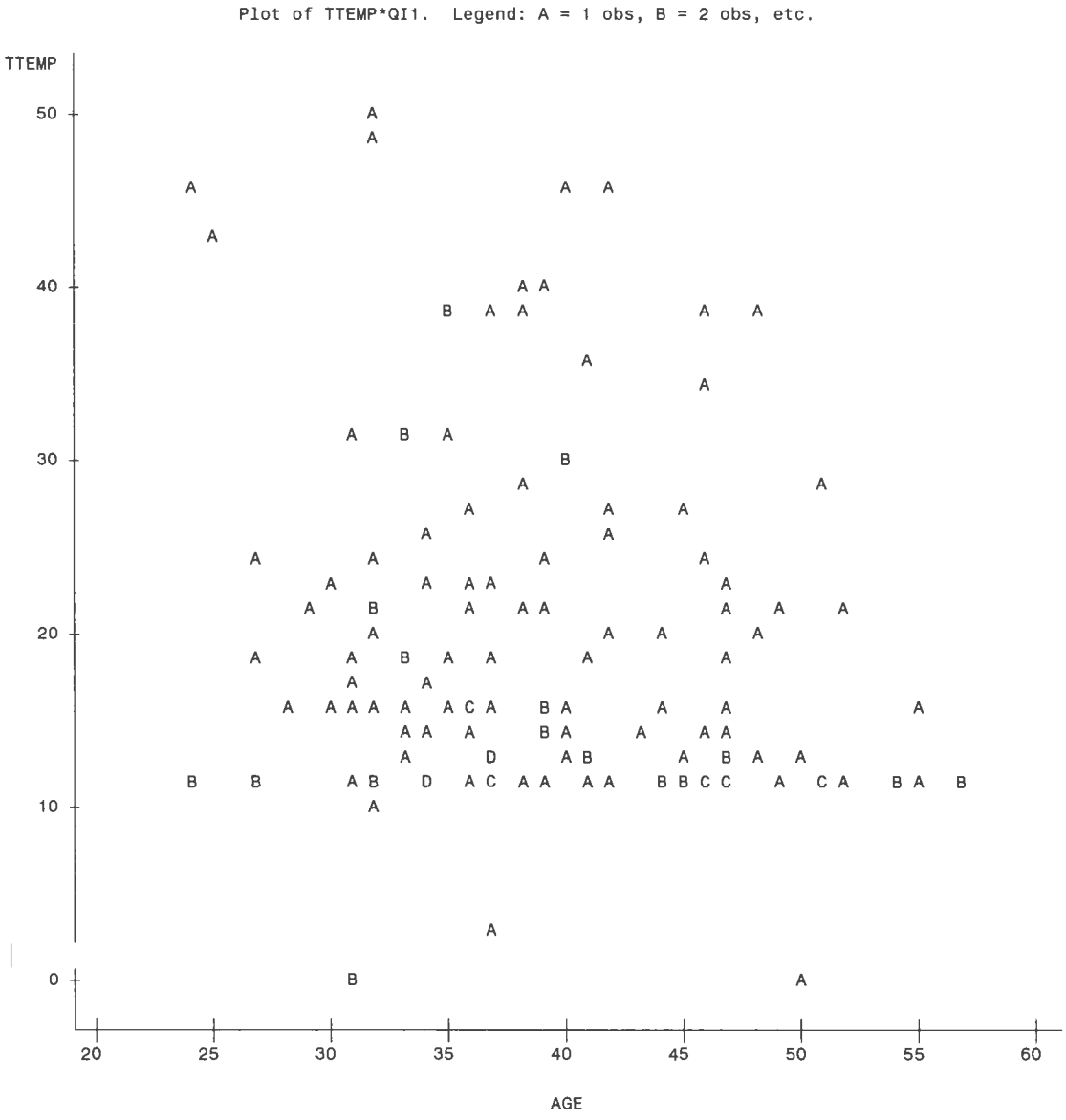
☐ nausea	☐ shortness of breath	☐ headaches
☐ dizziness	☐ muscle aches	☐ anxiety/worry
☐ vomiting	☐ fatigue	☐ depression
☐ abdominal pain	☐ tingling in hands/feet	☐ rash
☐ diarrhea	☐ numbness in hands/feet	☐ sensitivity to sun

☐ other: _____ (21/1-20)

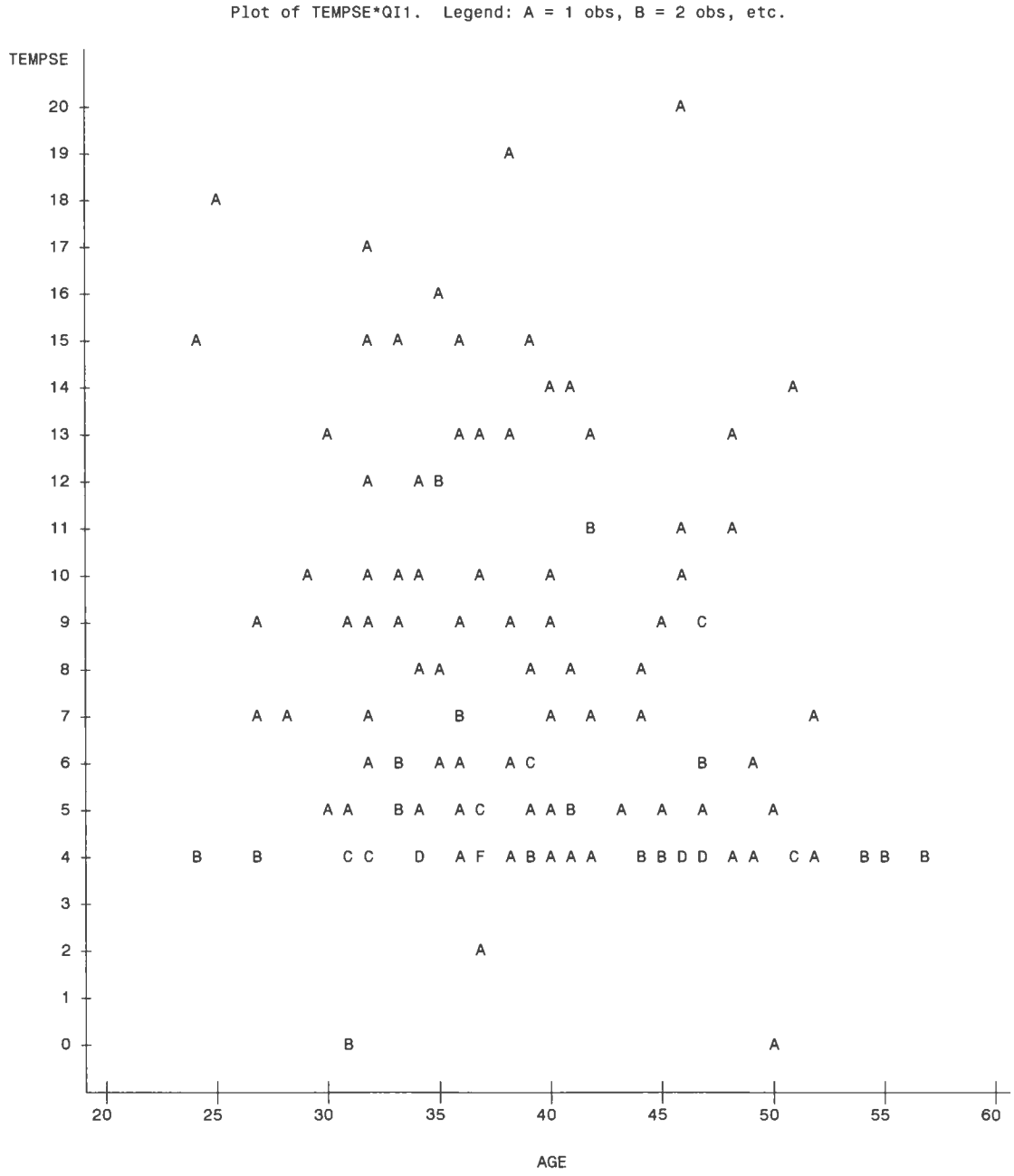
_____

_____

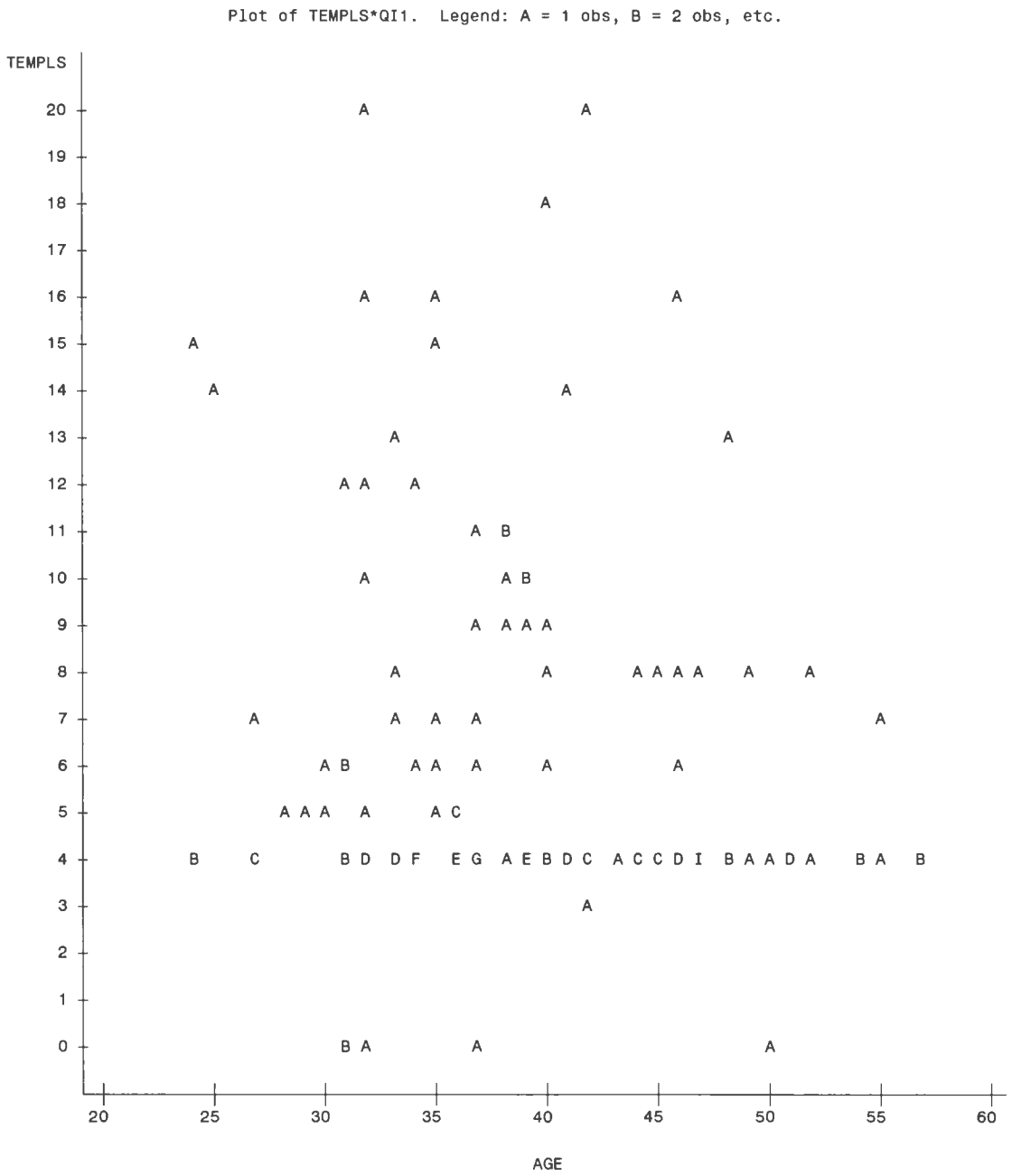
1. Plot of Temptation to Skip Antiretroviral Medication on the Total Scale vs Age



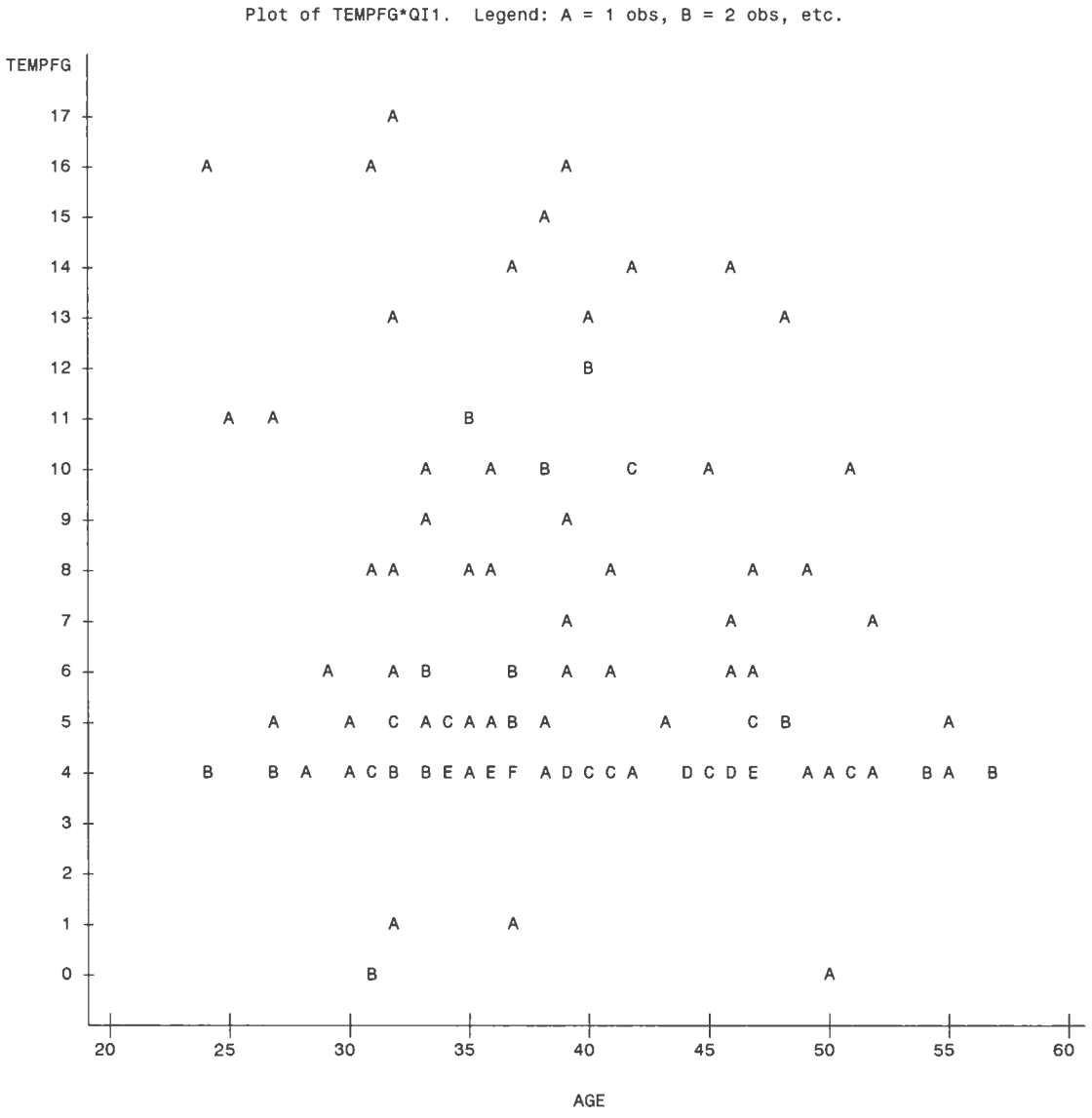
2. Plot of Temptation to Skip Antiretroviral Medication on the Side Effects Scale vs Age



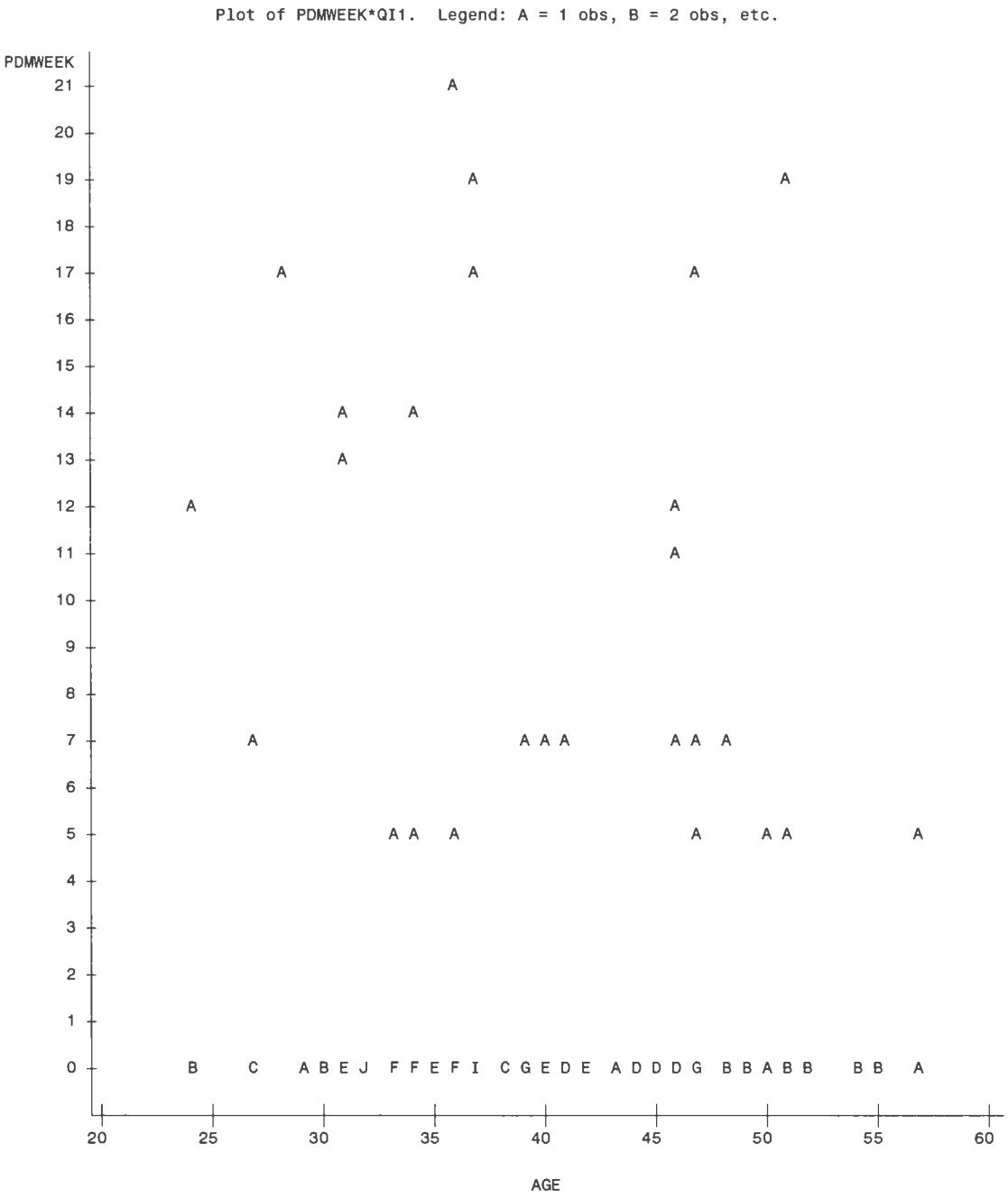
3. Plot of Temptation to Skip Antiretroviral Medication on the Lack of Support Scale vs Age



4. Plot of Temptation to Skip Antiretroviral Medication on the Feeling Good Scale vs Age

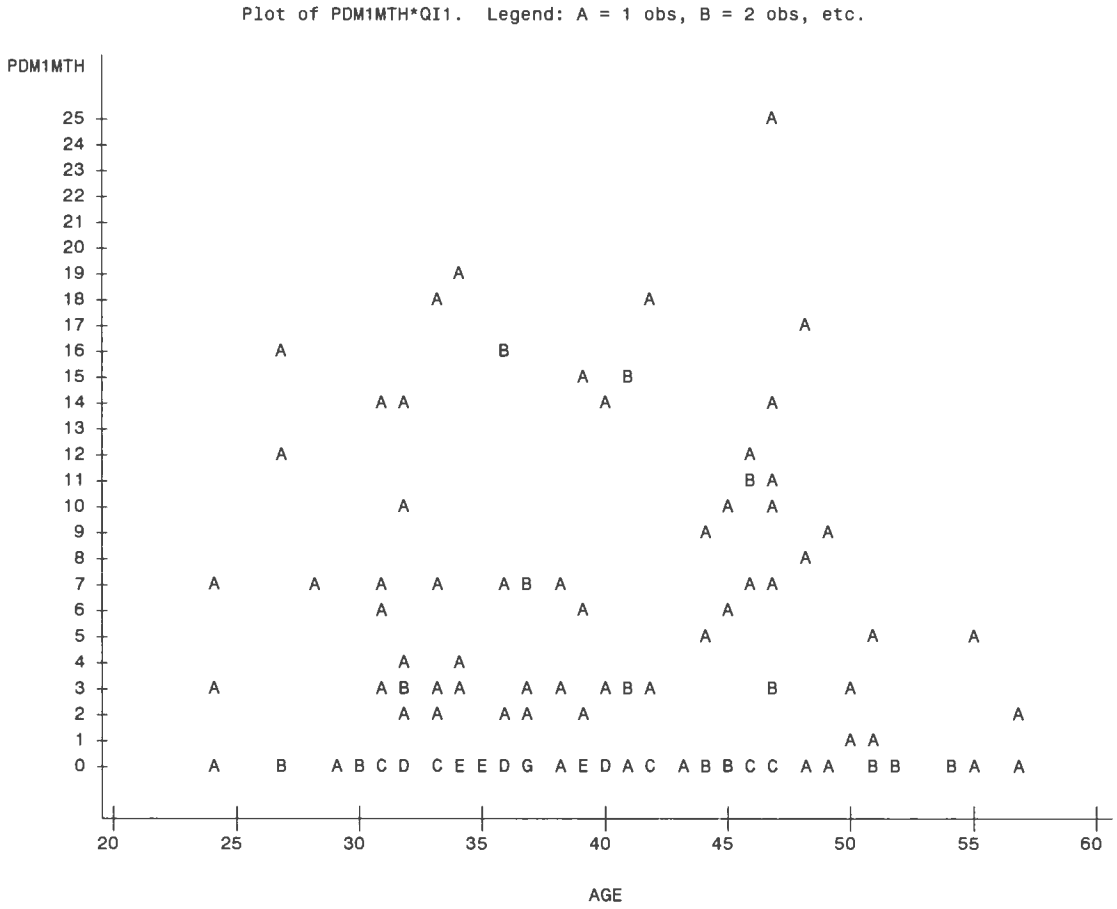


5. Plot of Percent of Doses Missed in the past Week vs Age



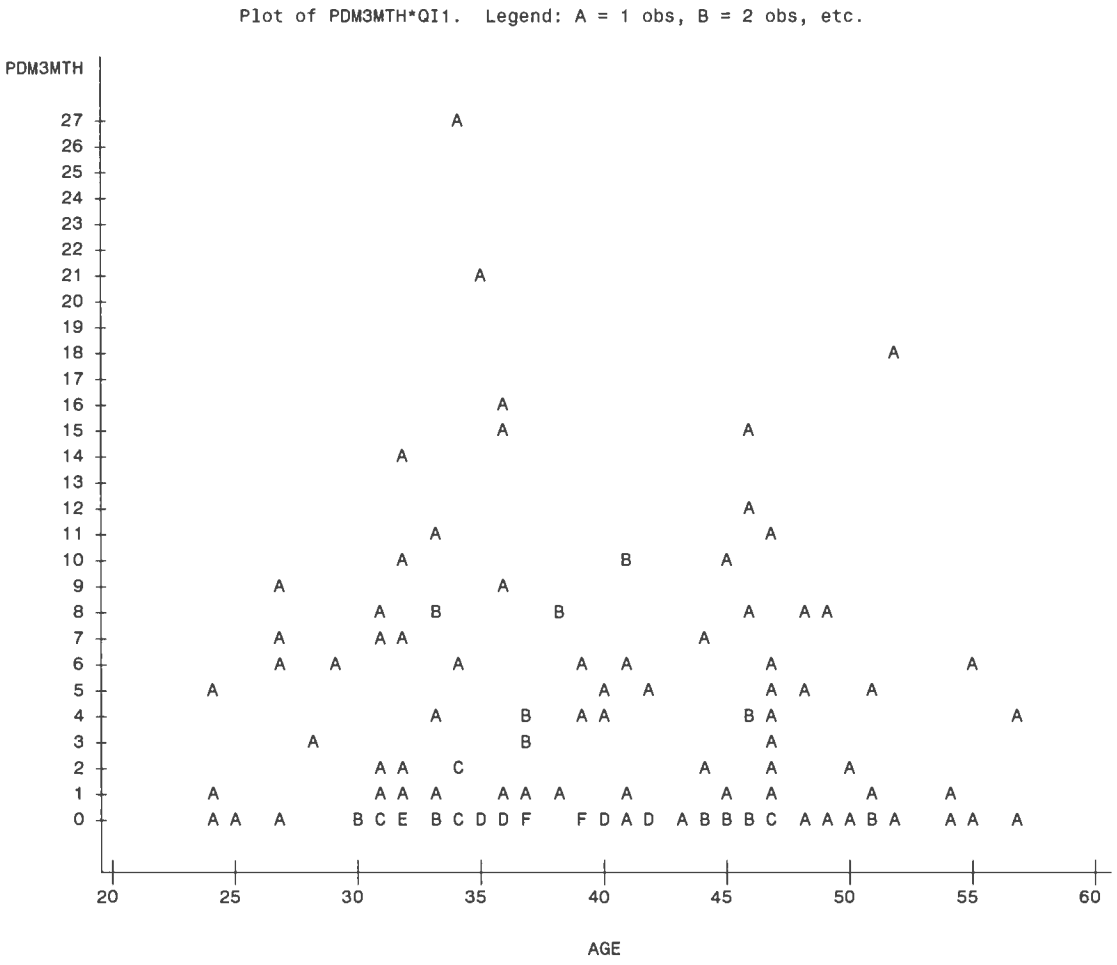
NOTE: 4 obs had missing values.

6. Plot of Percent of Doses Missed in the past Month vs Age



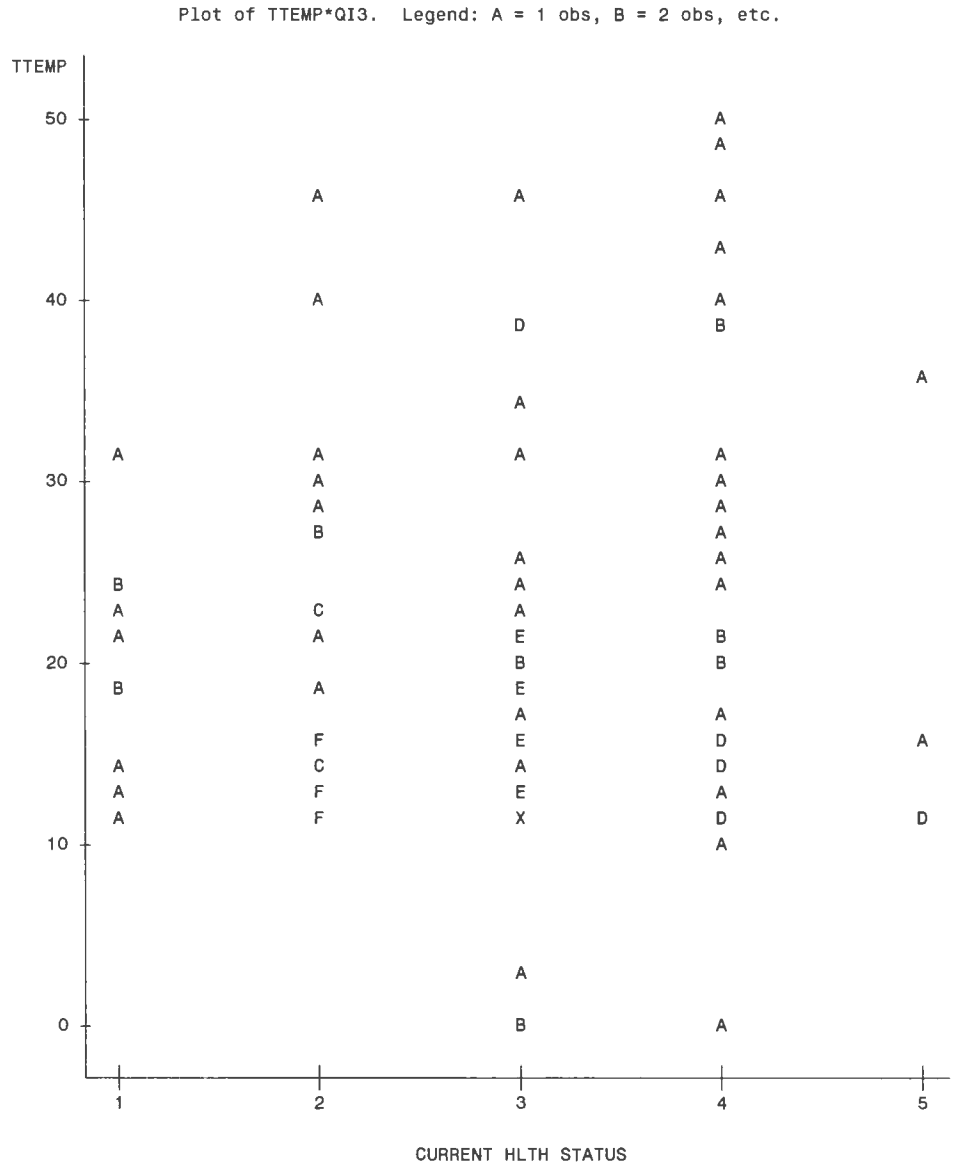
NOTE: 4 obs had missing values.

7. Plot of Percent of Doses Missed in past Three Months vs Age

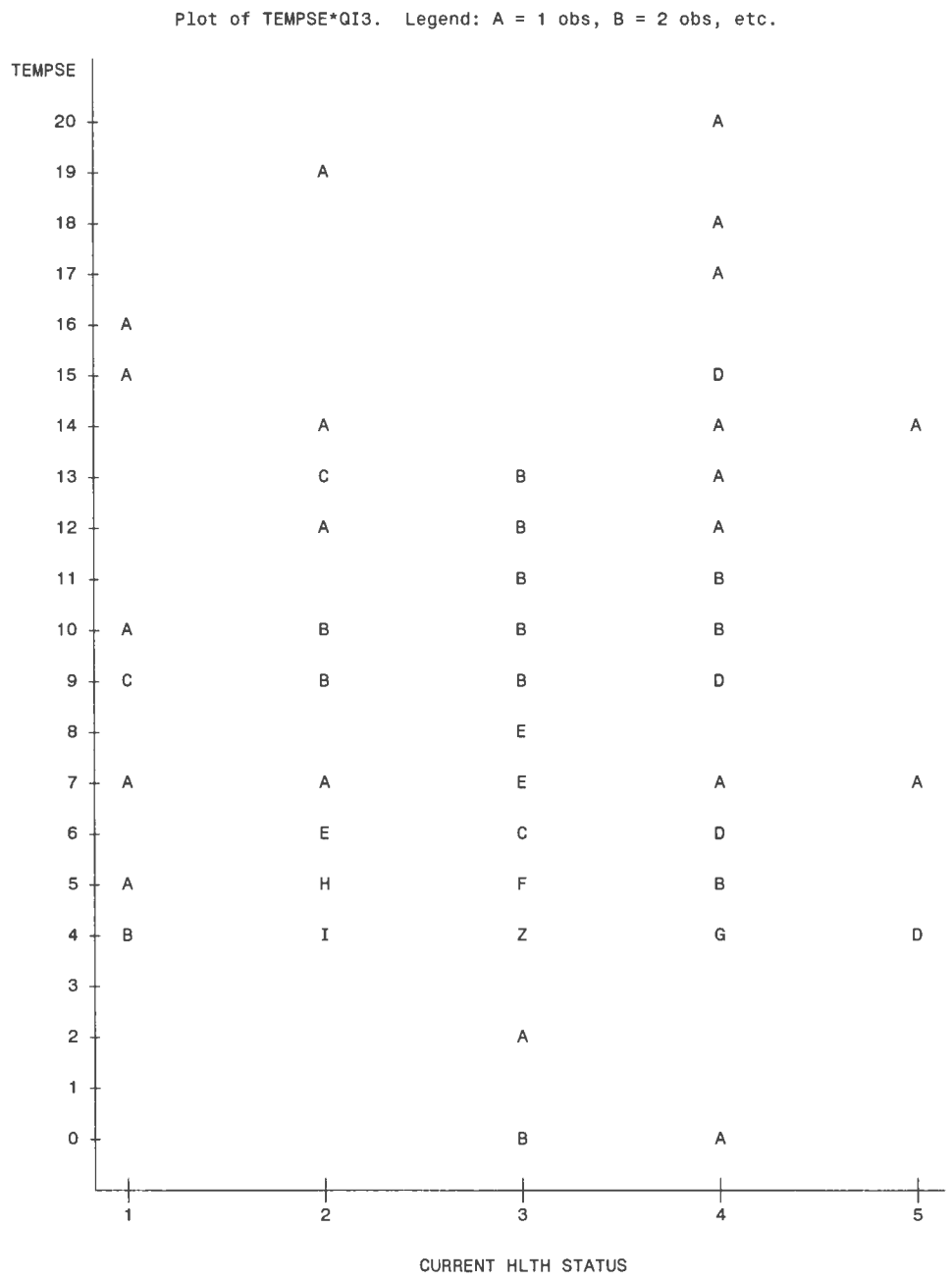


NOTE: 3 obs had missing values.

8. Plot of Temptation to Skip Antiretroviral Medication on the Total Scale vs Current Health Status

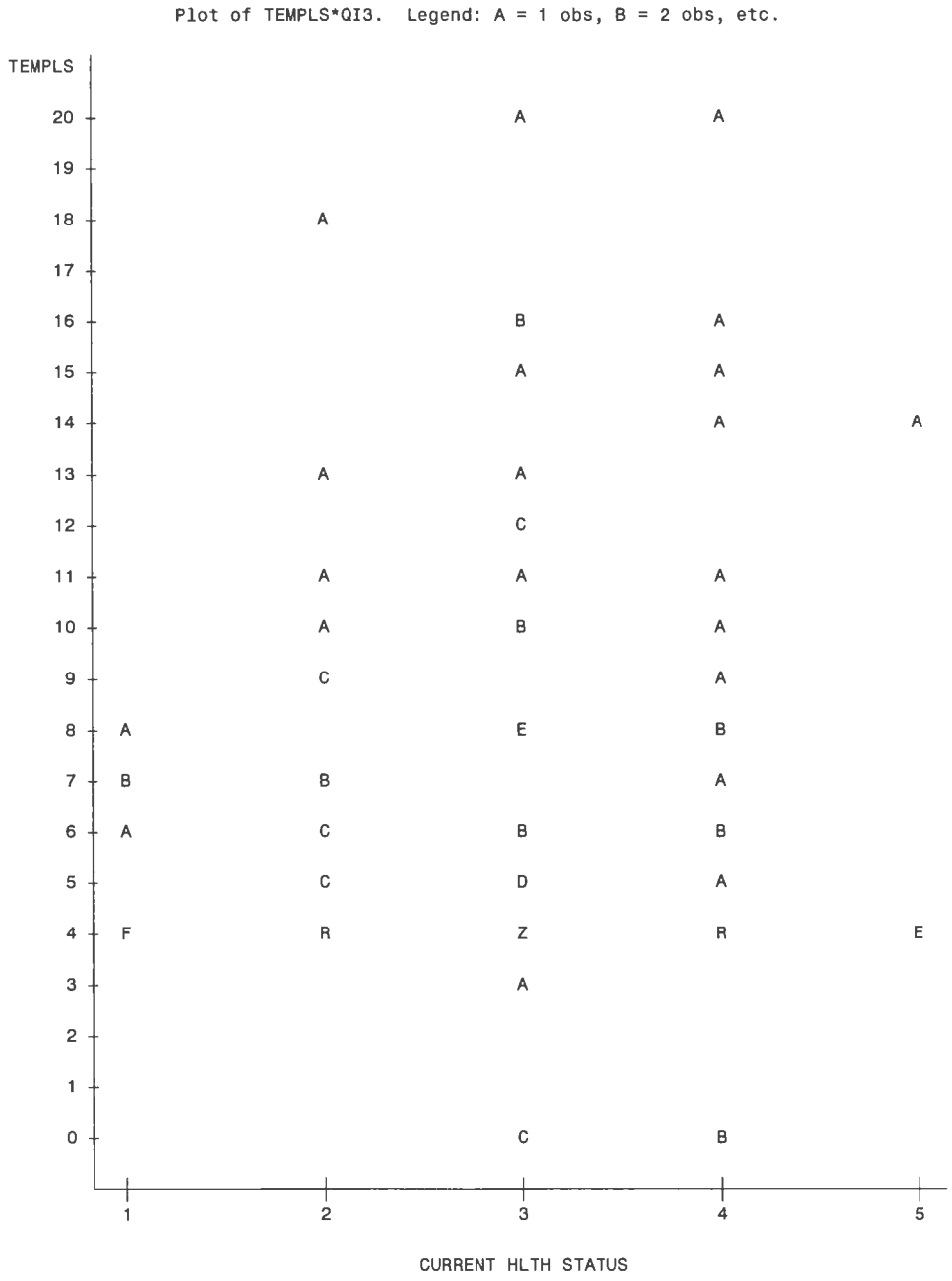


9. Plot of Temptation to Skip Antiretroviral Medication on the Side Effects Scale vs Current Health Status



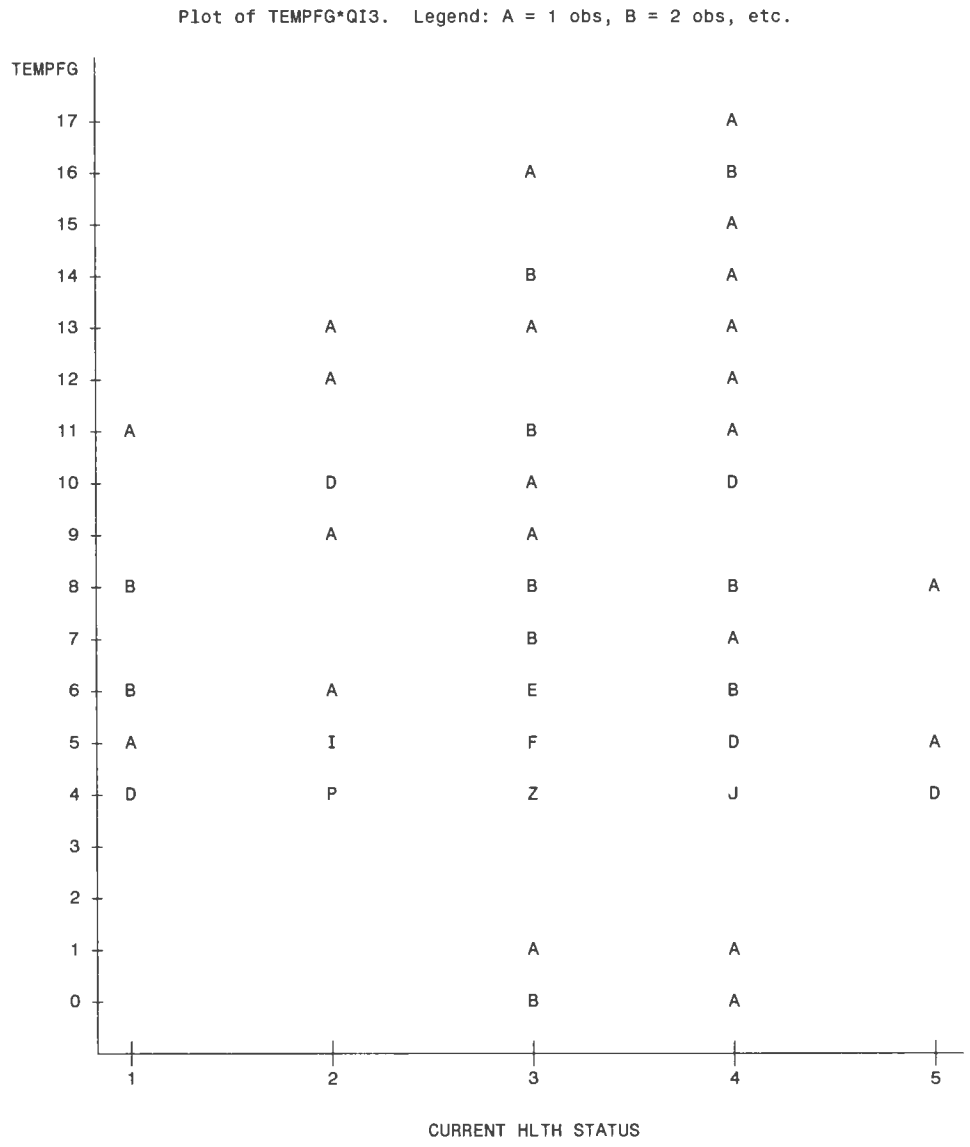
NOTE: 3 obs hidden.

10. Plot of Temptation to Skip Antiretroviral Medication on the Lack of Support Scale vs Current Health Status



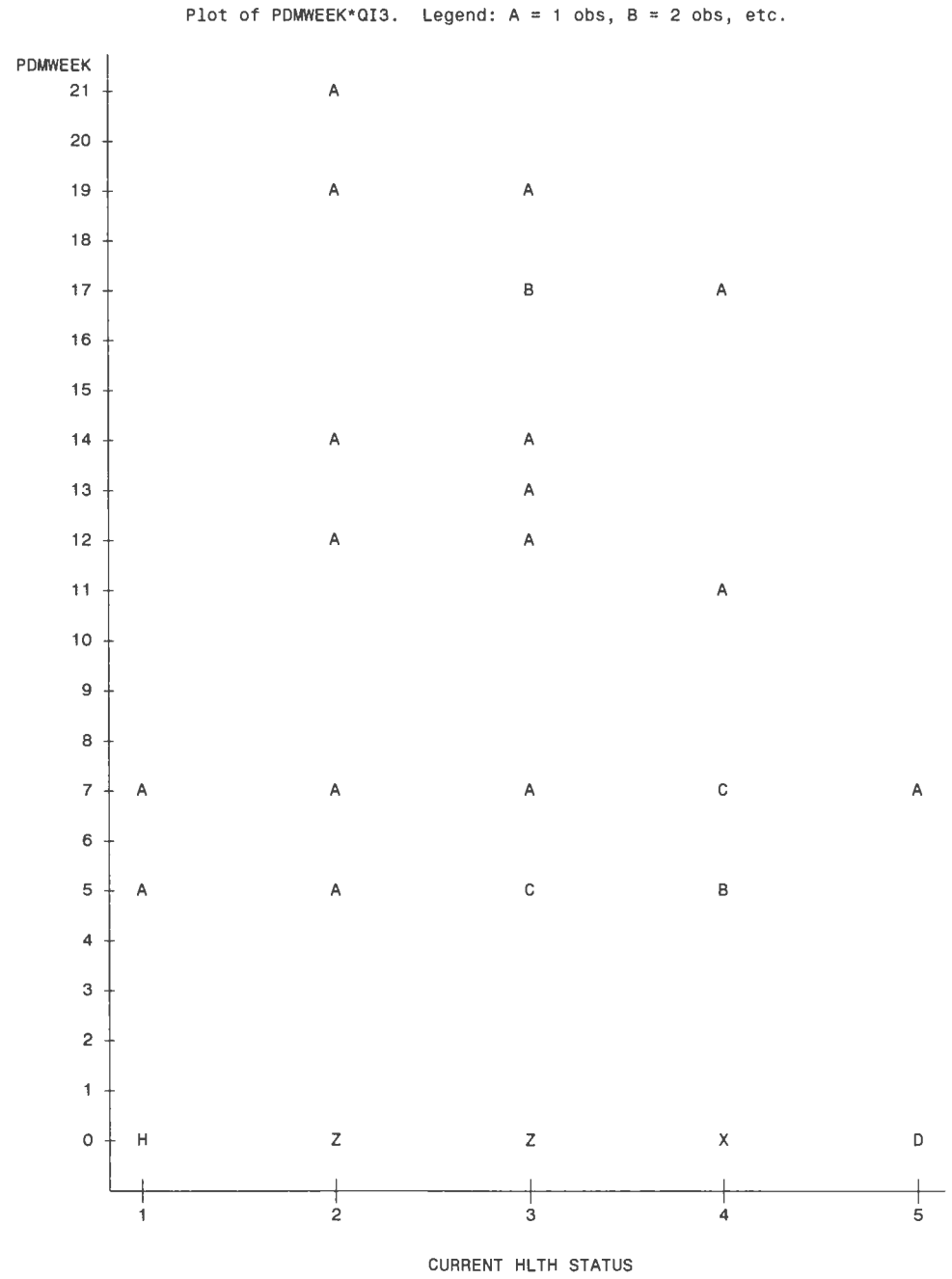
NOTE: 9 obs hidden.

11. Plot of Temptation to Skip Antiretroviral Medication on the Feeling Good Scale vs Current Health Status



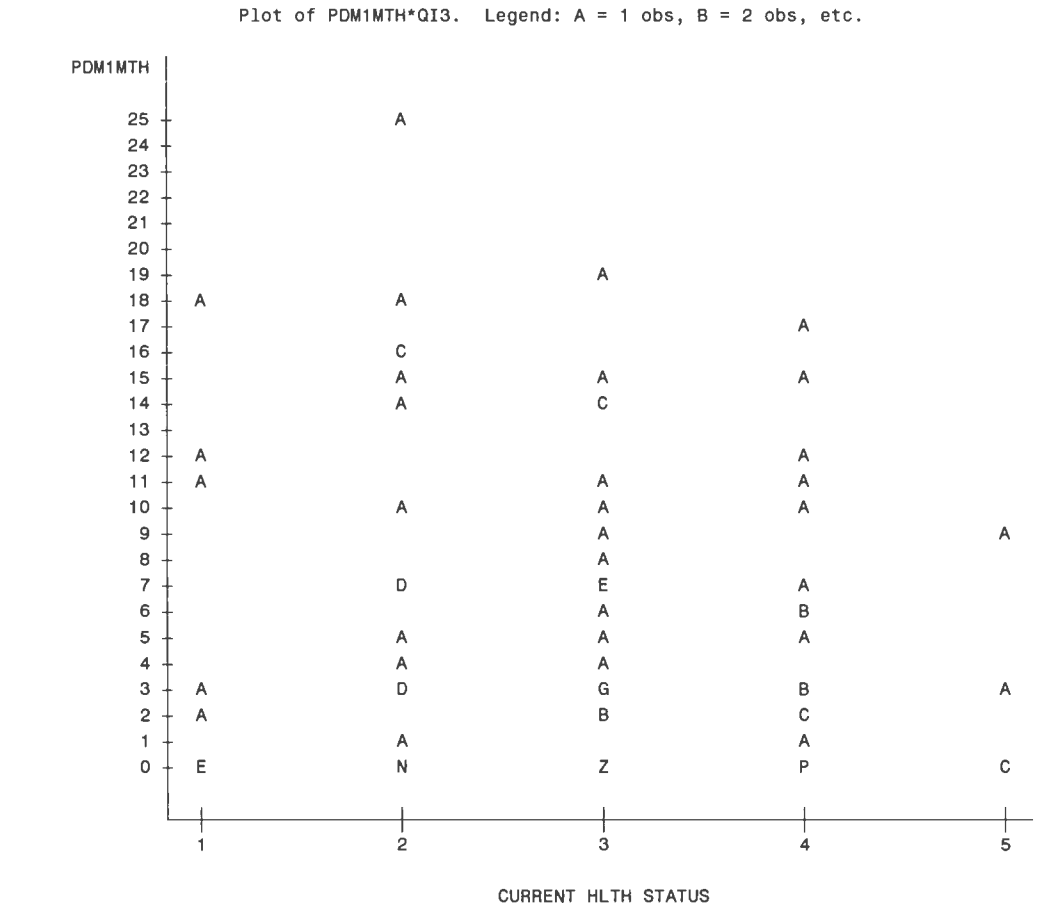
NOTE: 9 obs hidden.

12. Plot of Percent of Doses Missed in the past Week vs Current Health Status



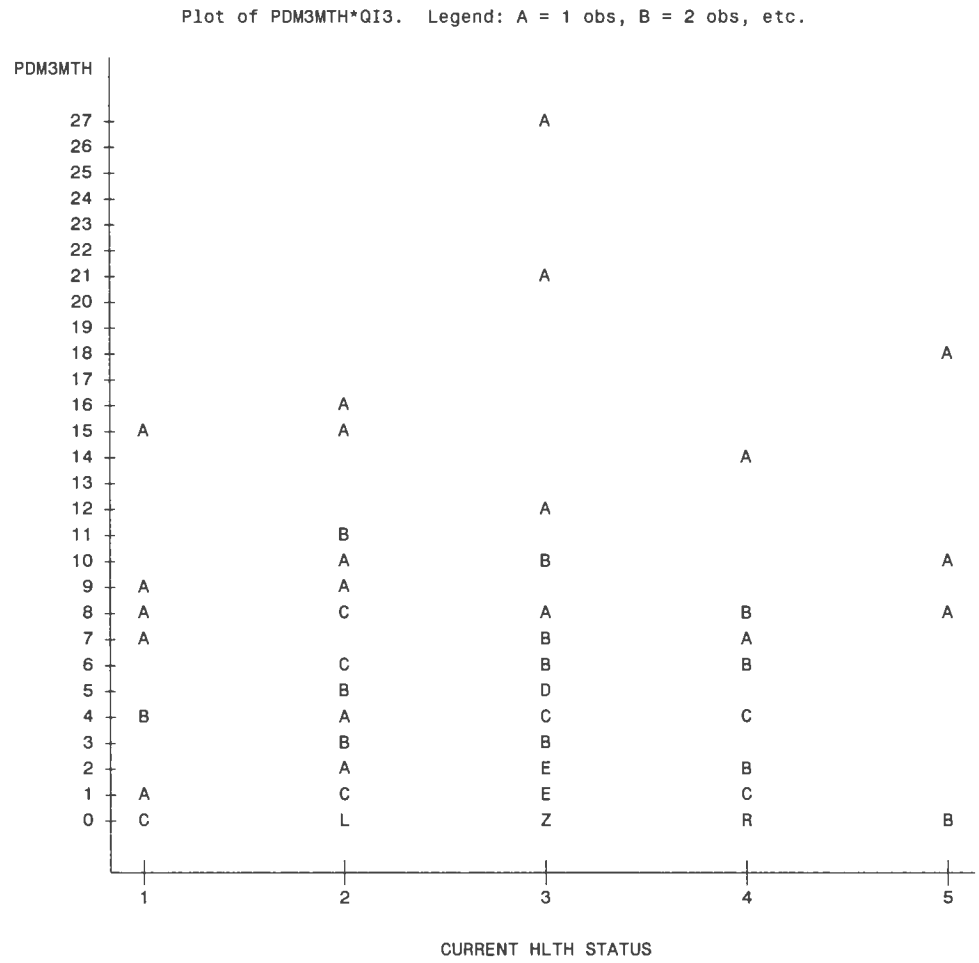
NOTE: 4 obs had missing values. 25 obs hidden.

13. Plot of Percent of Doses Missed in the past Month vs Current Health Status



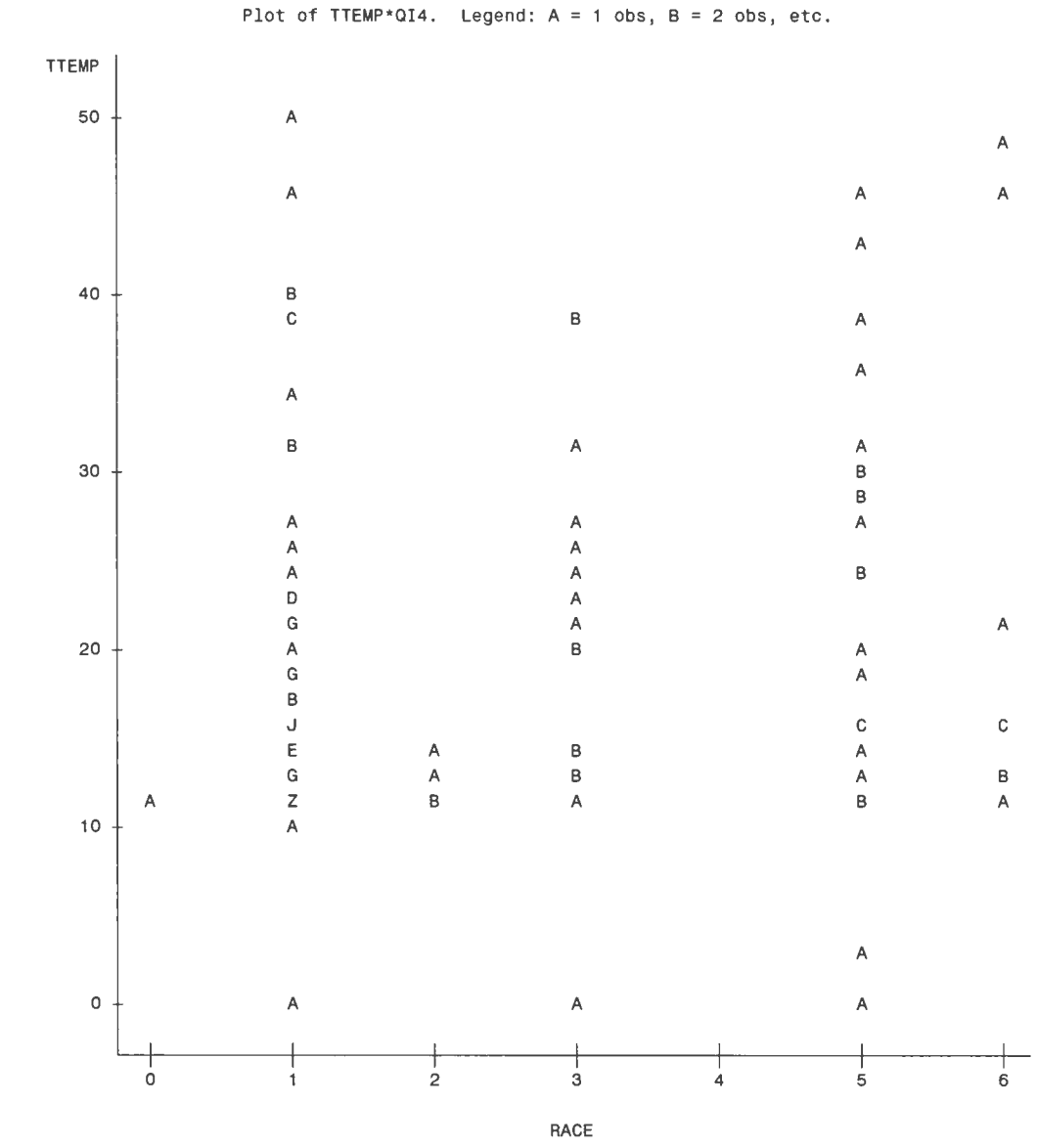
NOTE: 4 obs had missing values. 8 obs hidden.

14. Plot of Percent of Doses Missed in the past Three Months vs Current Health Status



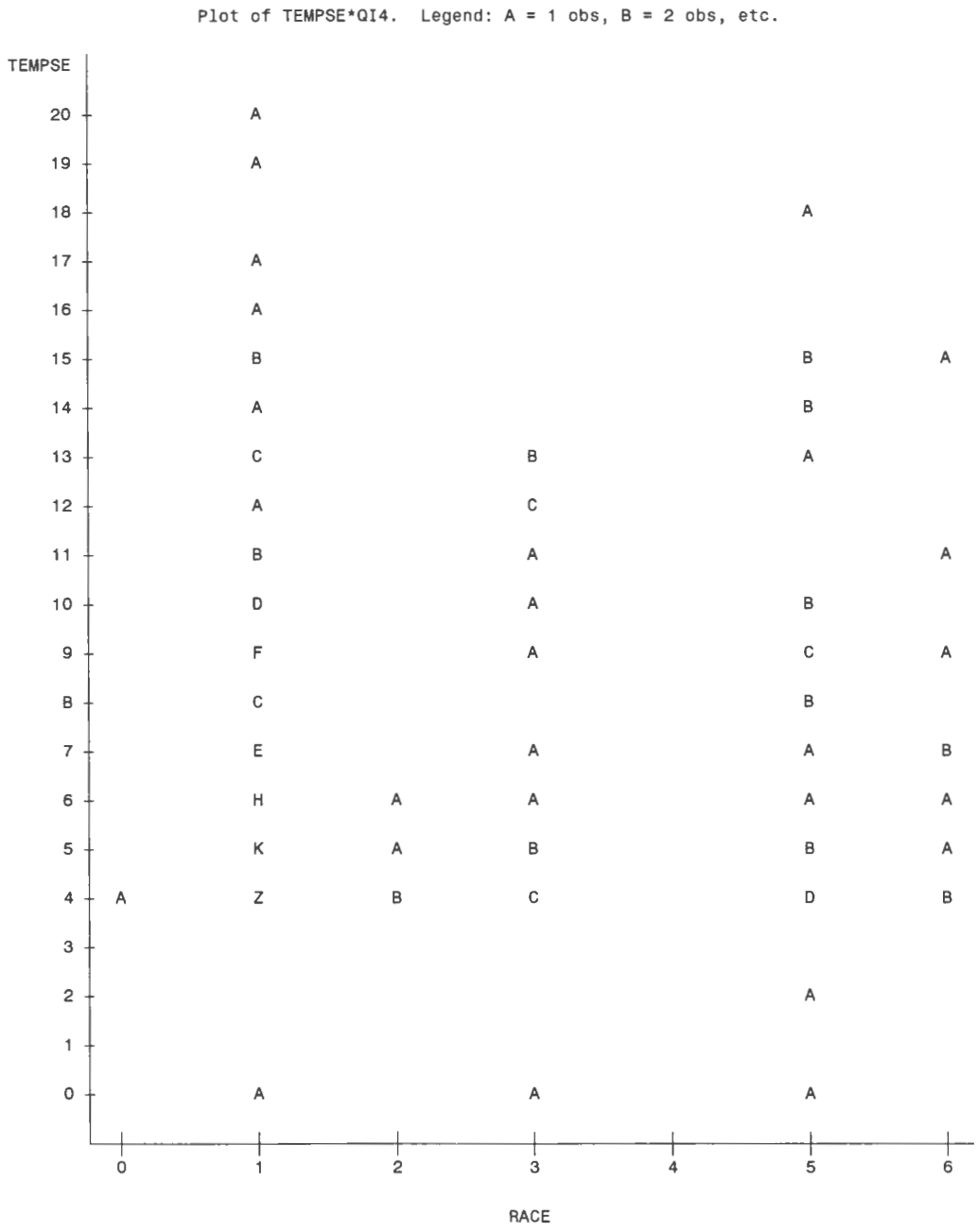
NOTE: 3 obs had missing values. 5 obs hidden.

15. Plot of Temptation to Skip Antiretroviral Medication on the Total Scale vs Race



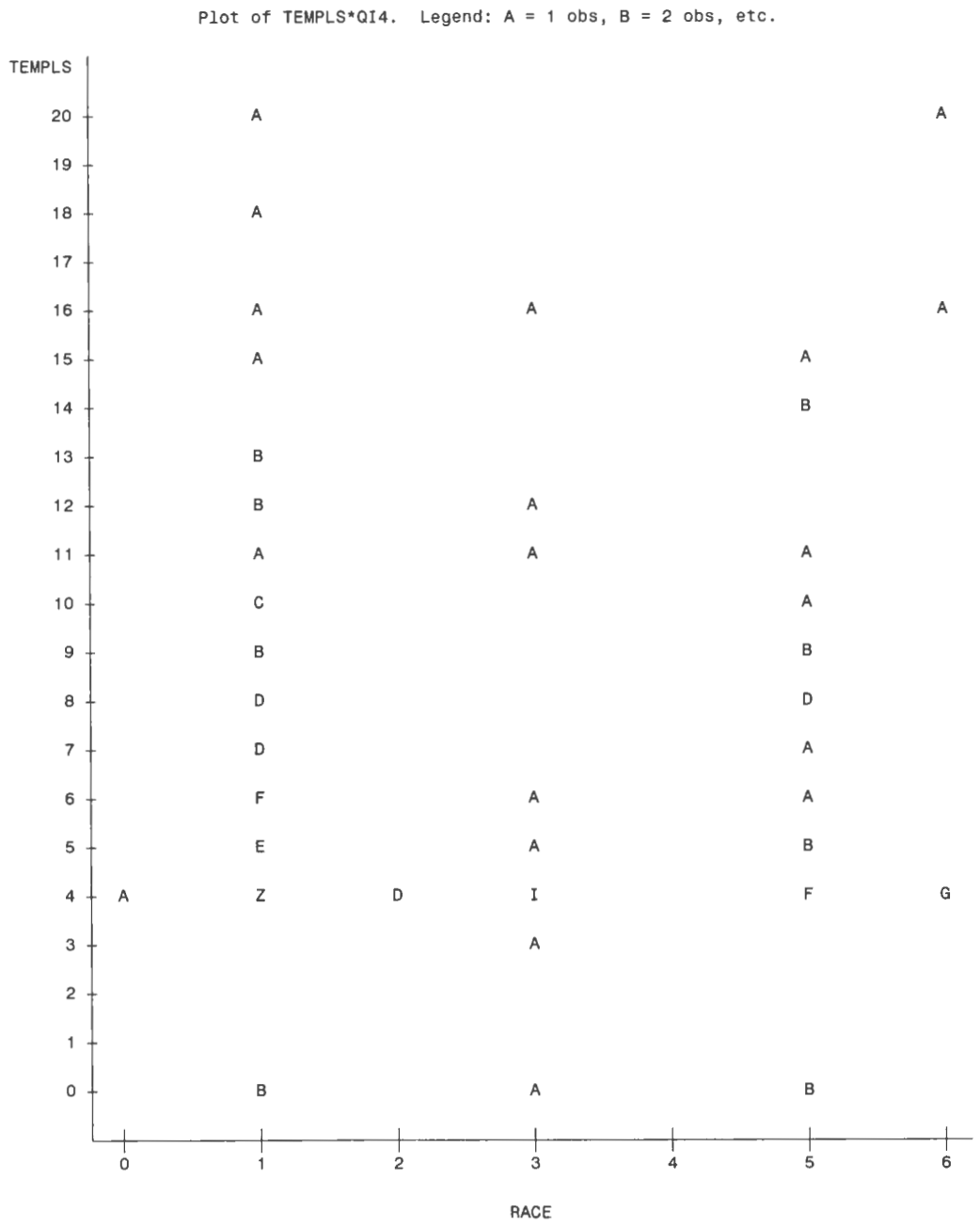
NOTE: 6 obs hidden.

16. Plot of Temptation to Skip Antiretroviral Medication on the Side Effects Scale vs Race



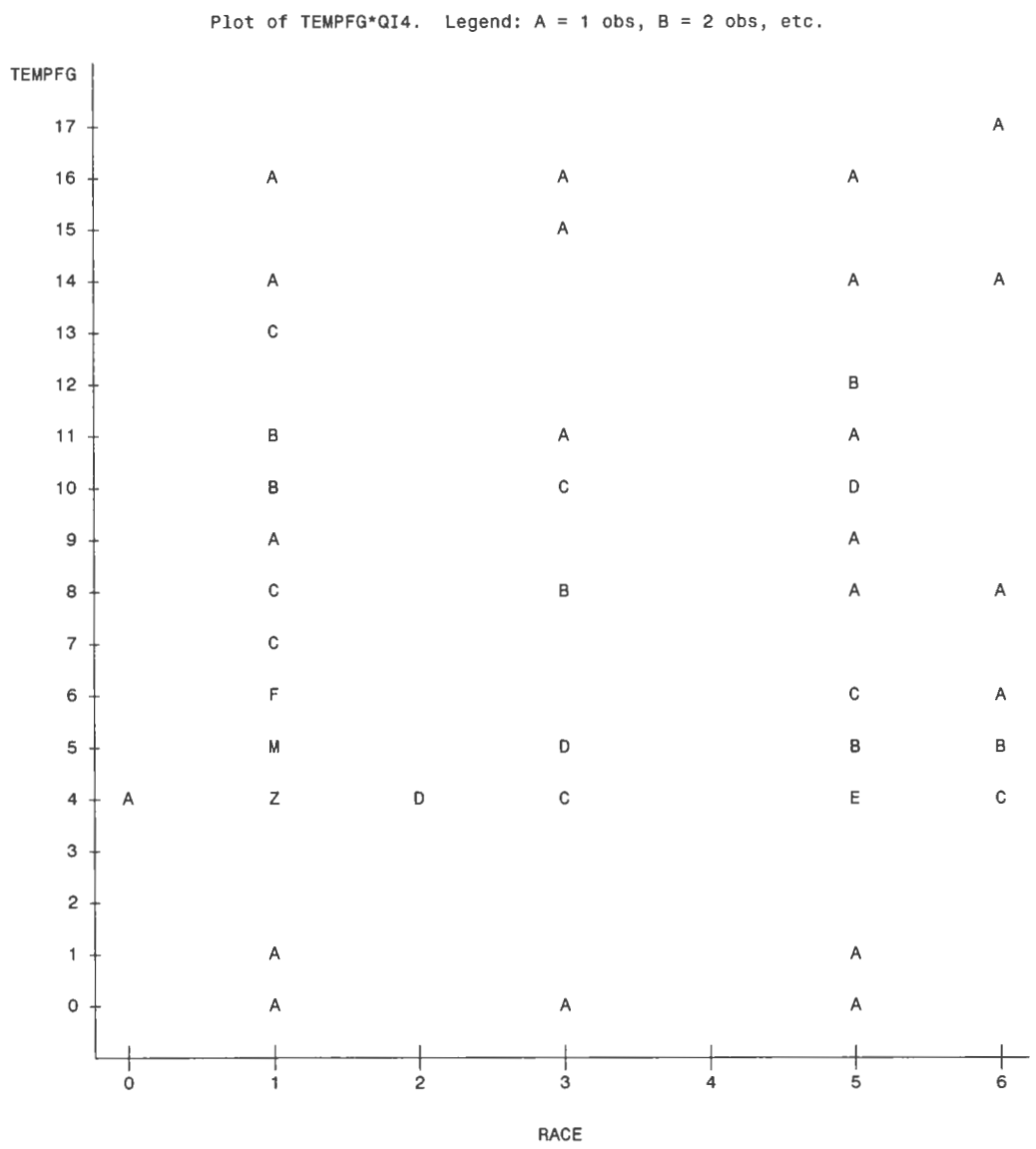
NOTE: 13 obs hidden.

17. Plot of Temptation to Skip Antiretroviral Medication on the Lack of Support Scale vs Race



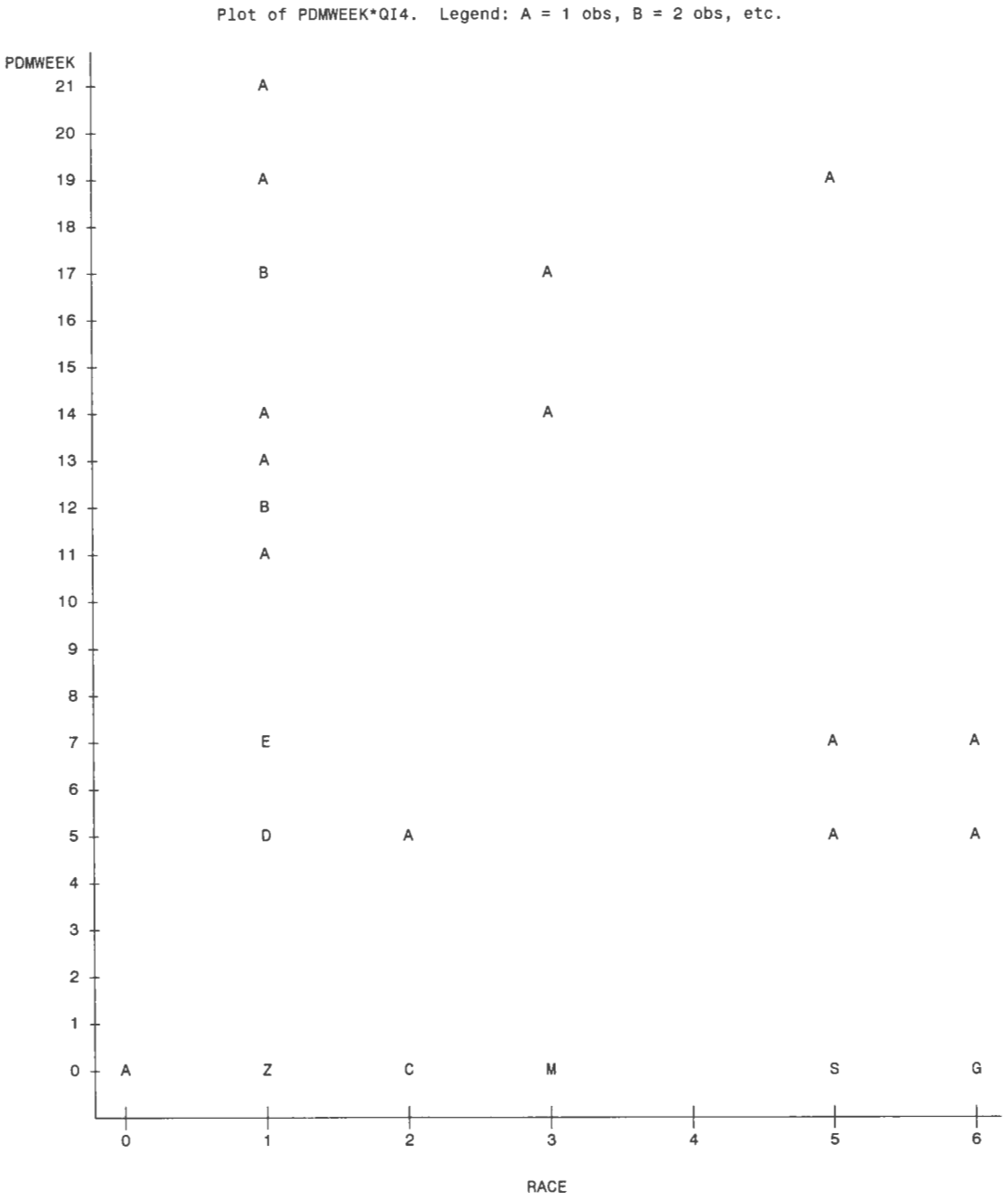
NOTE: 29 obs hidden.

18. Plot of Temptation to Skip Antiretroviral Medication on the Feeling Good Scale vs Race



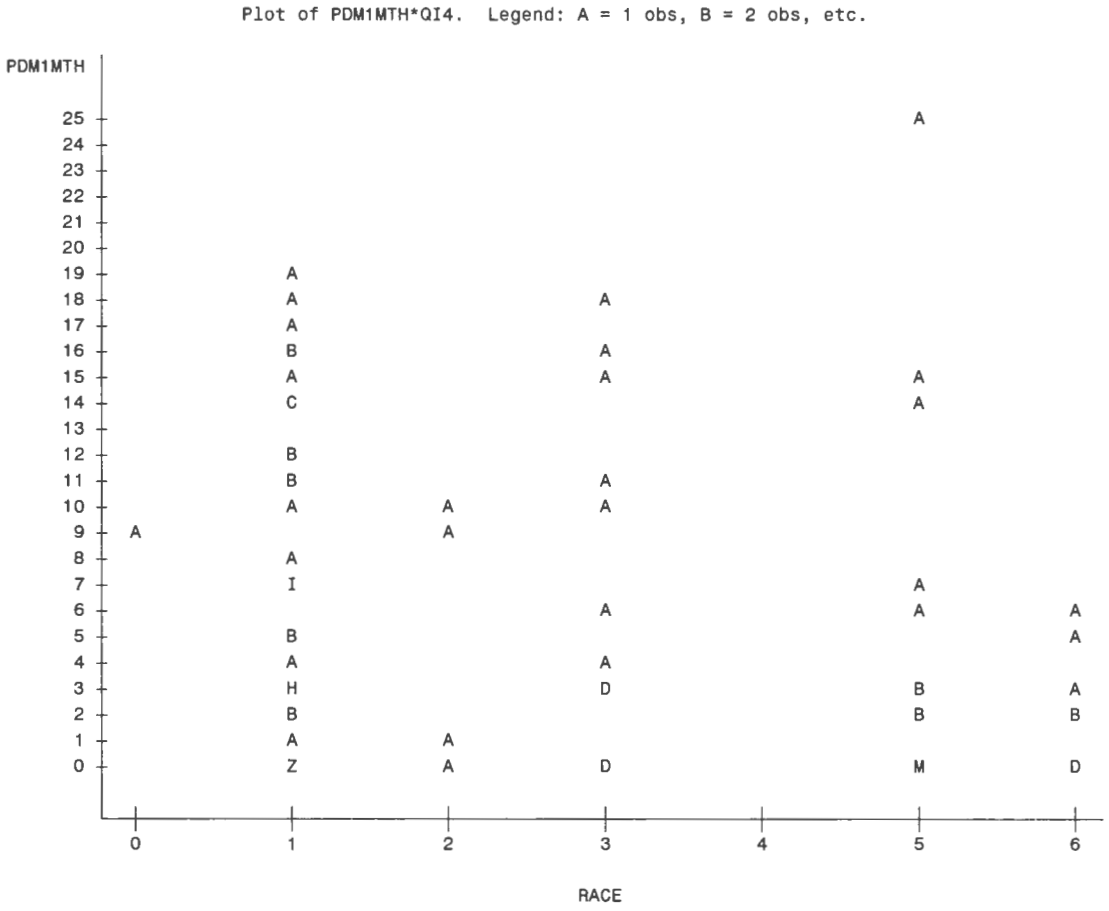
NOTE: 27 obs hidden.

19. Plot of Percent of Doses Missed in the past Week vs Race



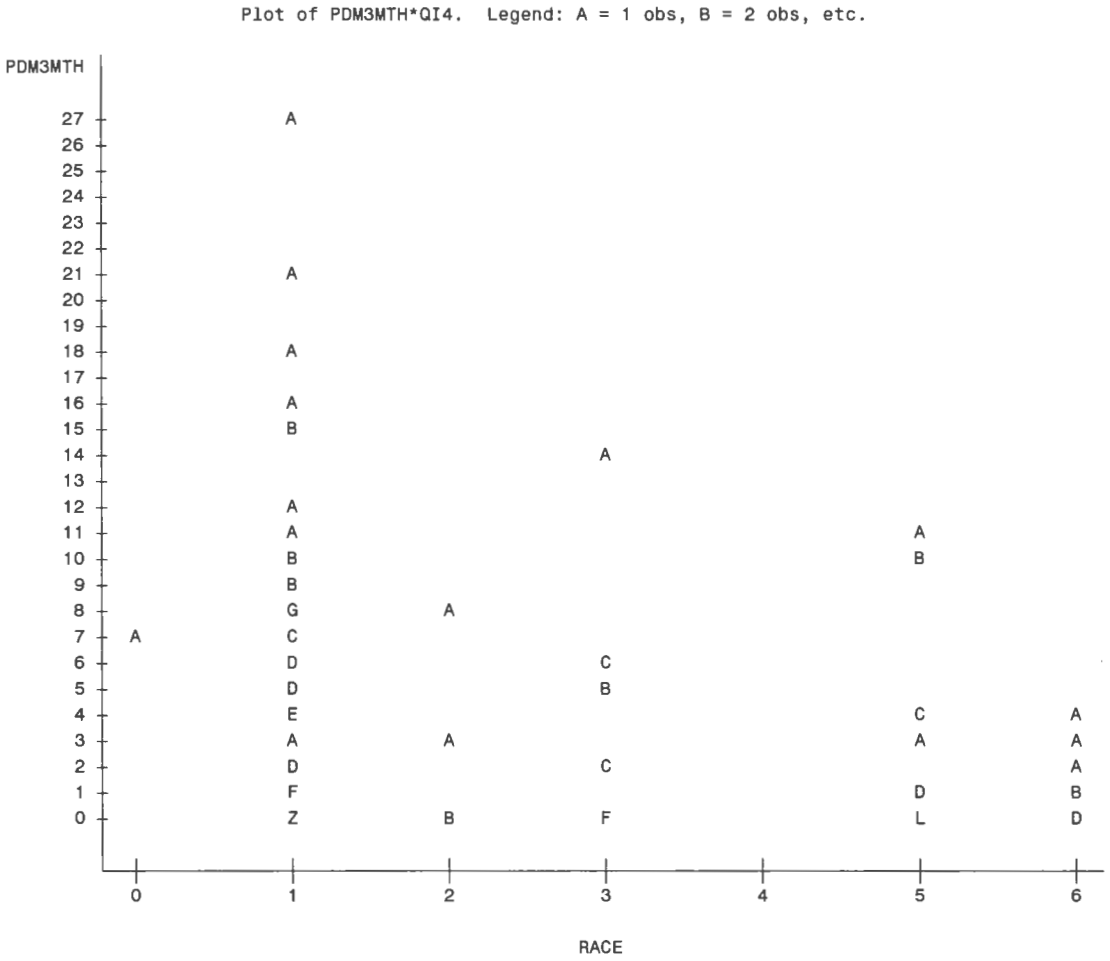
NOTE: 4 obs had missing values. 44 obs hidden.

20. Plot of Percent of Doses Missed in the past Month vs Race



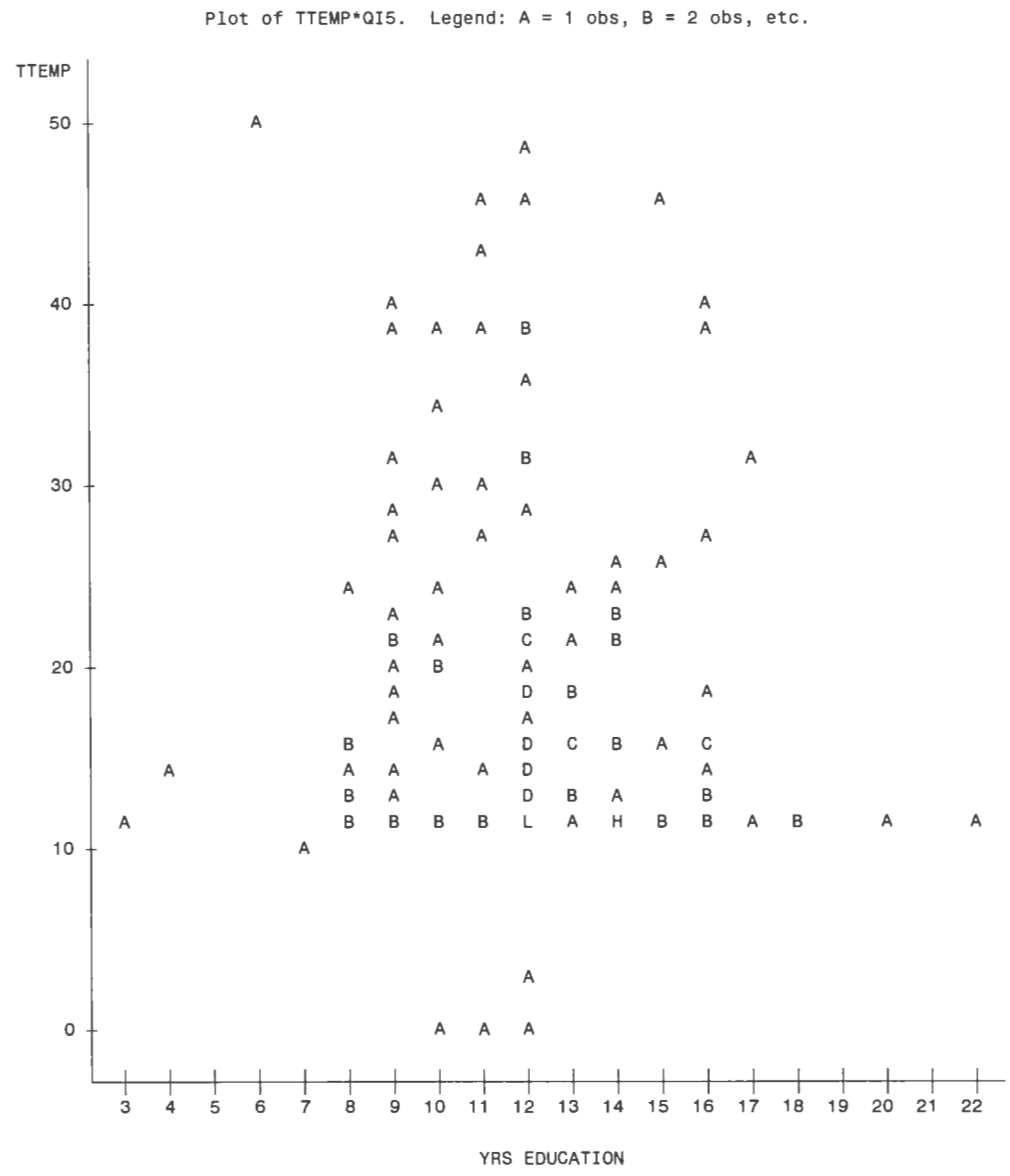
NOTE: 4 obs had missing values. 24 obs hidden.

21. Plot of Percent of Doses Missed in the past Three Months vs Race



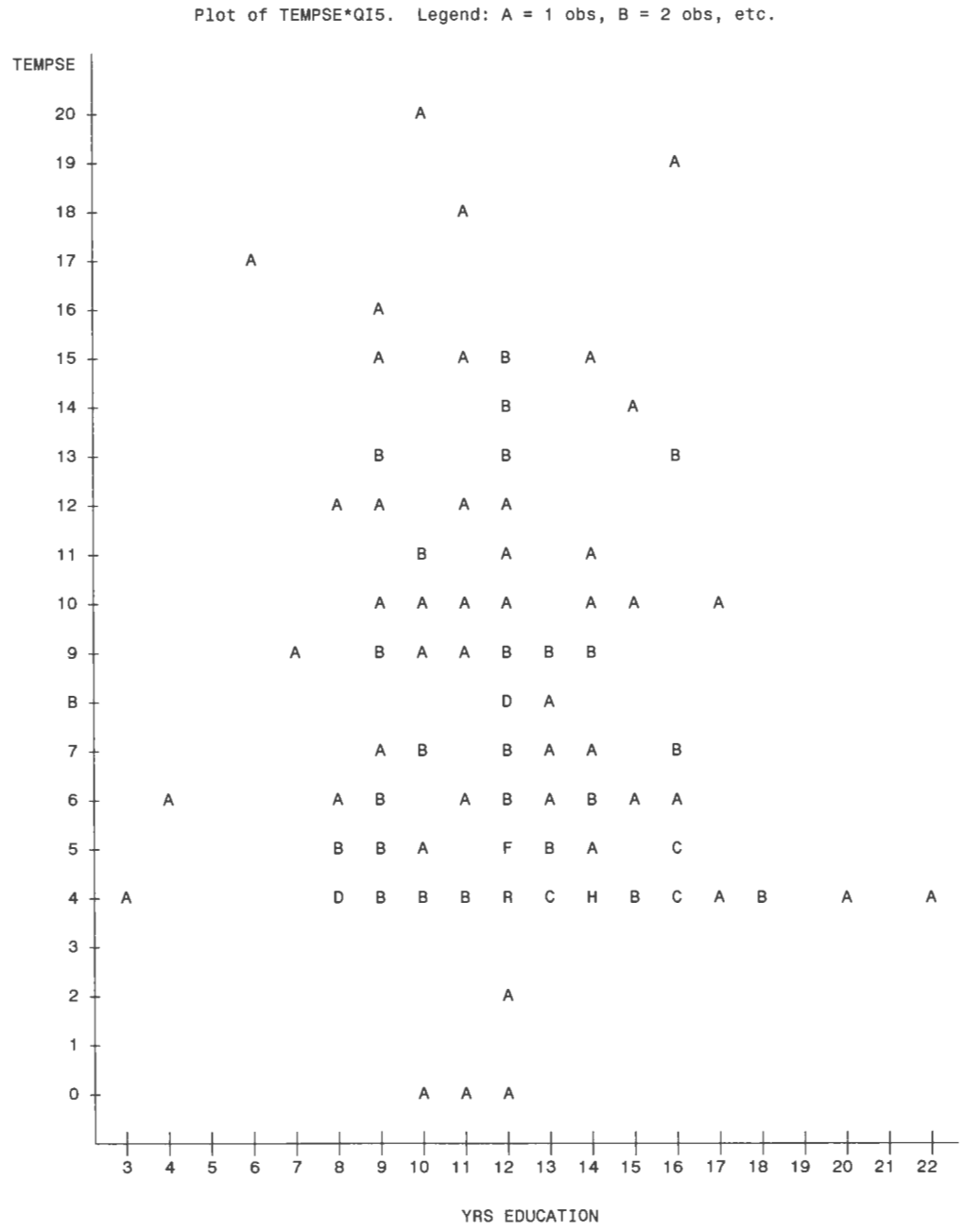
NOTE: 3 obs had missing values. 16 obs hidden.

22. Plot of Temptation to Skip Antiretroviral Medication on the Total Scale vs Years of Education



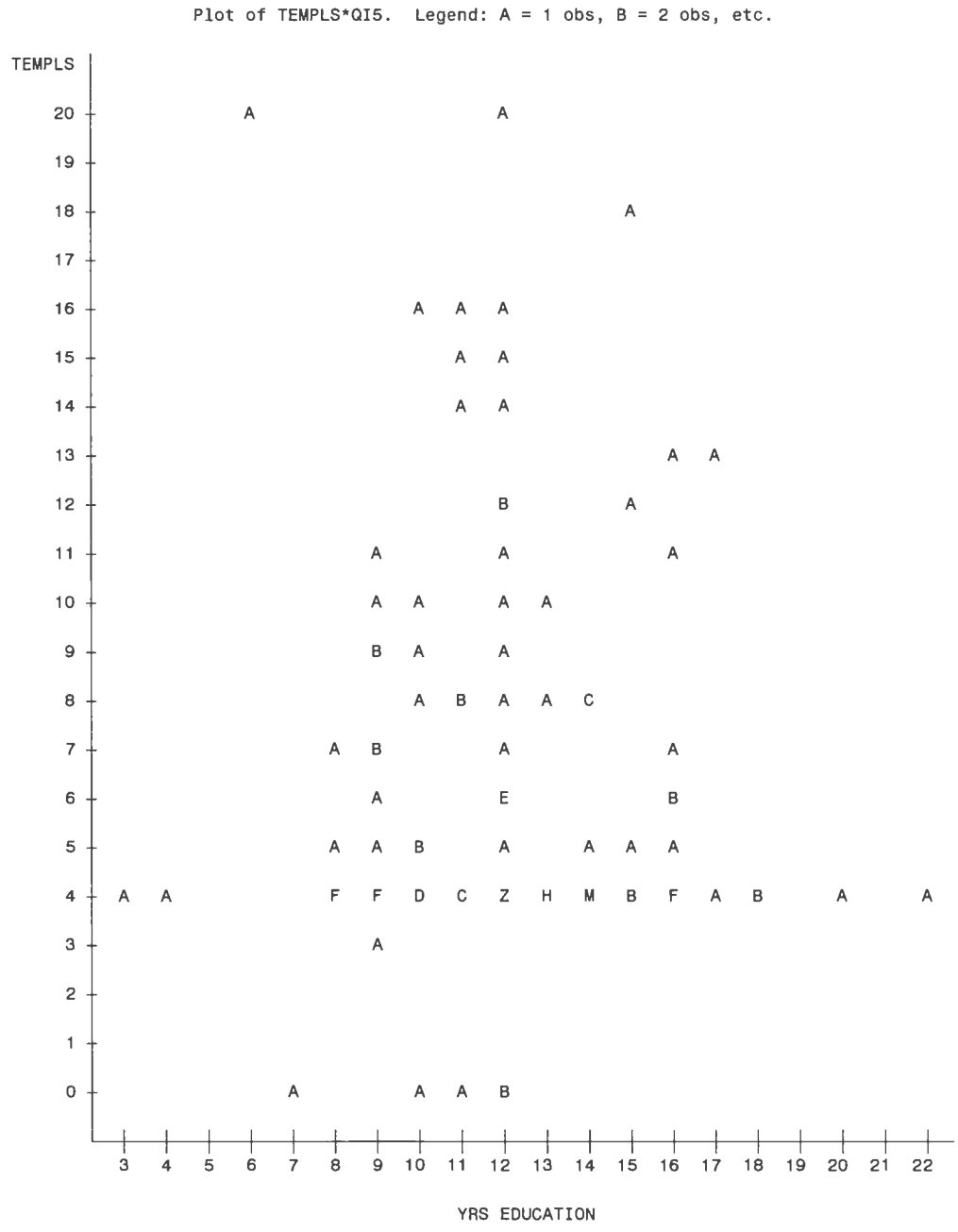
NOTE: 1 obs had missing values.

23. Plot of Temptation to Skip Antiretroviral Medication on the Side Effects Scale vs Years of Education



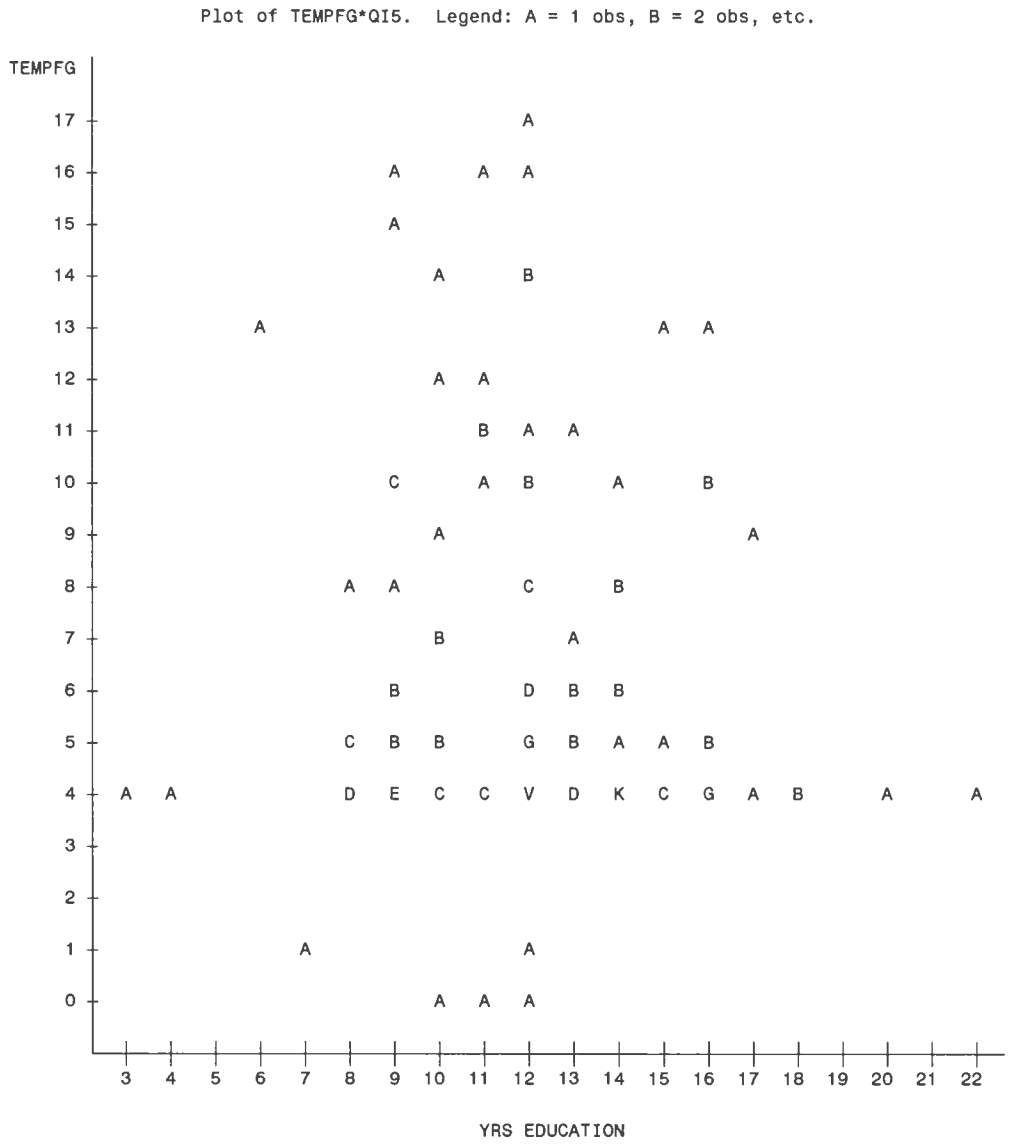
NOTE: 1 obs had missing values.

24. Plot of Temptation to Skip Antiretroviral Medication on the Lack of Support Scale vs Years of Education



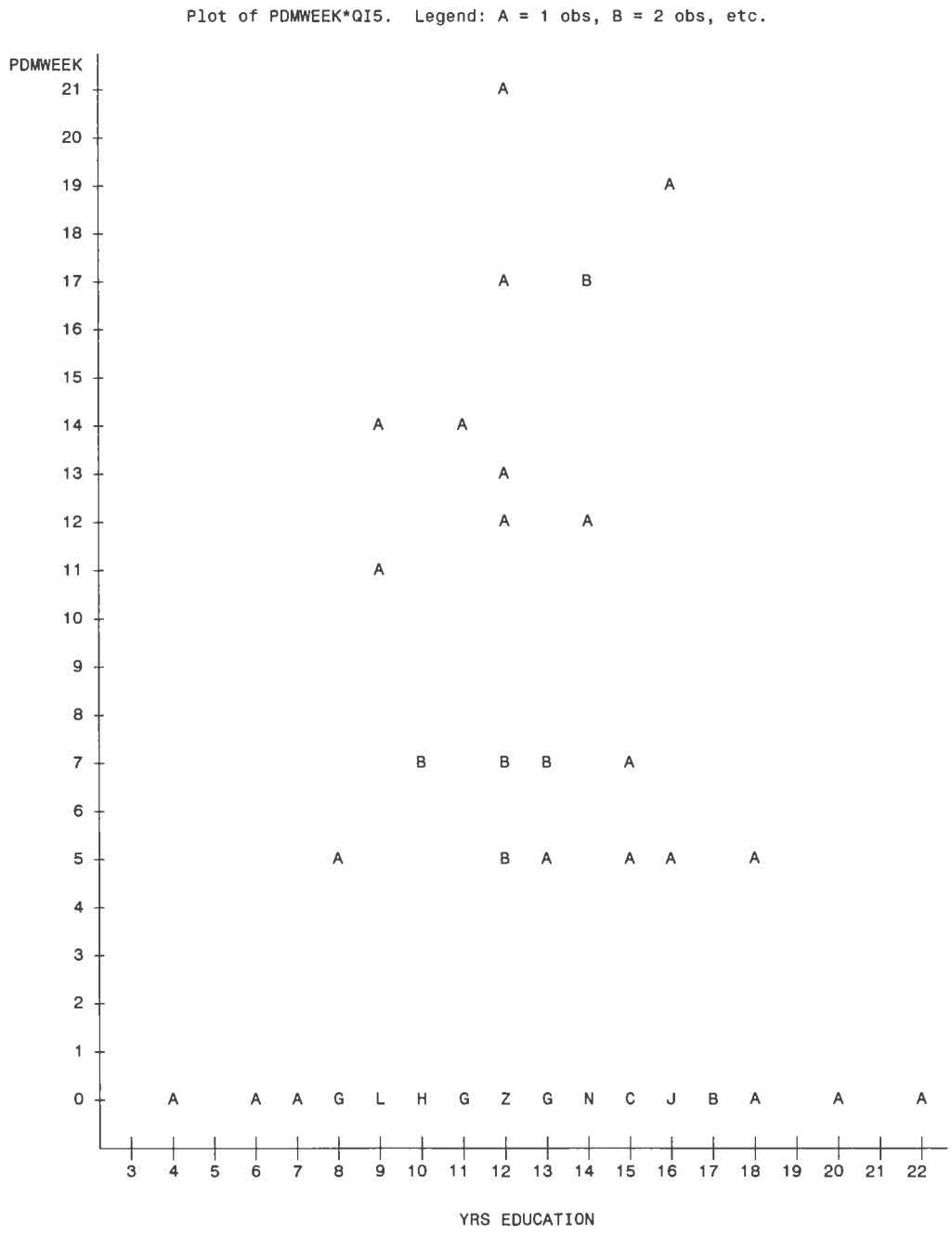
NOTE: 1 obs had missing values.

25. Plot of Temptation to Skip Antiretroviral Medication on the Feeling good Scale vs Years of Education



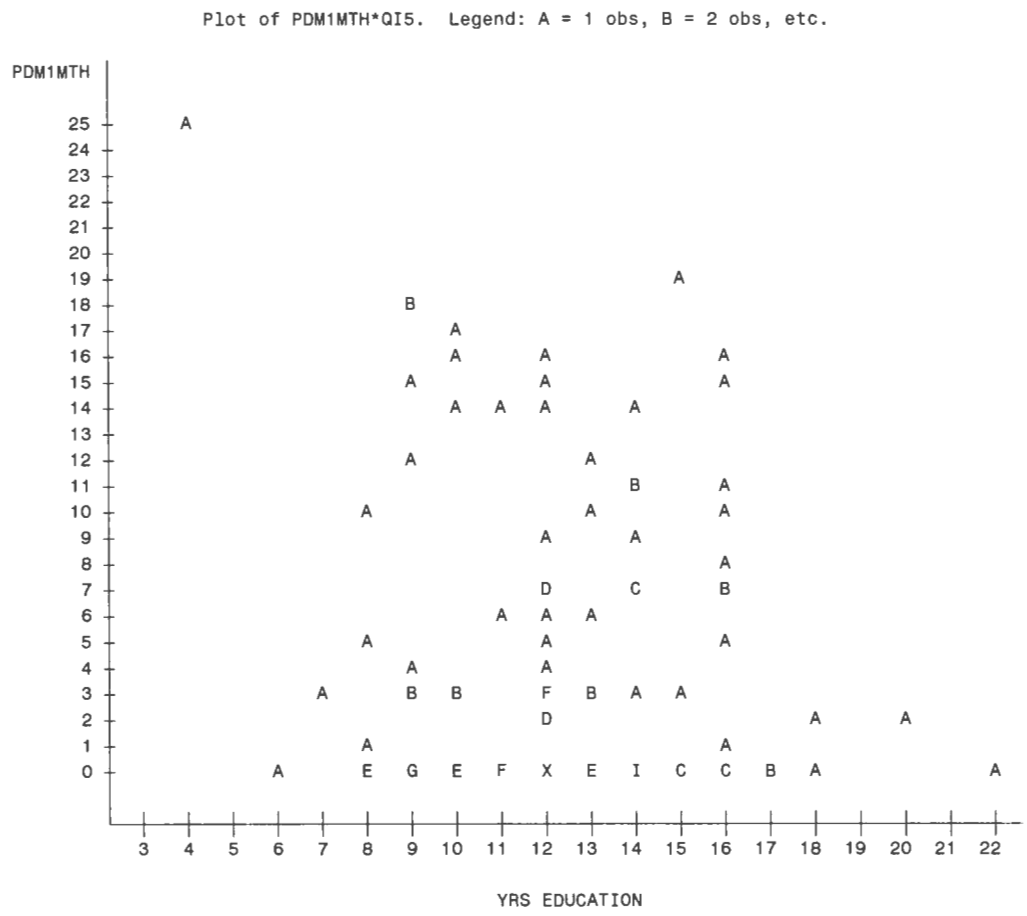
NOTE: 1 obs had missing values.

26. Plot of Percent of Doses Missed in the past Week vs Years of Education



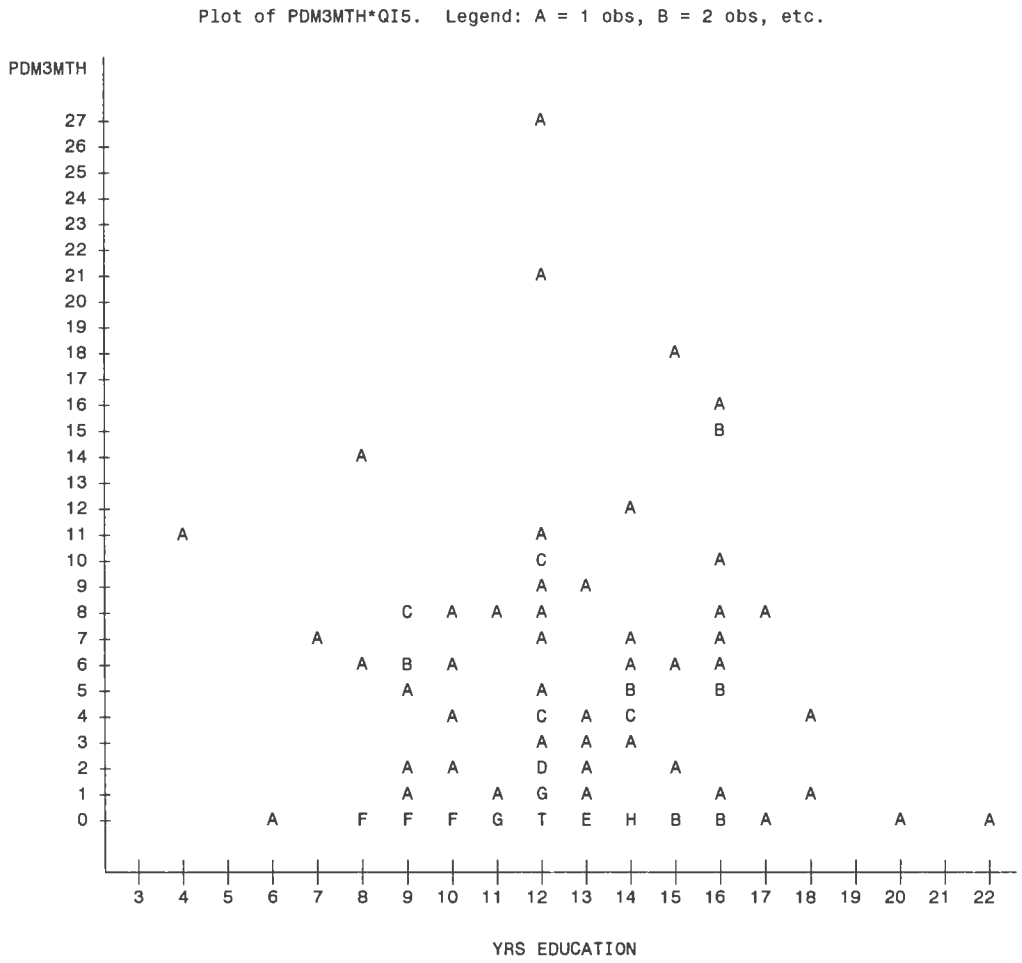
NOTE: 5 obs had missing values. 11 obs hidden.

27. Plot of Percent of Doses Missed in the past Month vs Years of Education



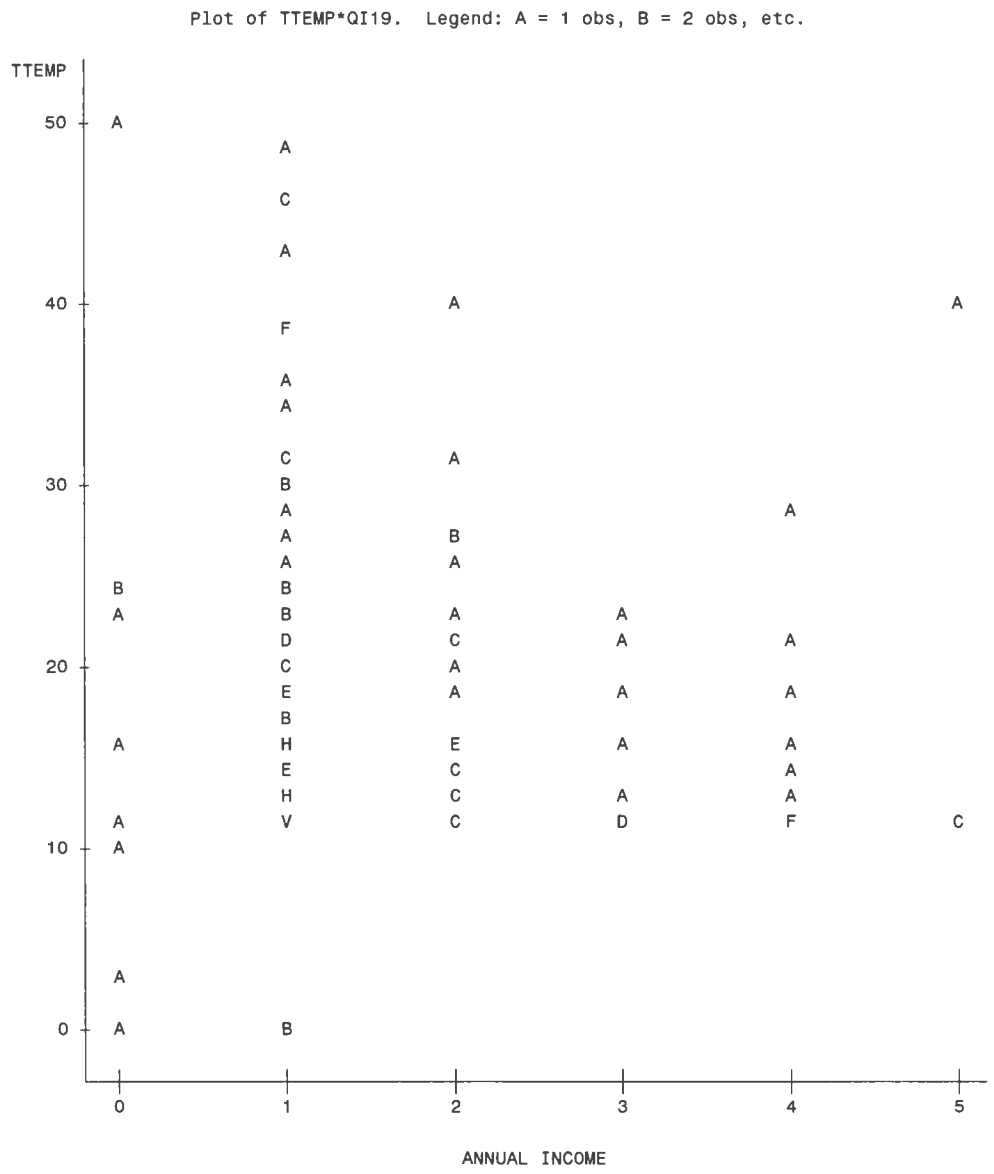
NOTE: 5 obs had missing values.

28. Plot of Percent of Doses Missed in past Three Months vs Years of Education

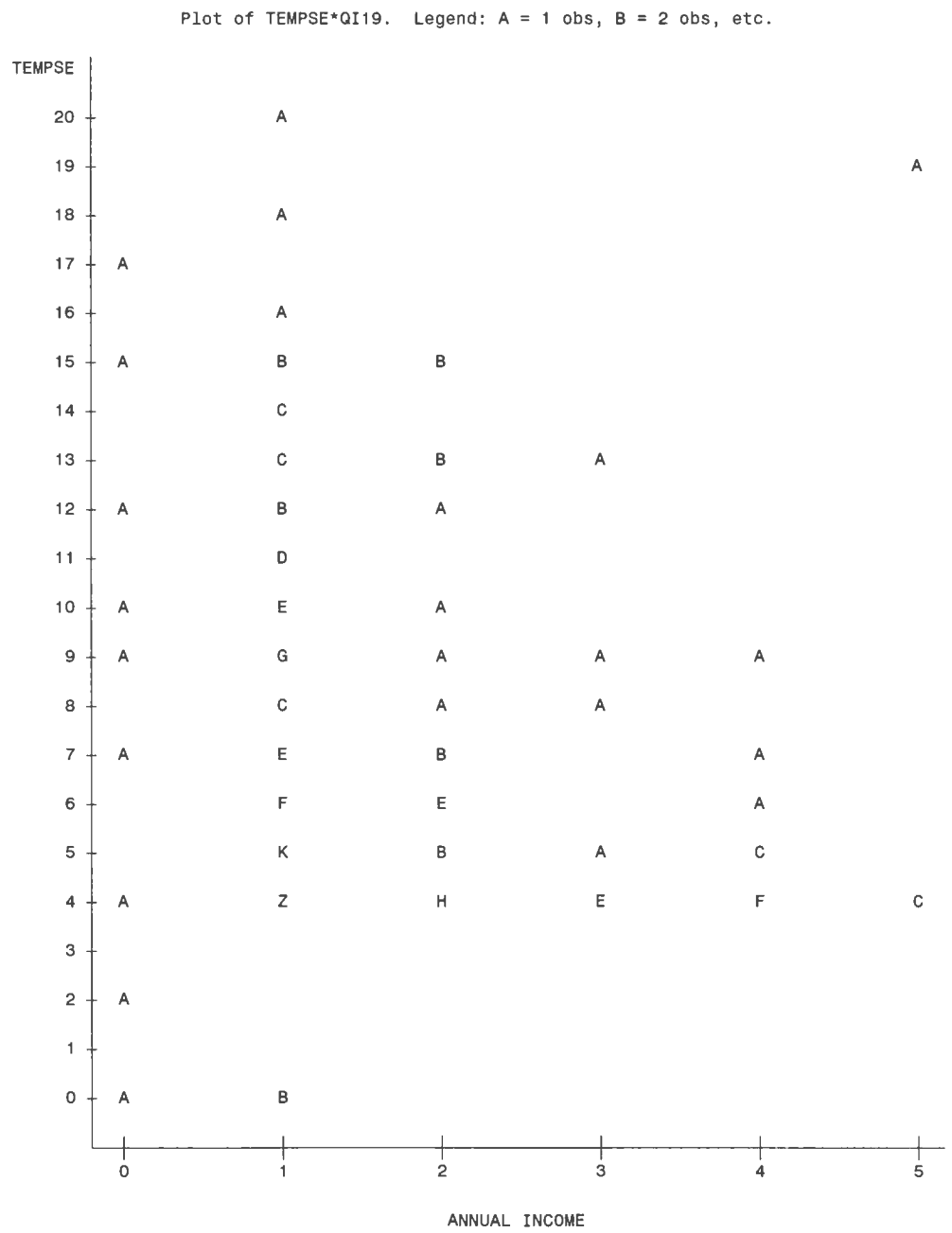


NOTE: 4 obs had missing values.

29. Plot of Temptation to Skip Antiretroviral Medication on the Total Scale vs Annual Income

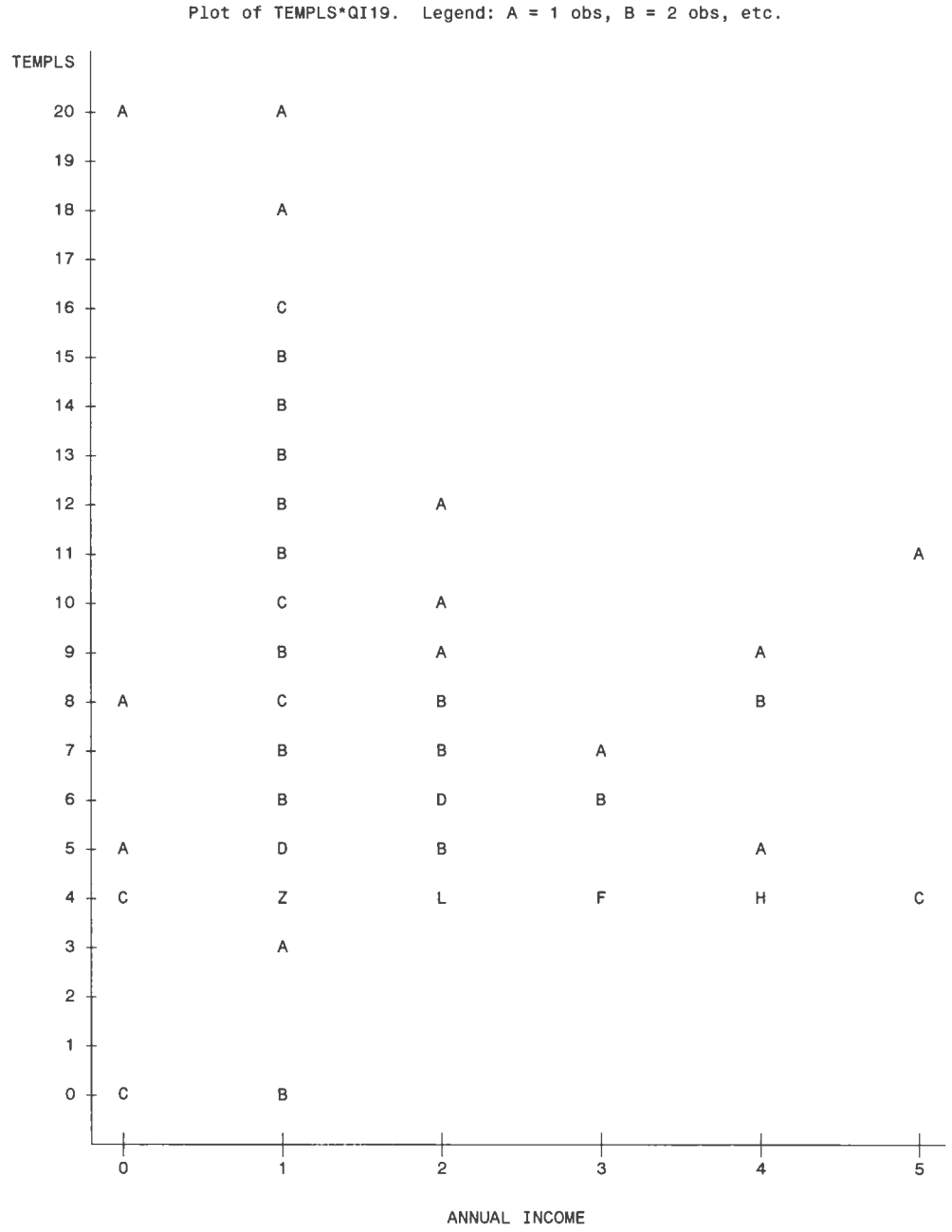


30. Plot of Temptation to Skip Antiretroviral Medication on the Side Effects Scale vs Annual Income



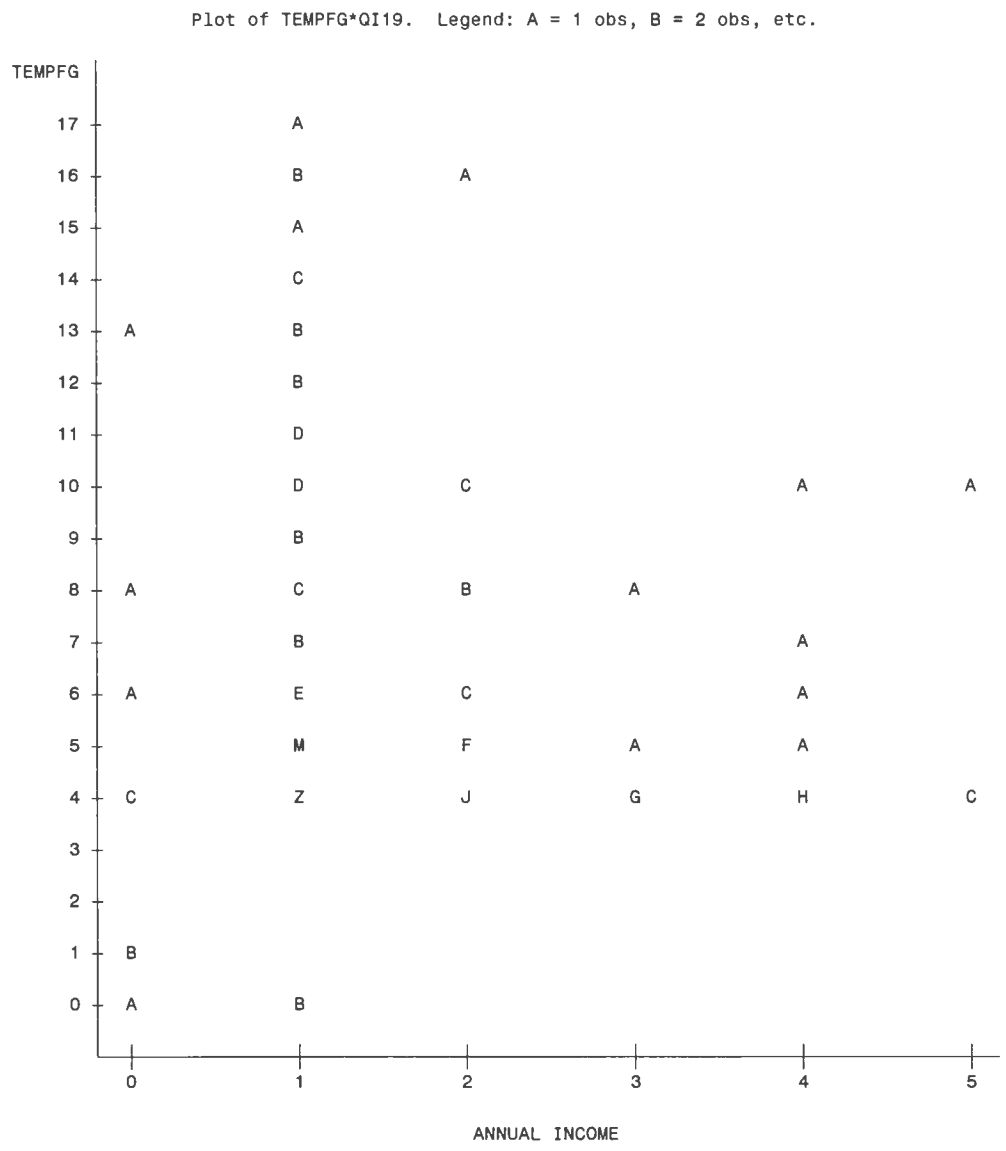
NOTE: 2 obs hidden.

31. Plot of Temptation to Skip Antiretroviral Medication on the Lack of Support Scale vs Annual Income



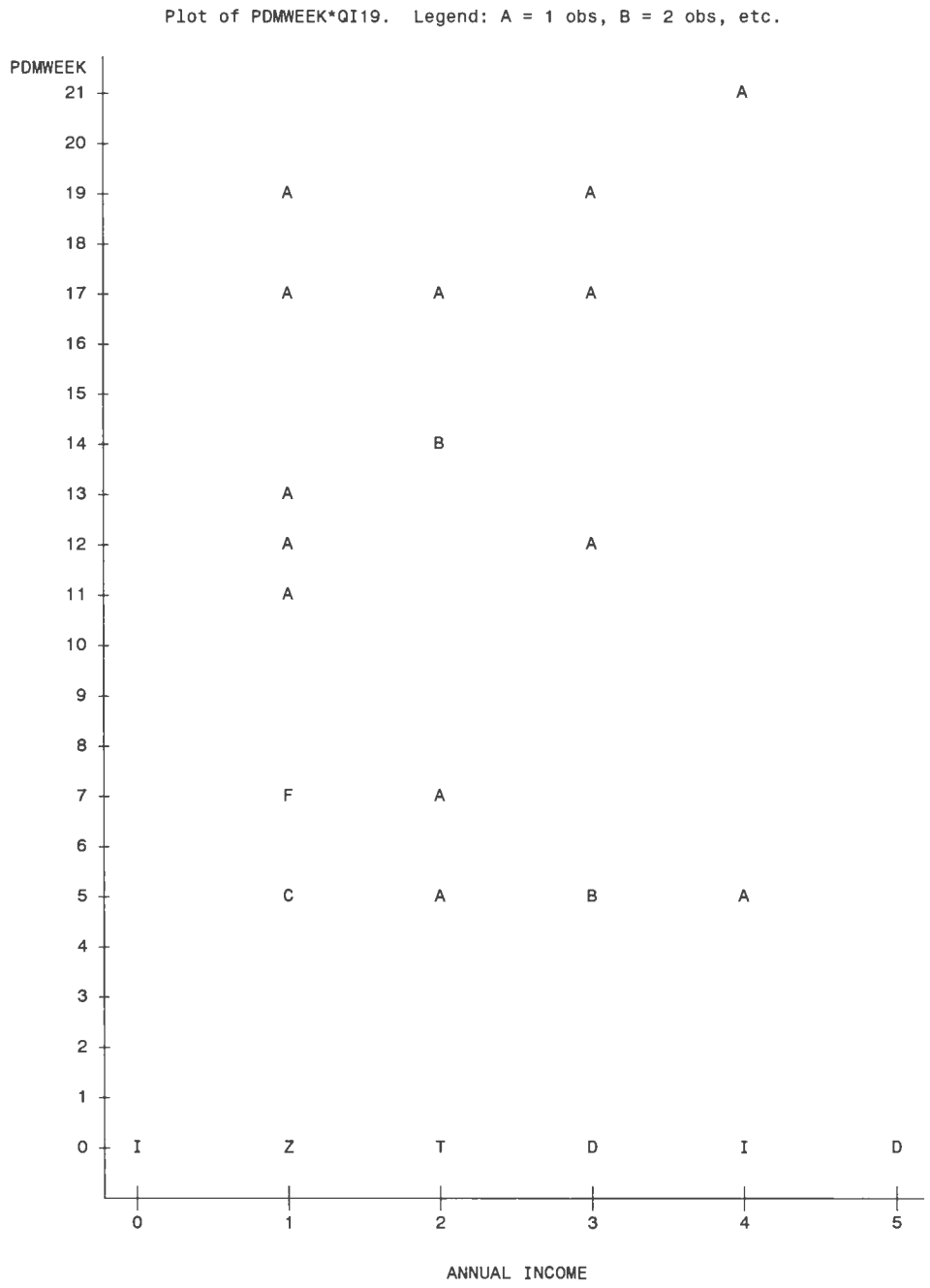
NOTE: 24 obs hidden.

32. Plot of Temptation to Skip Antiretroviral Medication on the Feeling Good Scale vs Annual Income



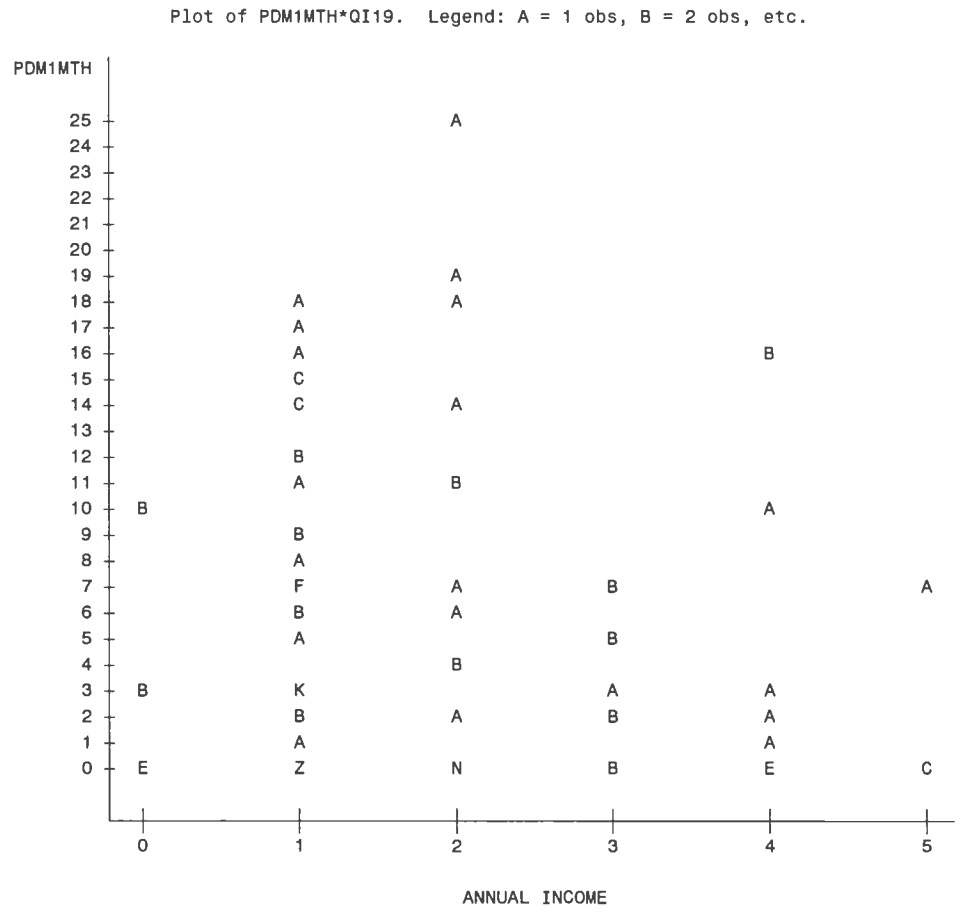
NOTE: 12 obs hidden.

33. Plot of Percent of Doses Missed in the past Week vs Annual Income



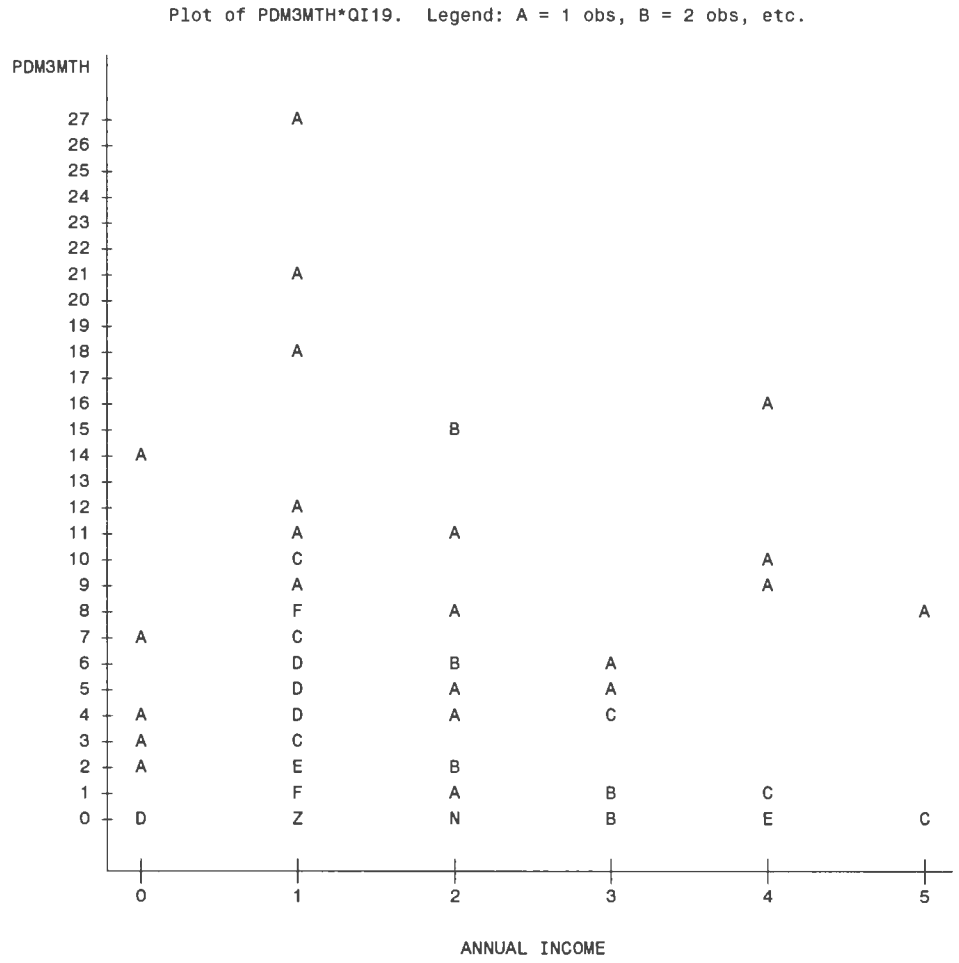
NOTE: 4 obs had missing values. 41 obs hidden.

34. Plot of Percent of Doses Missed in the past Month vs Annual Income



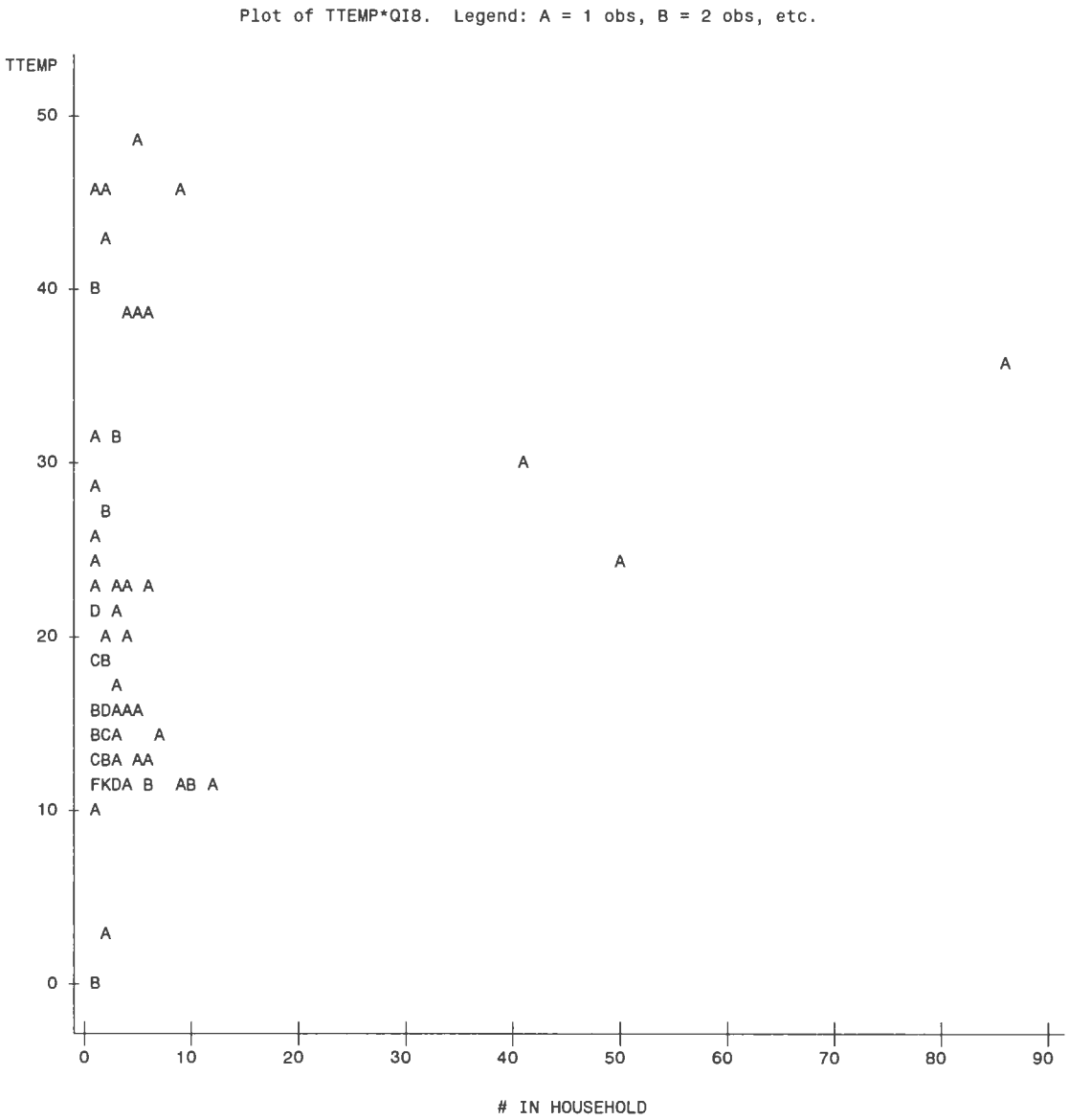
NOTE: 4 obs had missing values. 17 obs hidden.

35. Plot of Percent of Doses Missed in past Three Months vs Annual Income



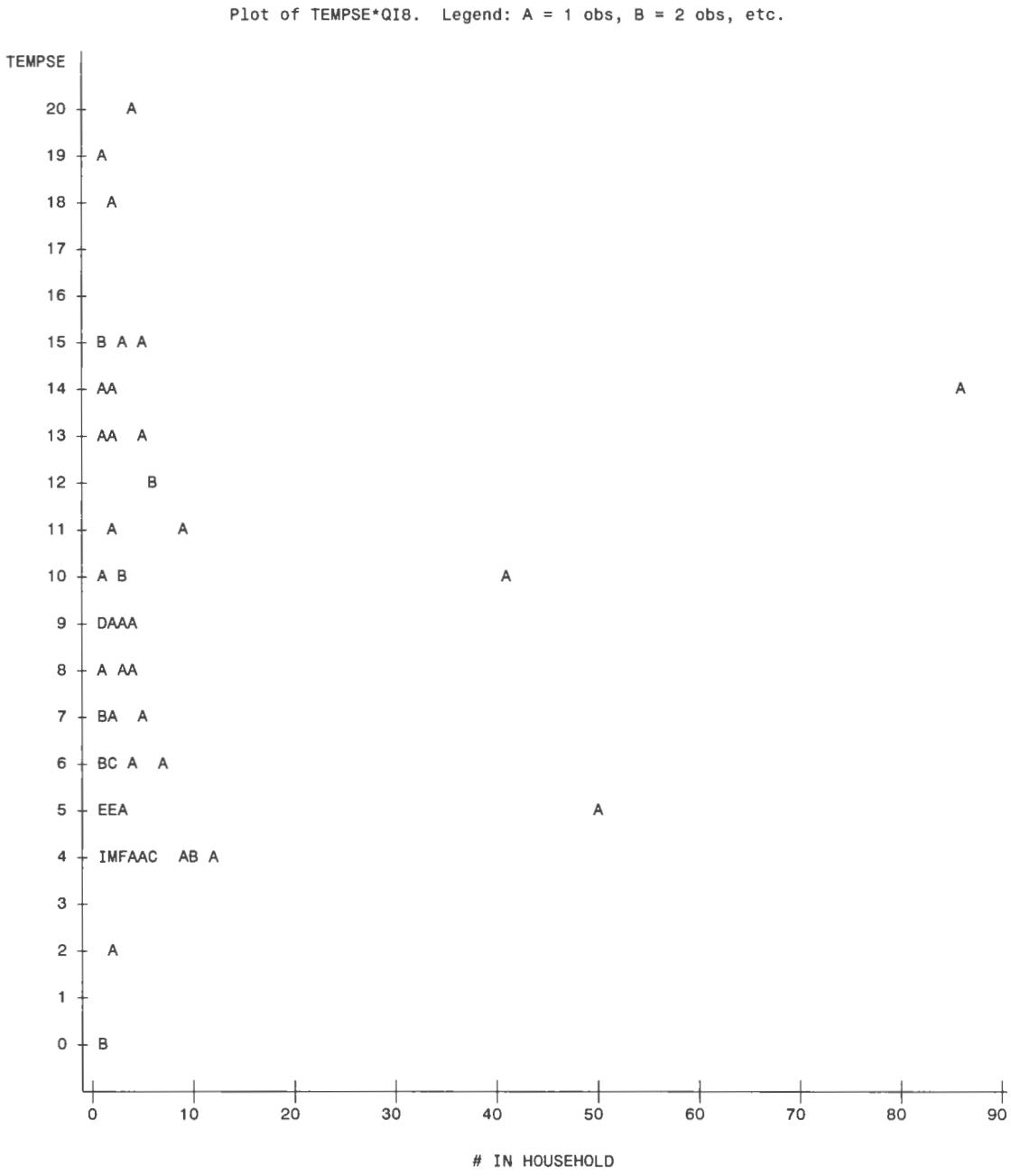
NOTE: 3 obs had missing values. 12 obs hidden.

36. Plot of Temptation to Skip Antiretroviral Medication on the Total Scale vs Persons in Household



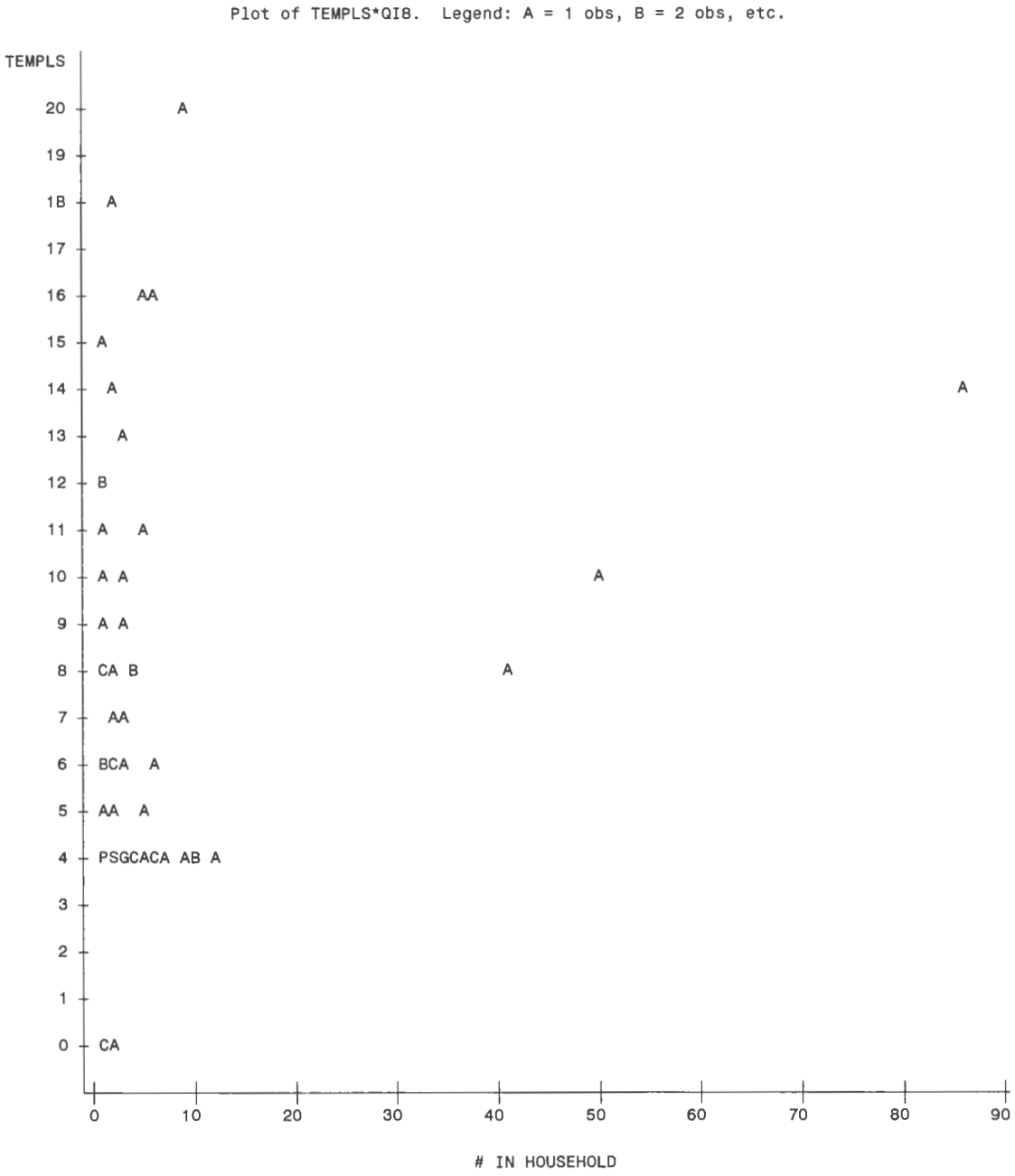
NOTE: 49 obs had missing values.

37. Plot of Temptation to Skip Antiretroviral Medication on the Side Effects Scale vs Persons in Household



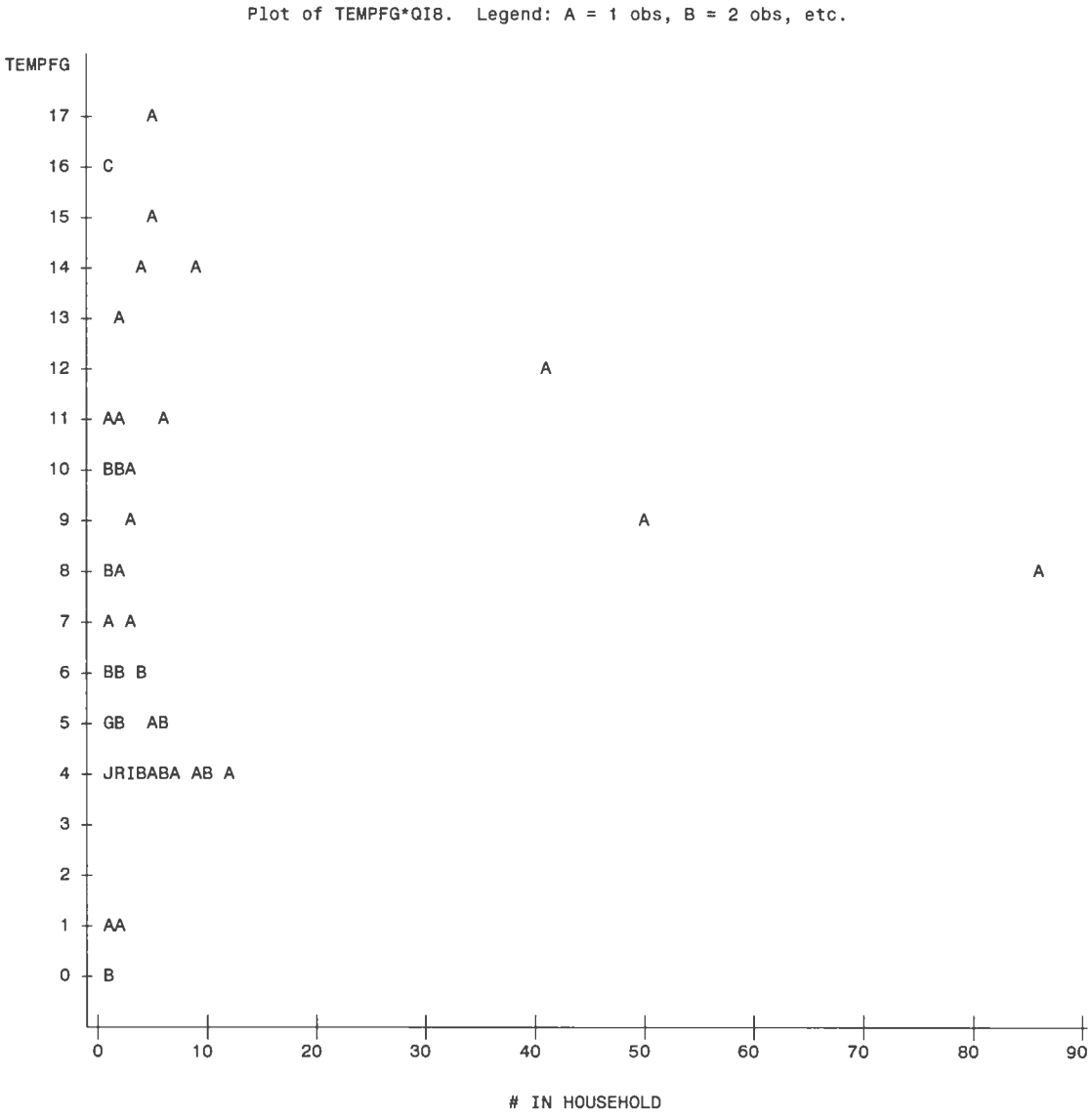
NOTE: 49 obs had missing values.

38. Plot of Temptation to Skip Antiretroviral Medication on the Lack of Support Scale vs Persons in Household



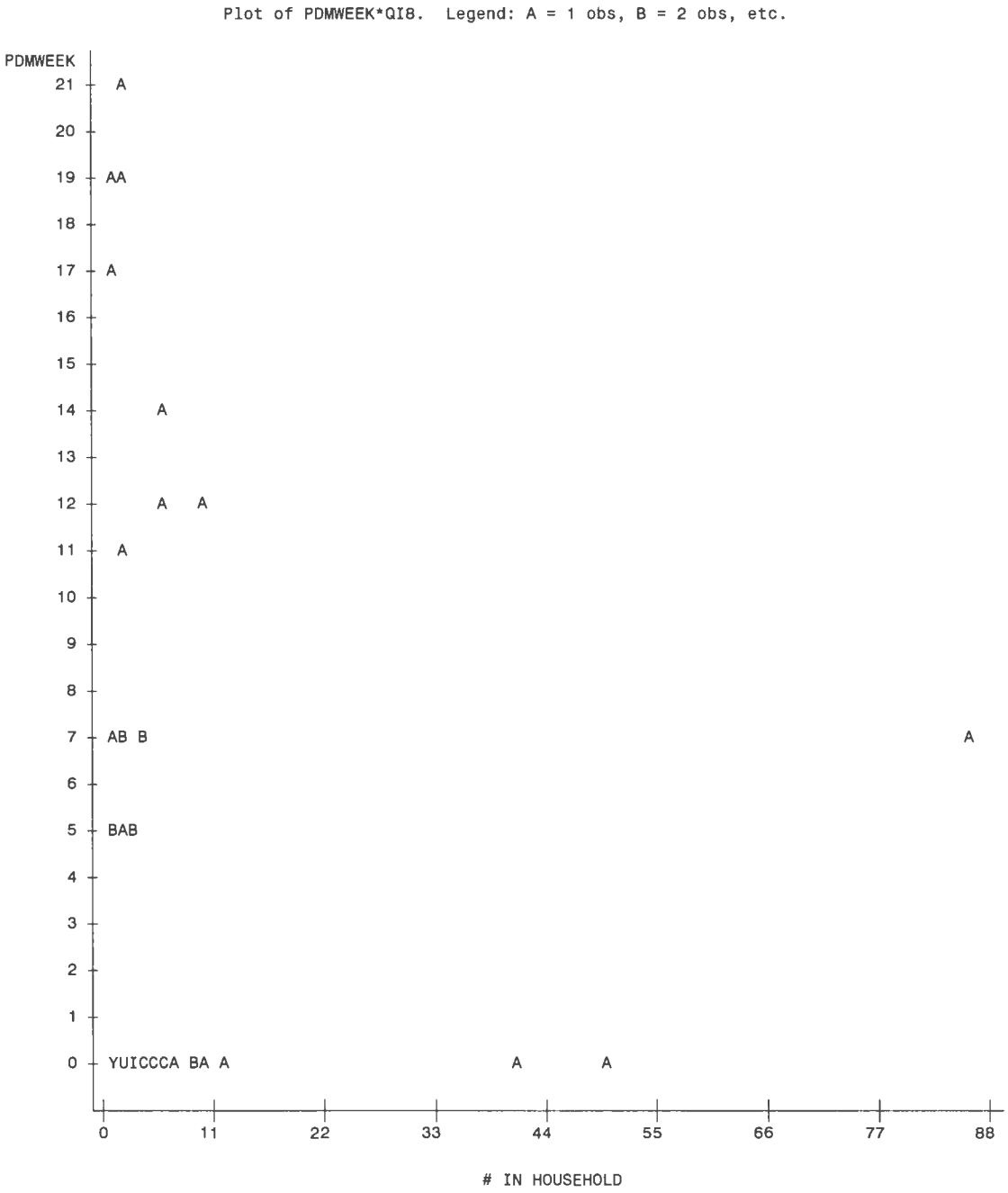
NOTE: 49 obs had missing values.

39. Plot of Temptation to Skip Antiretroviral Medication on the Feeling Good Scale vs Persons in Household



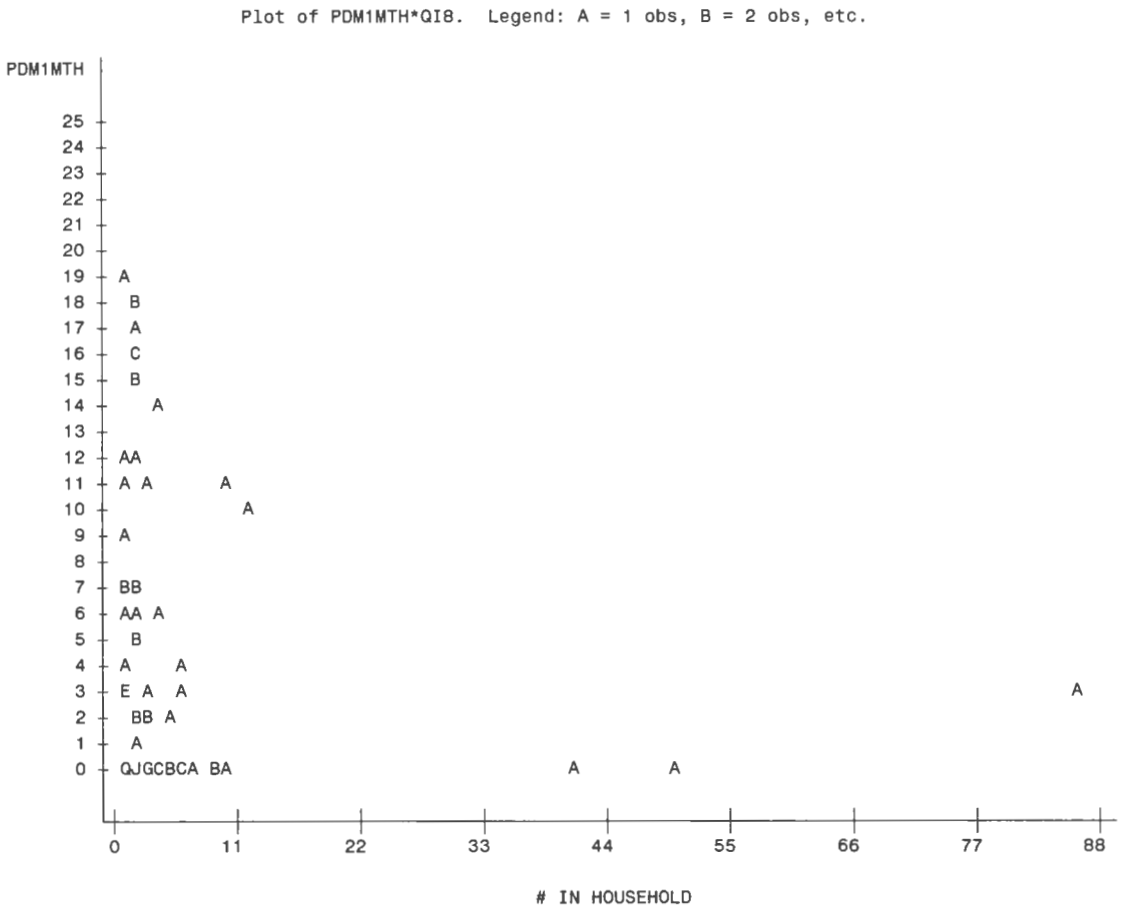
NOTE: 49 obs had missing values.

40. Plot of Percent of Doses Missed in the past Week vs Persons in Household



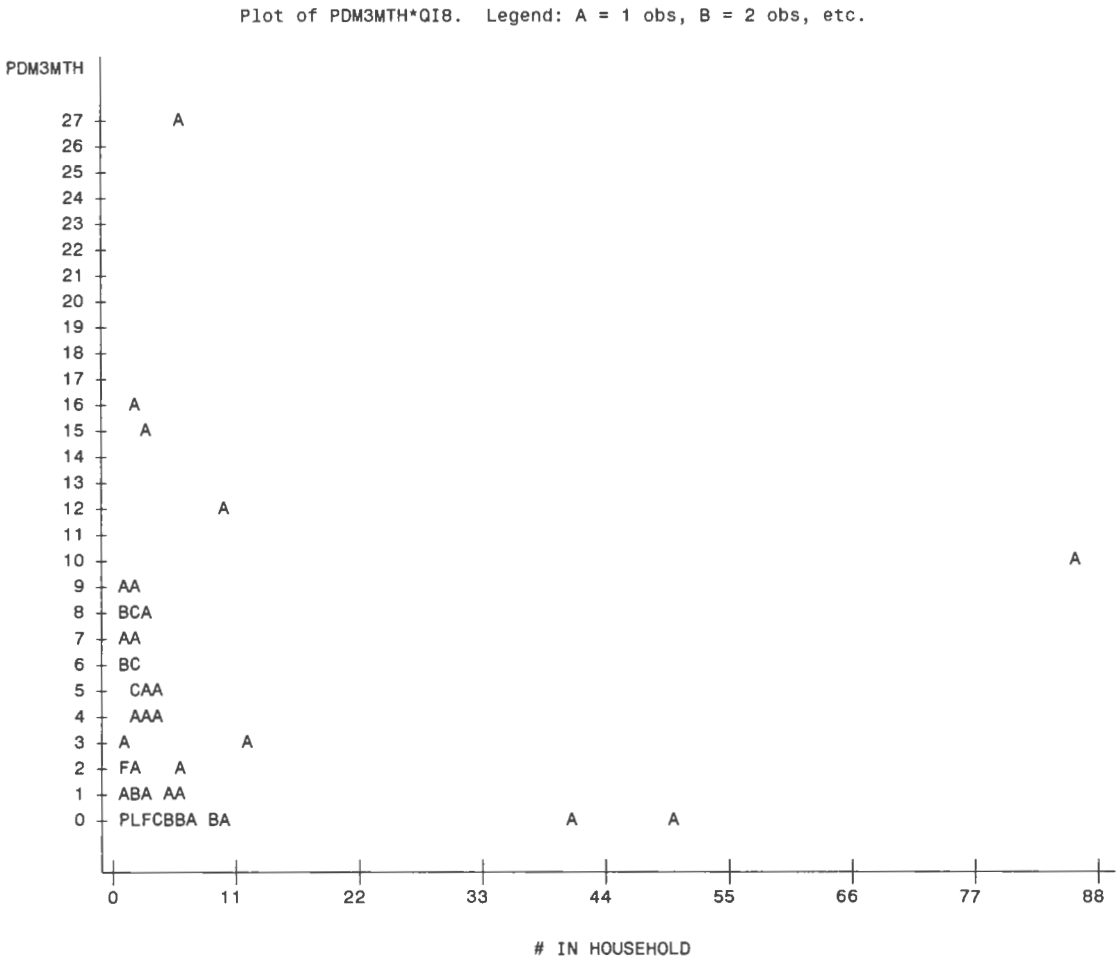
NOTE: 53 obs had missing values.

41. Plot of Percent of Doses Missed in the past Month vs Persons in Household



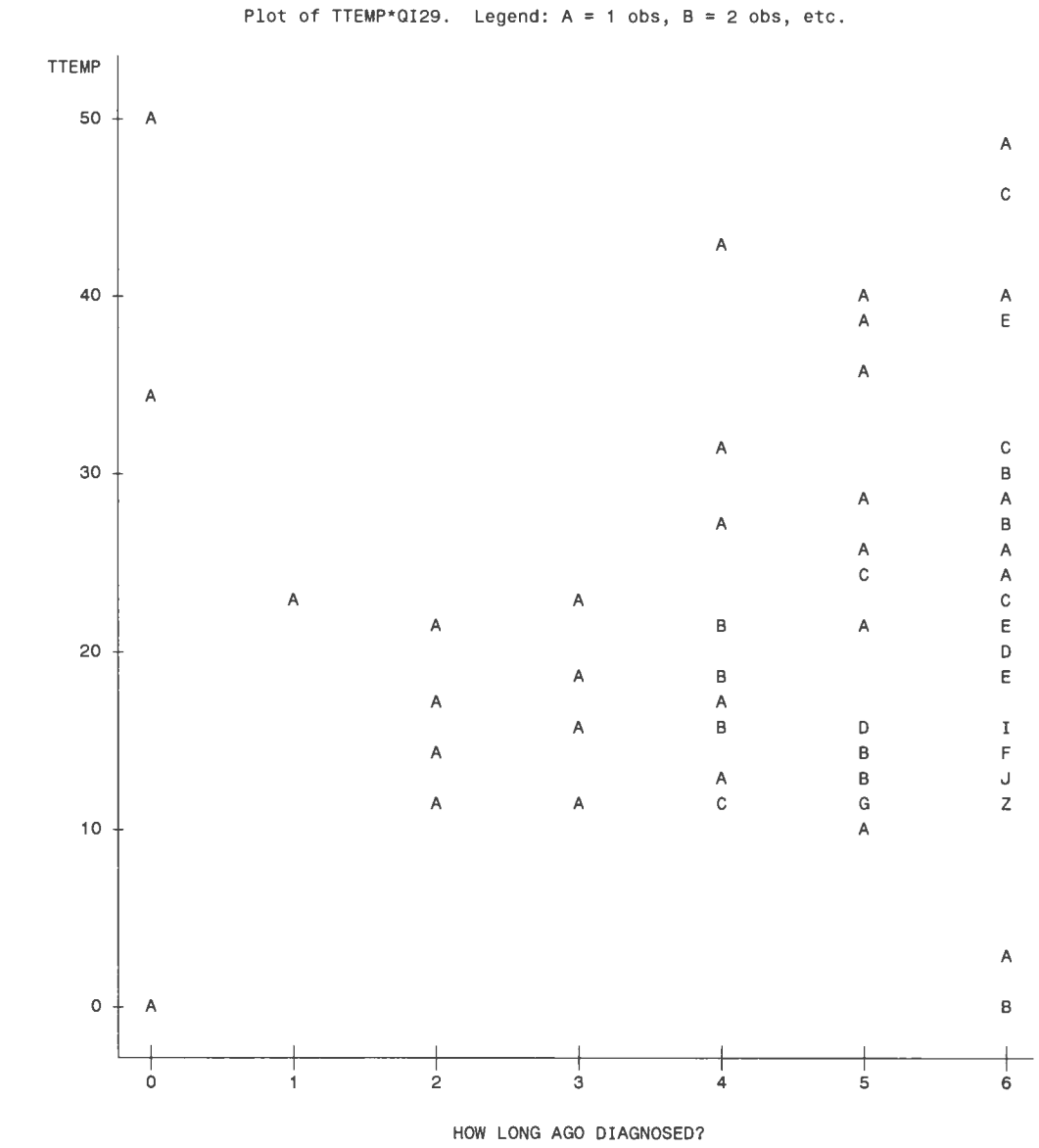
NOTE: 53 obs had missing values.

42. Plot of Percent of Doses Missed in past Three Months vs Persons in Household



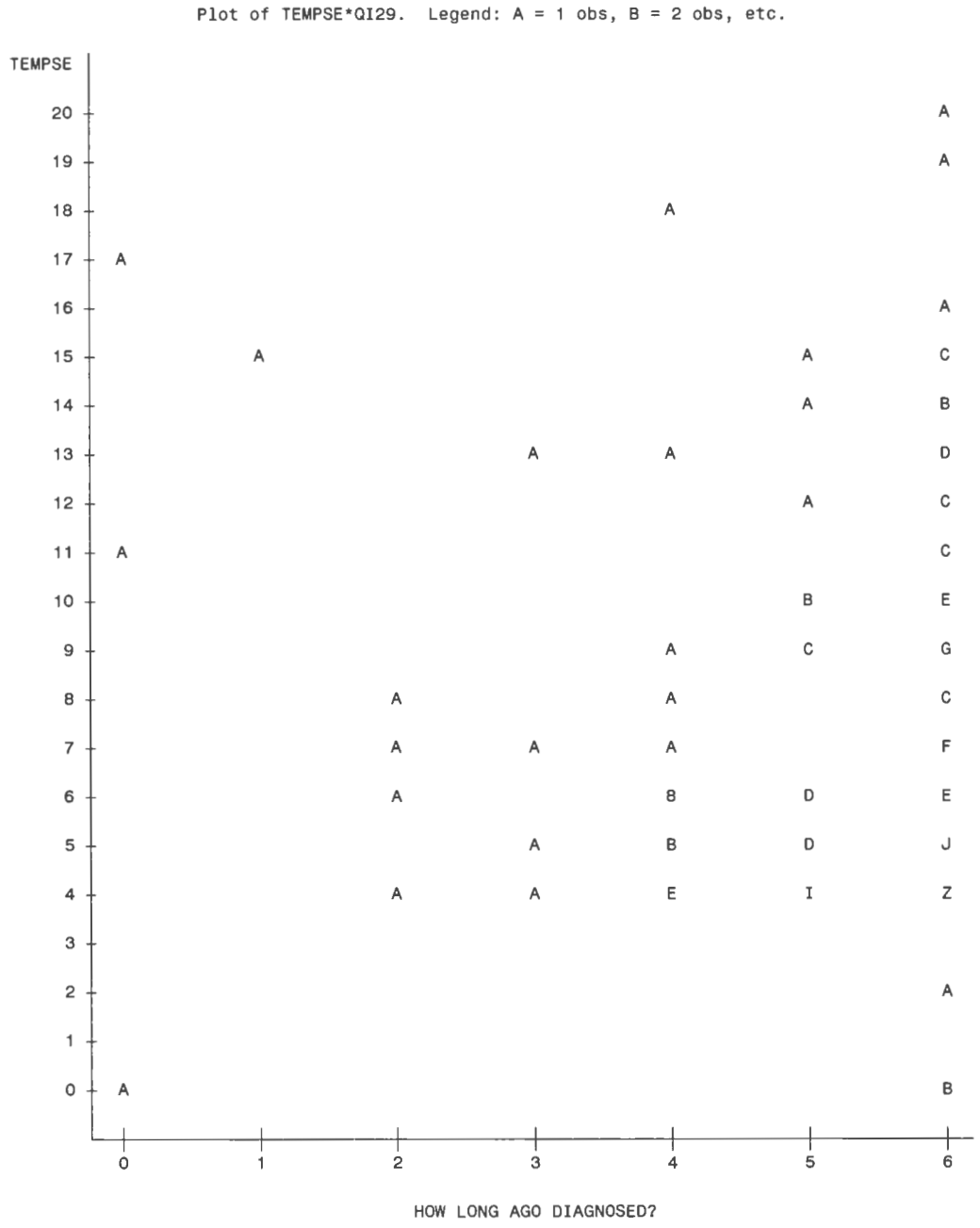
NOTE: 52 obs had missing values.

43. Plot of Temptation to Skip Antiretroviral Medication on the Total Scale vs Duration since HIV Positive



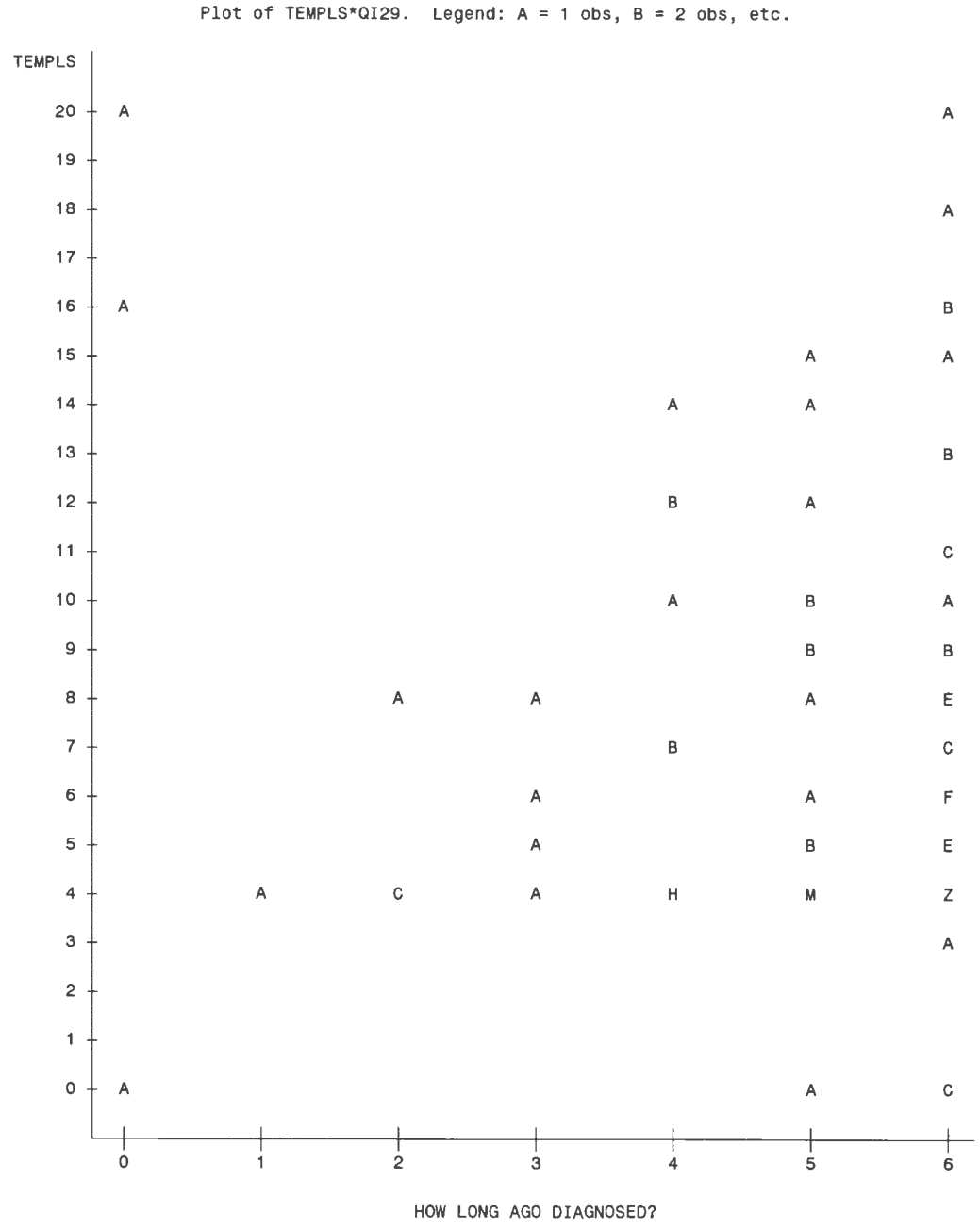
NOTE: 1 obs hidden.

44. Plot of Temptation to Skip Antiretroviral Medication on the Side Effects Scale vs Duration since HIV Positive



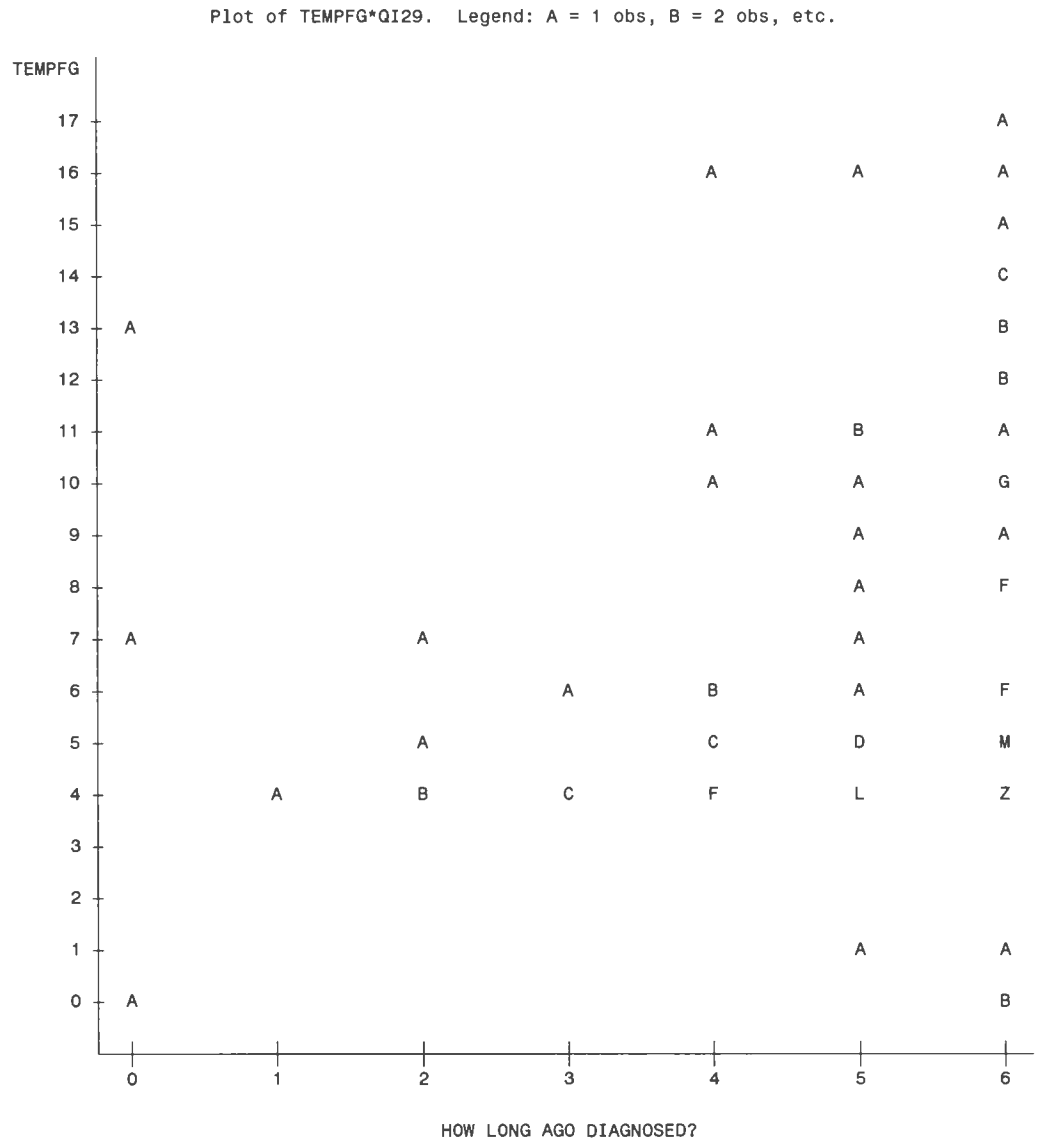
NOTE: 9 obs hidden.

45. Plot of Temptation to Skip Antiretroviral Medication on the Lack of Support Scale vs Duration since HIV Positive



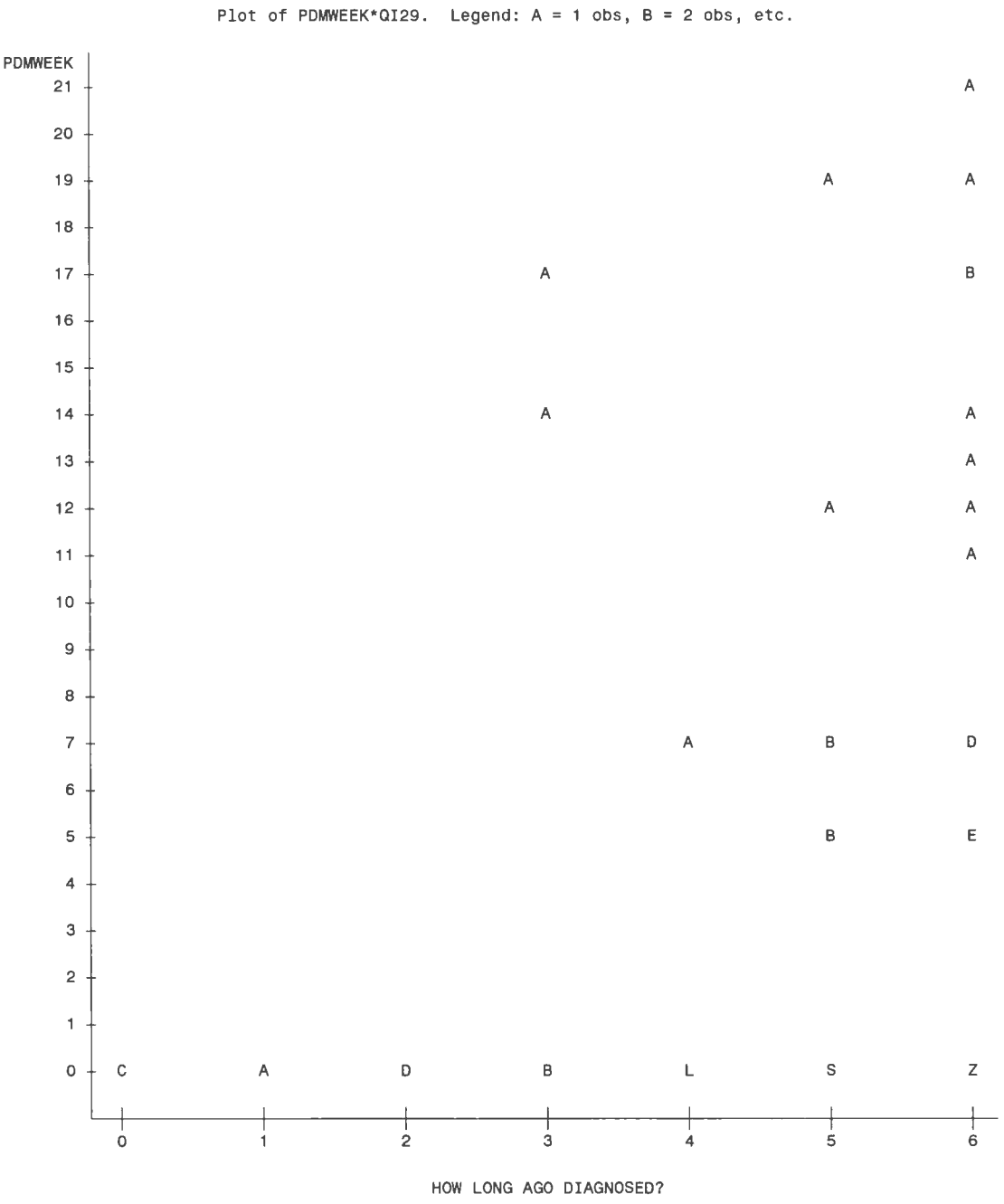
NOTE: 30 obs hidden.

46. Plot of Temptation to Skip Antiretroviral Medication on the Feeling Good Scale vs Duration since HIV Positive



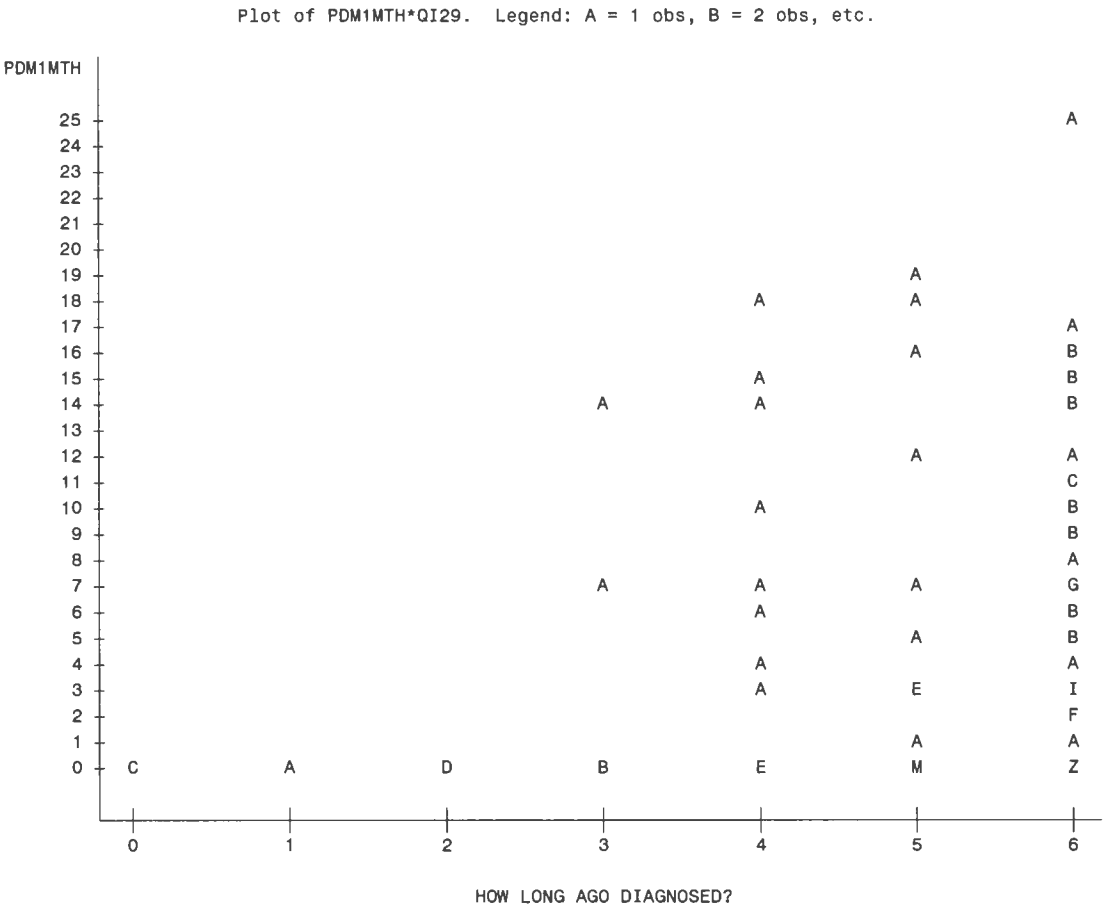
NOTE: 19 obs hidden.

47. Plot of Percent of Doses Missed in the past Week vs Duration since HIV Positive



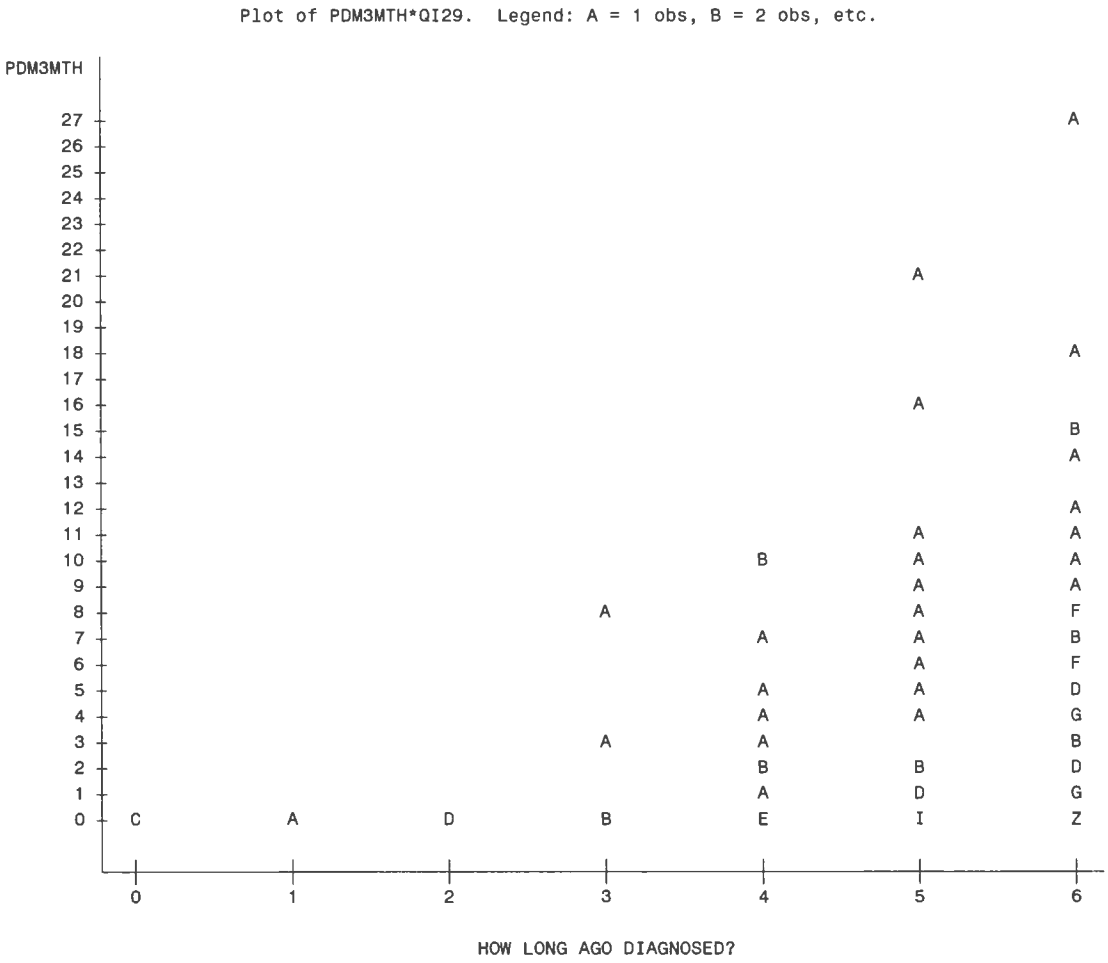
NOTE: 4 obs had missing values. 46 obs hidden.

48. Plot of Percent of Doses Missed in the past Month vs Duration since HIV Positive



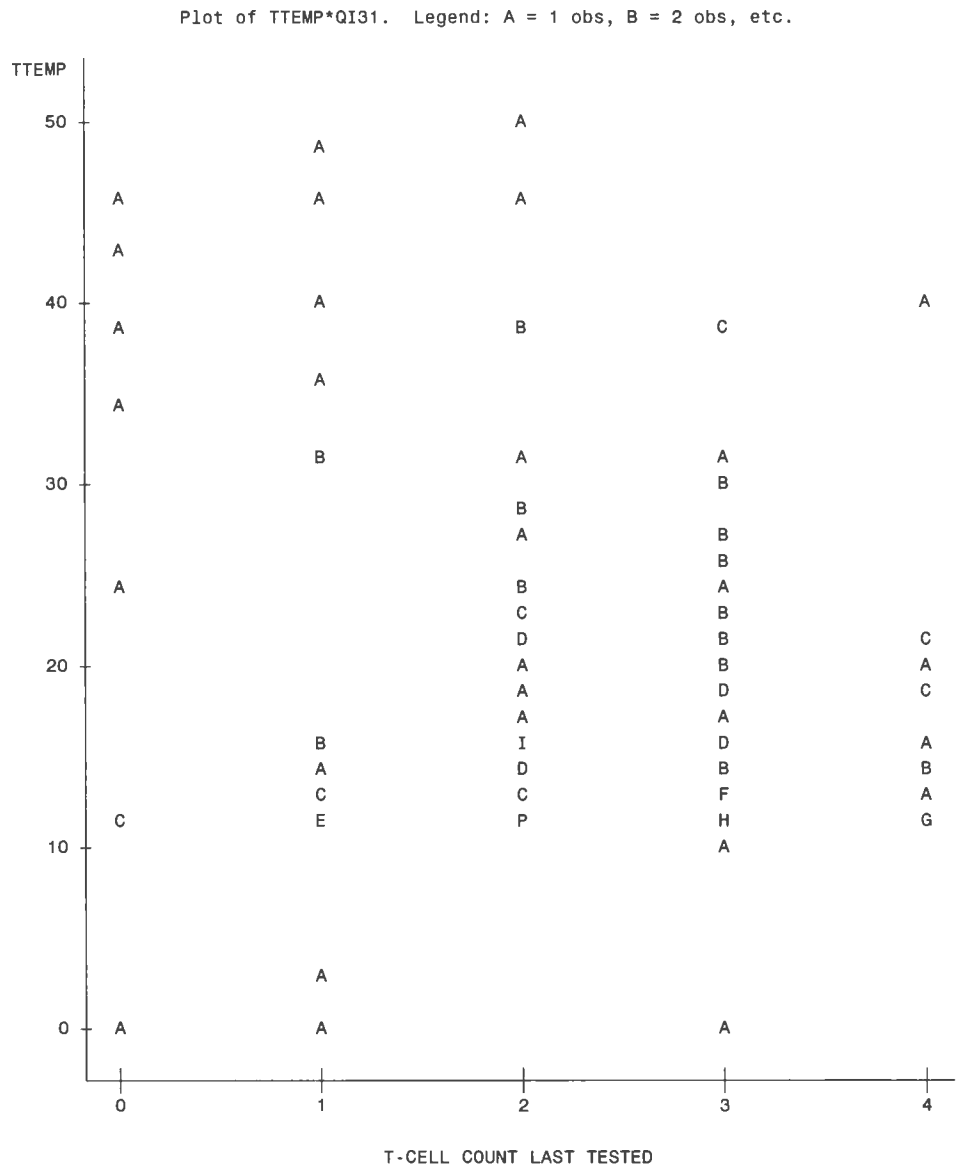
NOTE: 4 obs had missing values. 18 obs hidden.

49. Plot of Percent of Doses Missed in the past Three Months vs Duration since HIV Positive

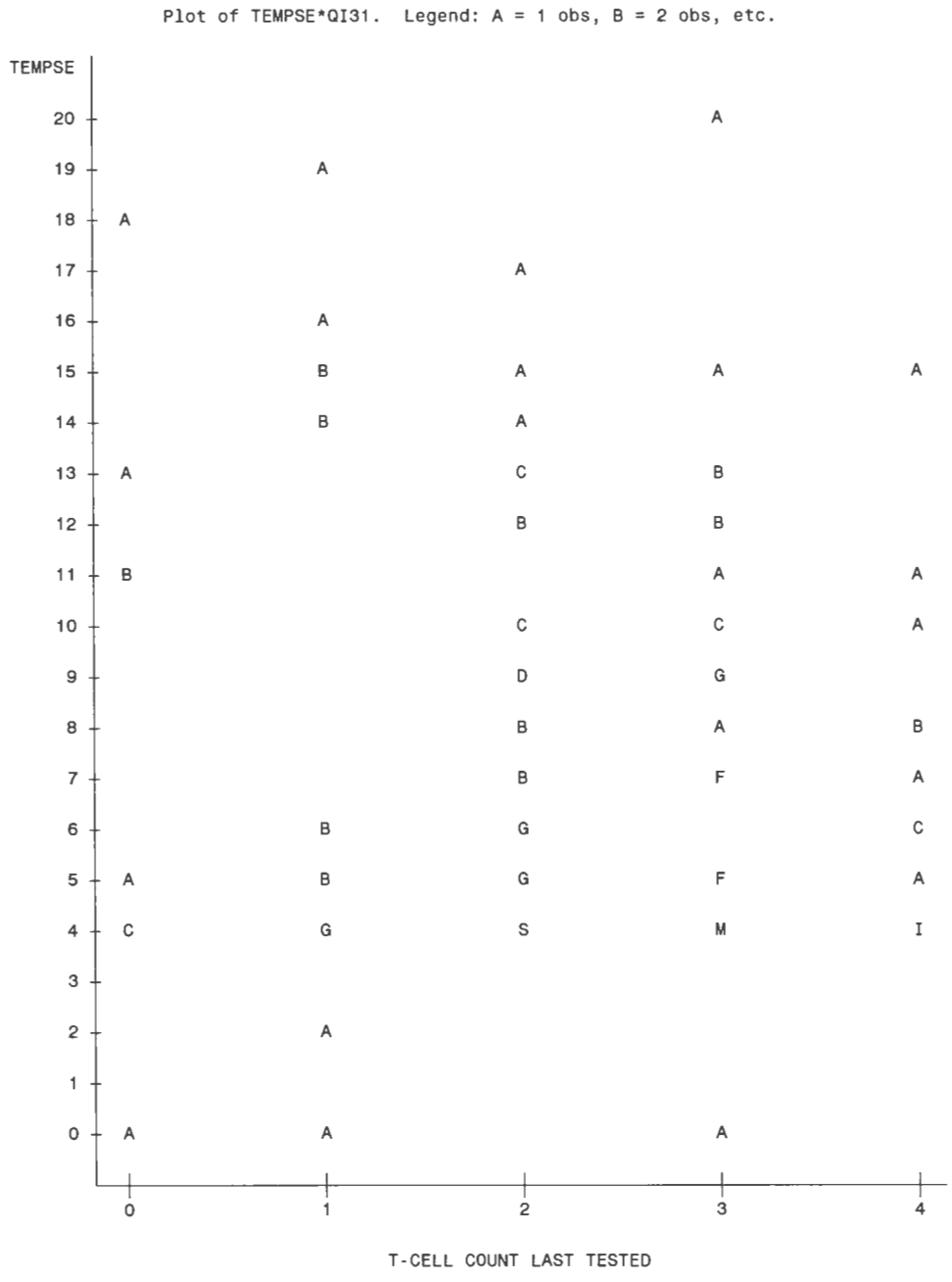


NOTE: 3 obs had missing values. 16 obs hidden.

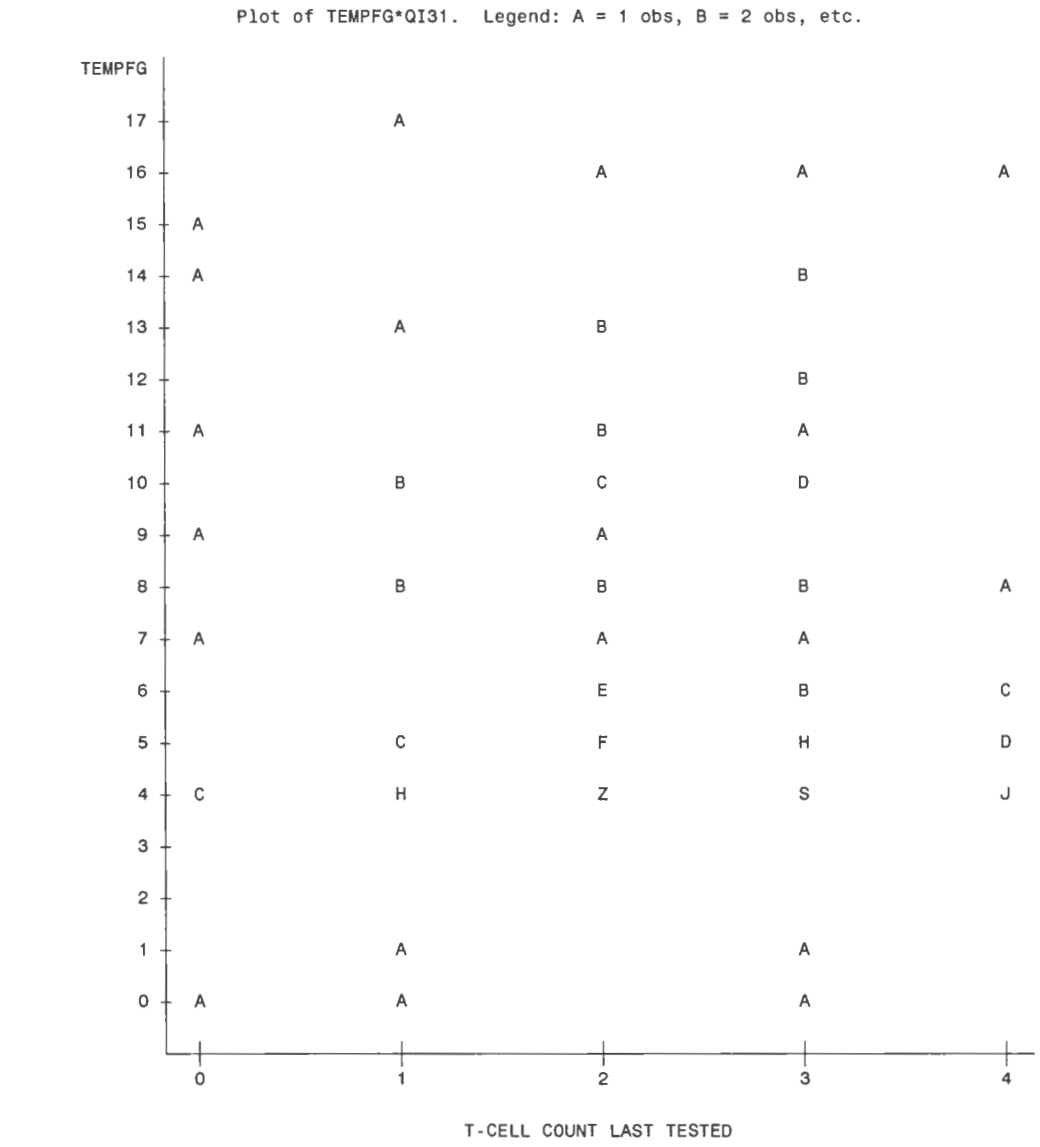
50. Plot of Temptation to Skip Antiretroviral Medication on the Total Scale vs T-Cell Count



51. Plot of Temptation to Skip Antiretroviral Medication on the Side Effects Scale vs T-Cell Count

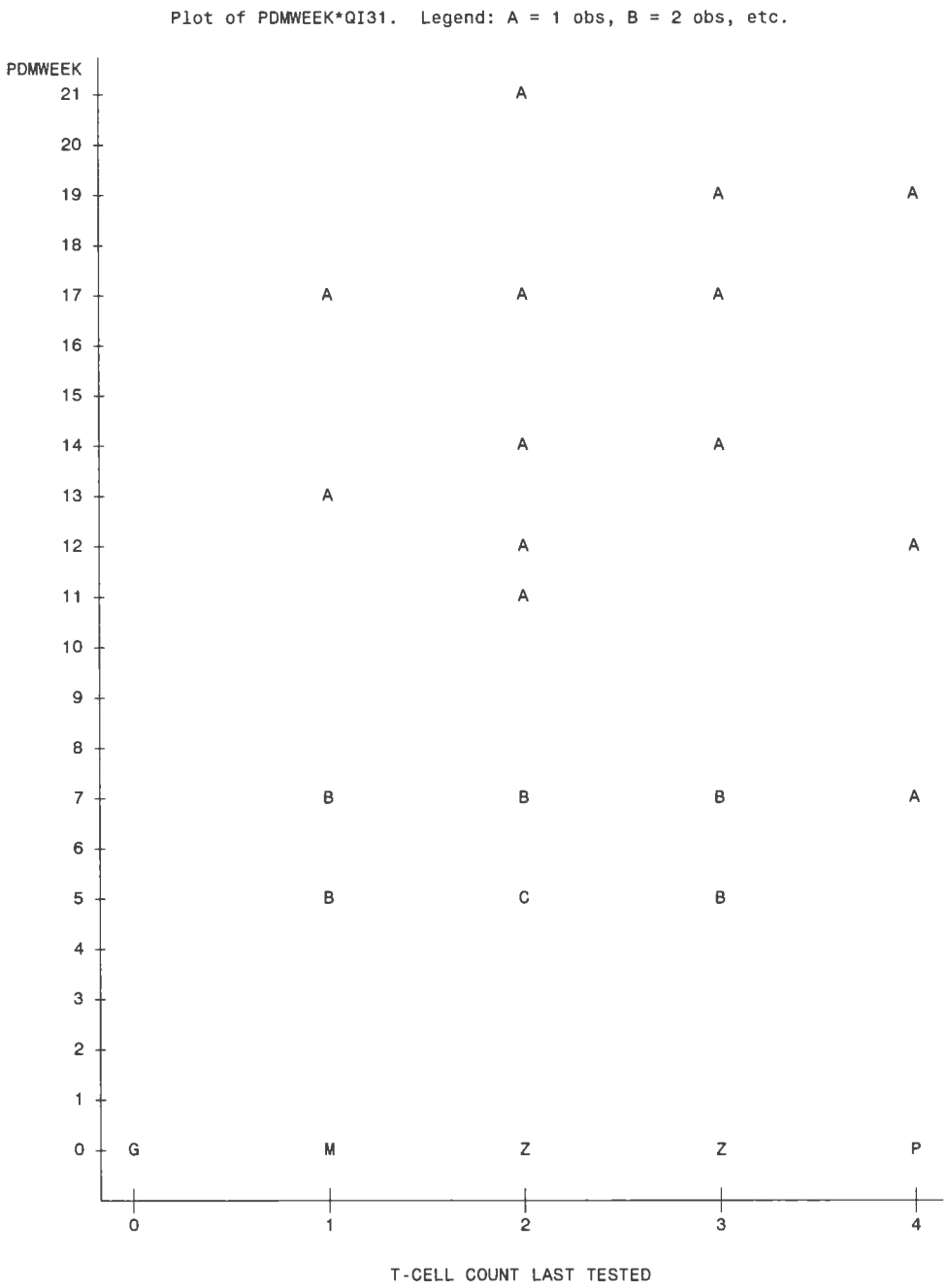


53. Plot of Temptation to Skip Antiretroviral Medication on the Feeling Good Scale vs T-Cell Count



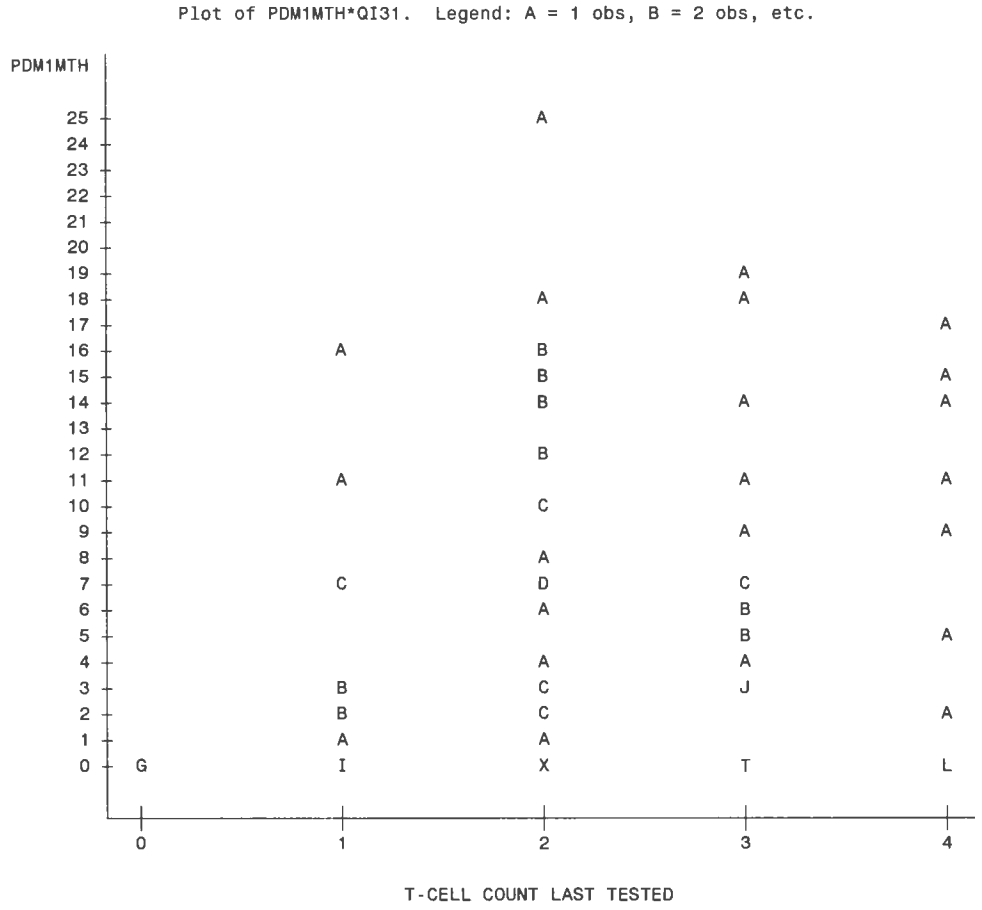
NOTE: 3 obs hidden.

54. Plot of Percent of Doses Missed in the past Week vs T-Cell Count



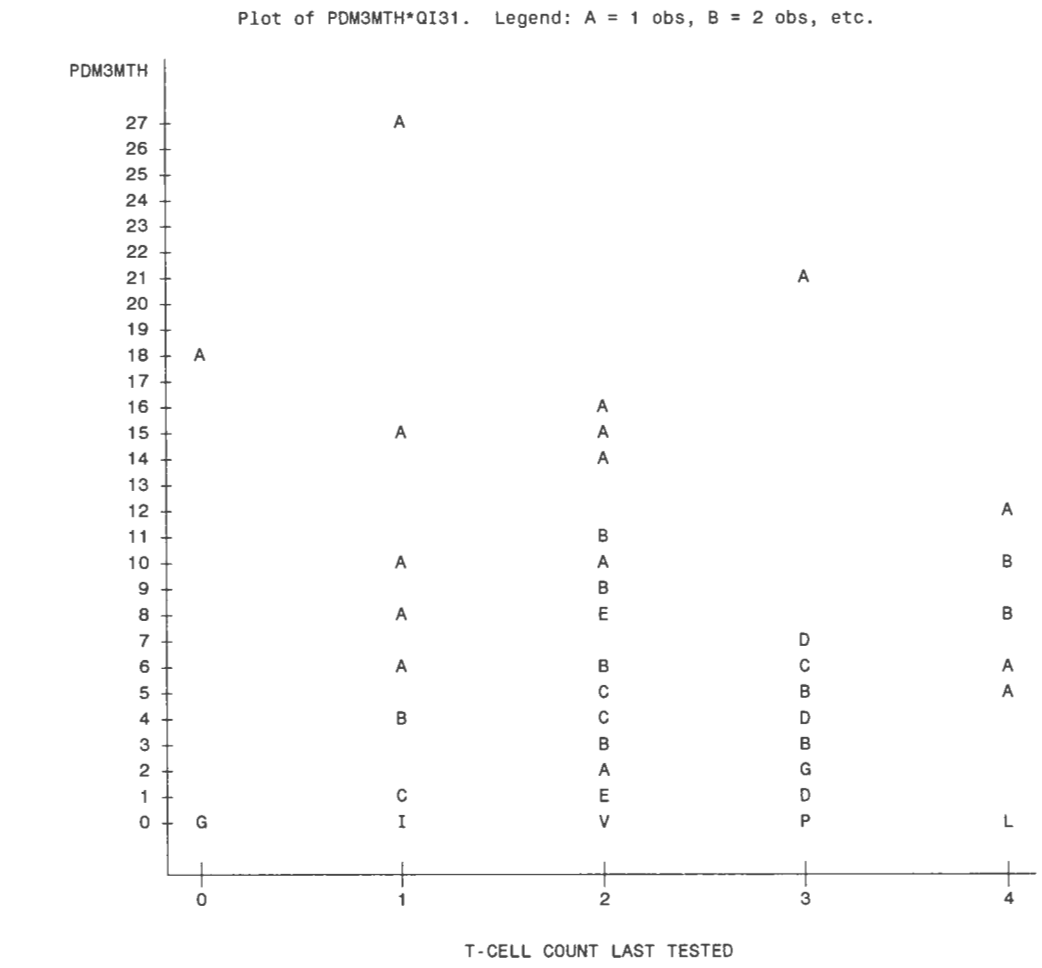
NOTE: 4 obs had missing values. 25 obs hidden.

55. Plot of Percent of Doses Missed in the past Month vs T-Cell Count



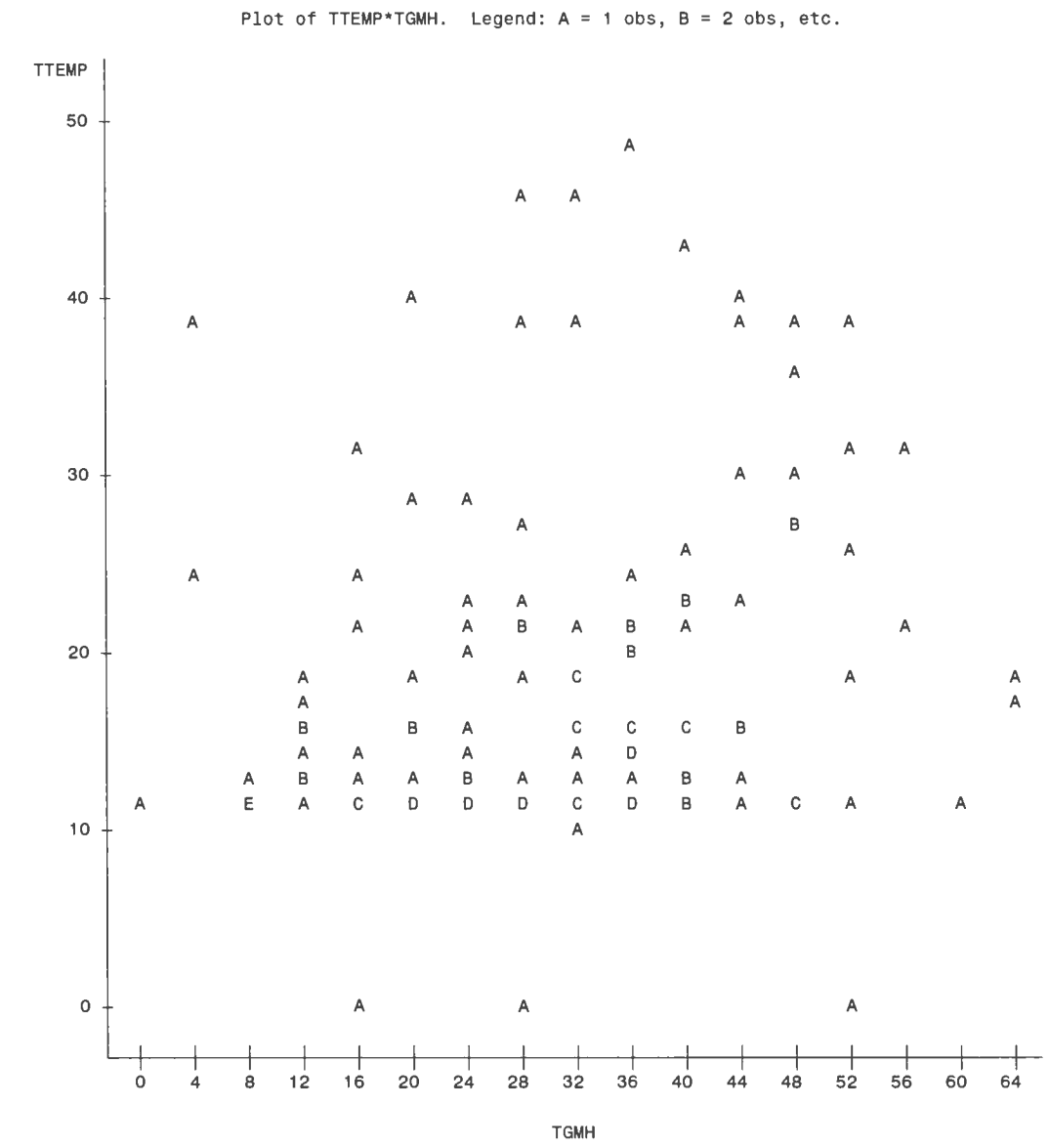
NOTE: 4 obs had missing values.

56. Plot of Percent of Doses Missed in the past Three Months vs T-Cell Count



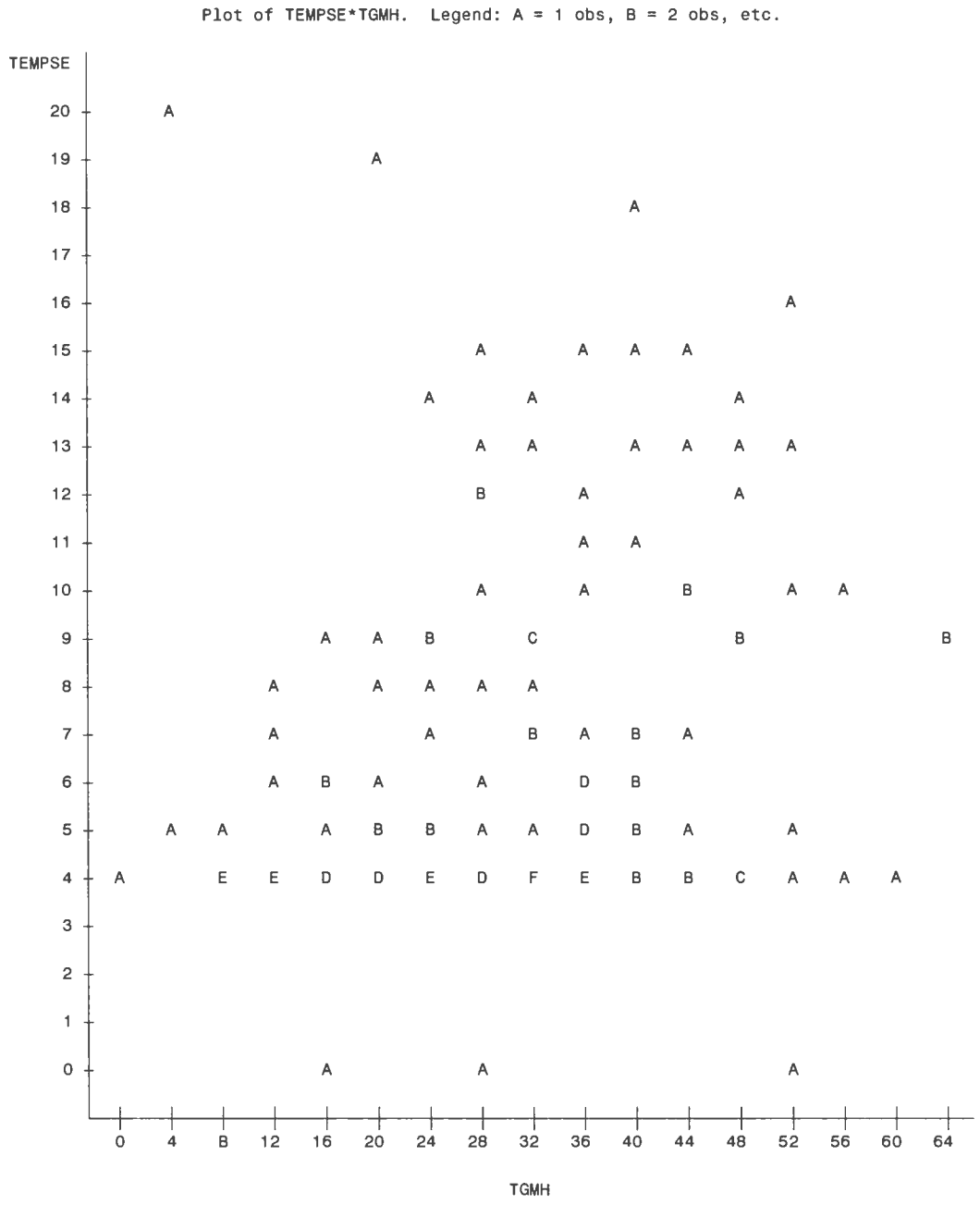
NOTE: 3 obs had missing values.

57. Plot of Temptation to Skip Antiretroviral Medication on the Total Scale vs General Mental Health



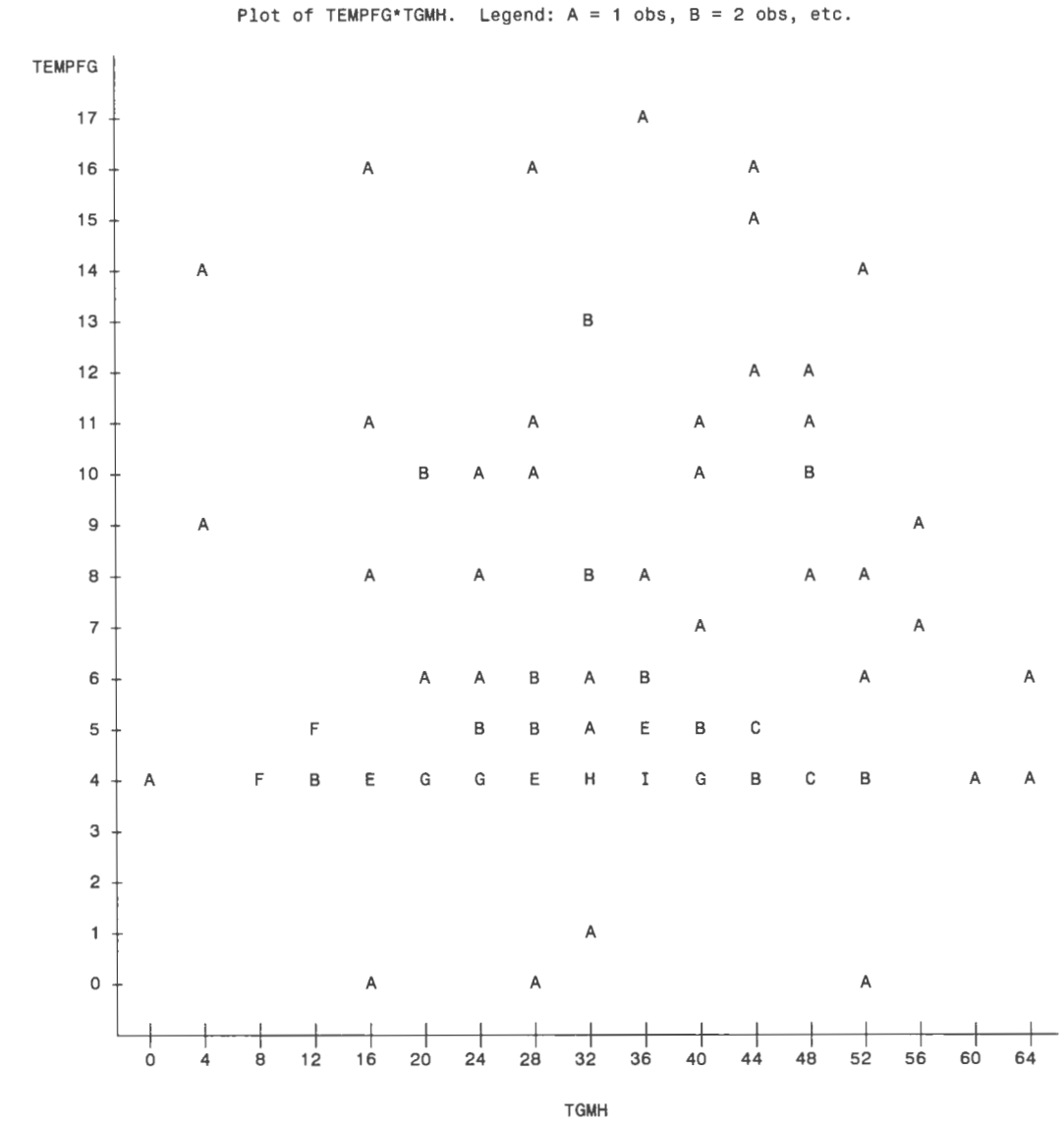
NOTE: 10 obs had missing values.

58. Plot of Temptation to Skip Antiretroviral Medication on the Side Effects Scale vs General Mental Health



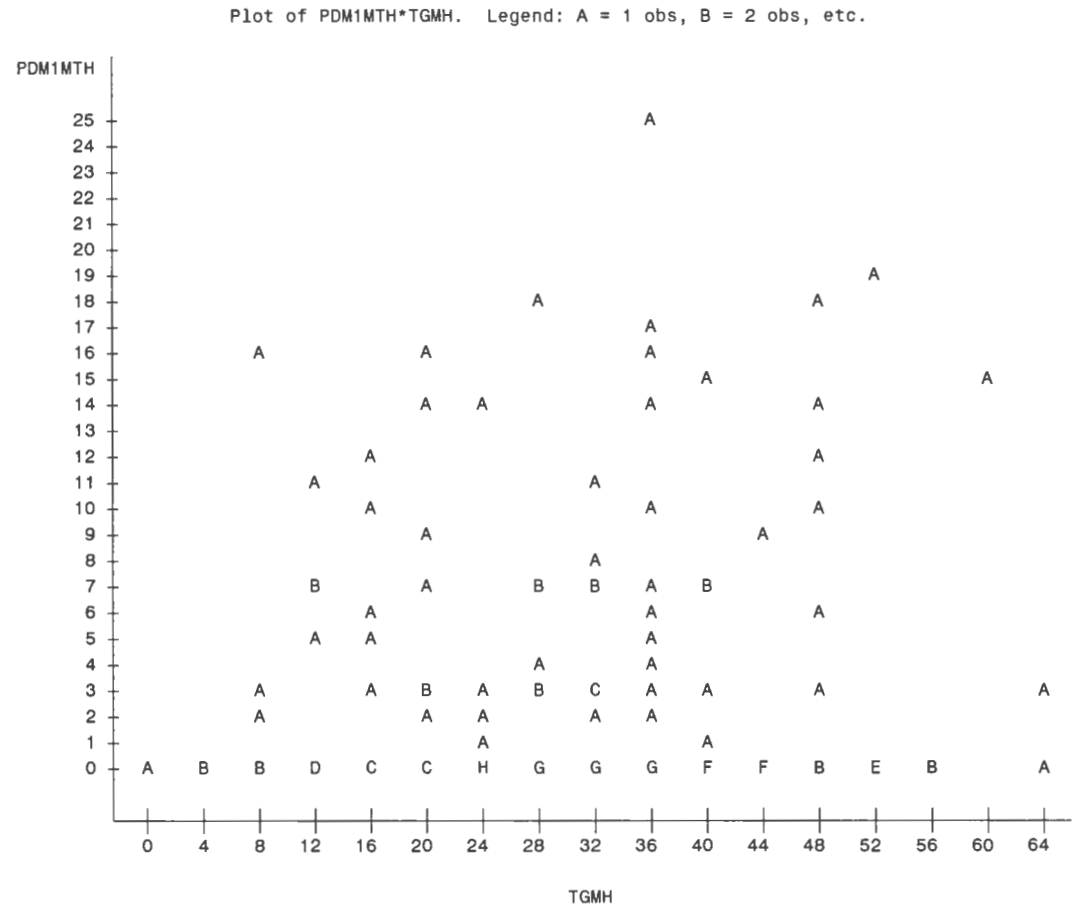
NOTE: 10 obs had missing values.

60. Plot of Temptation to Skip Antiretroviral Medication on the Feeling Good Scale vs General Mental Health



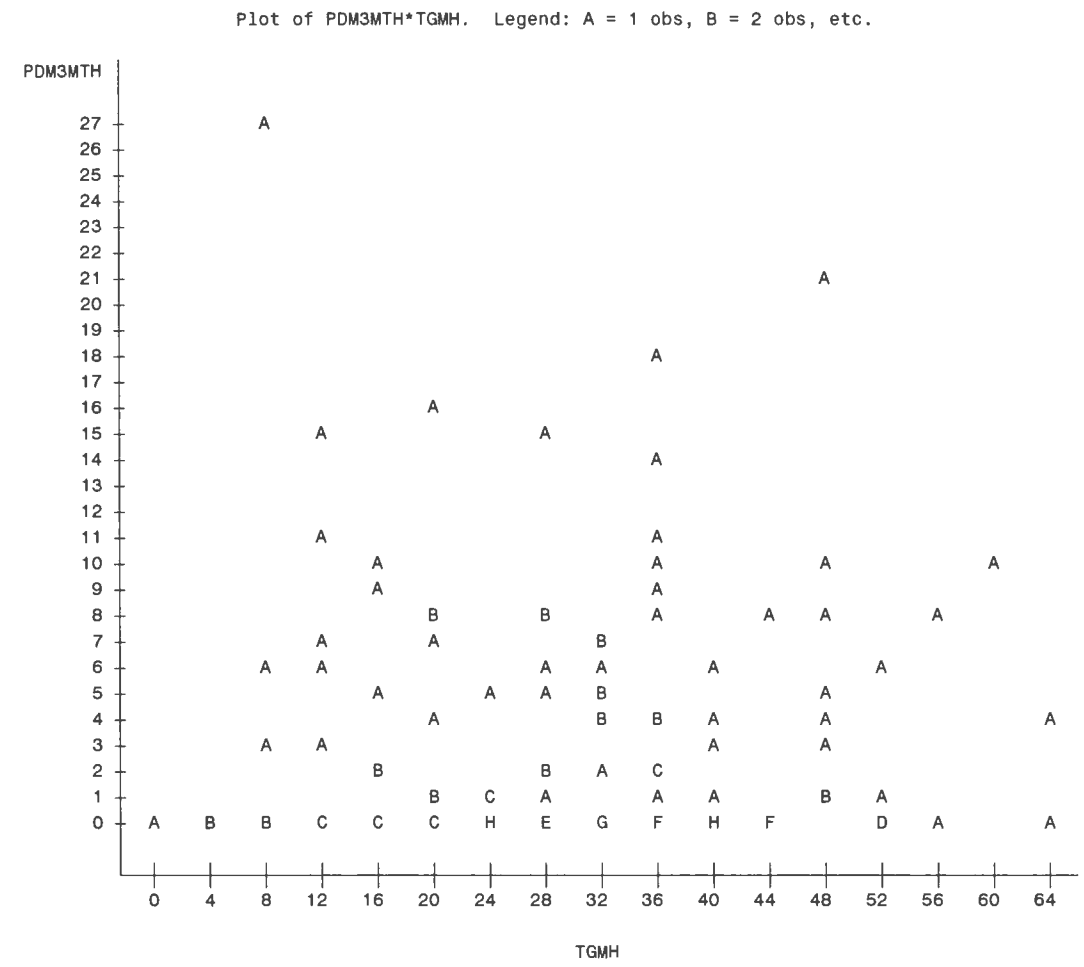
NOTE: 10 obs had missing values.

62. Plot of Percent of Doses Missed in the past Month vs General Mental Health



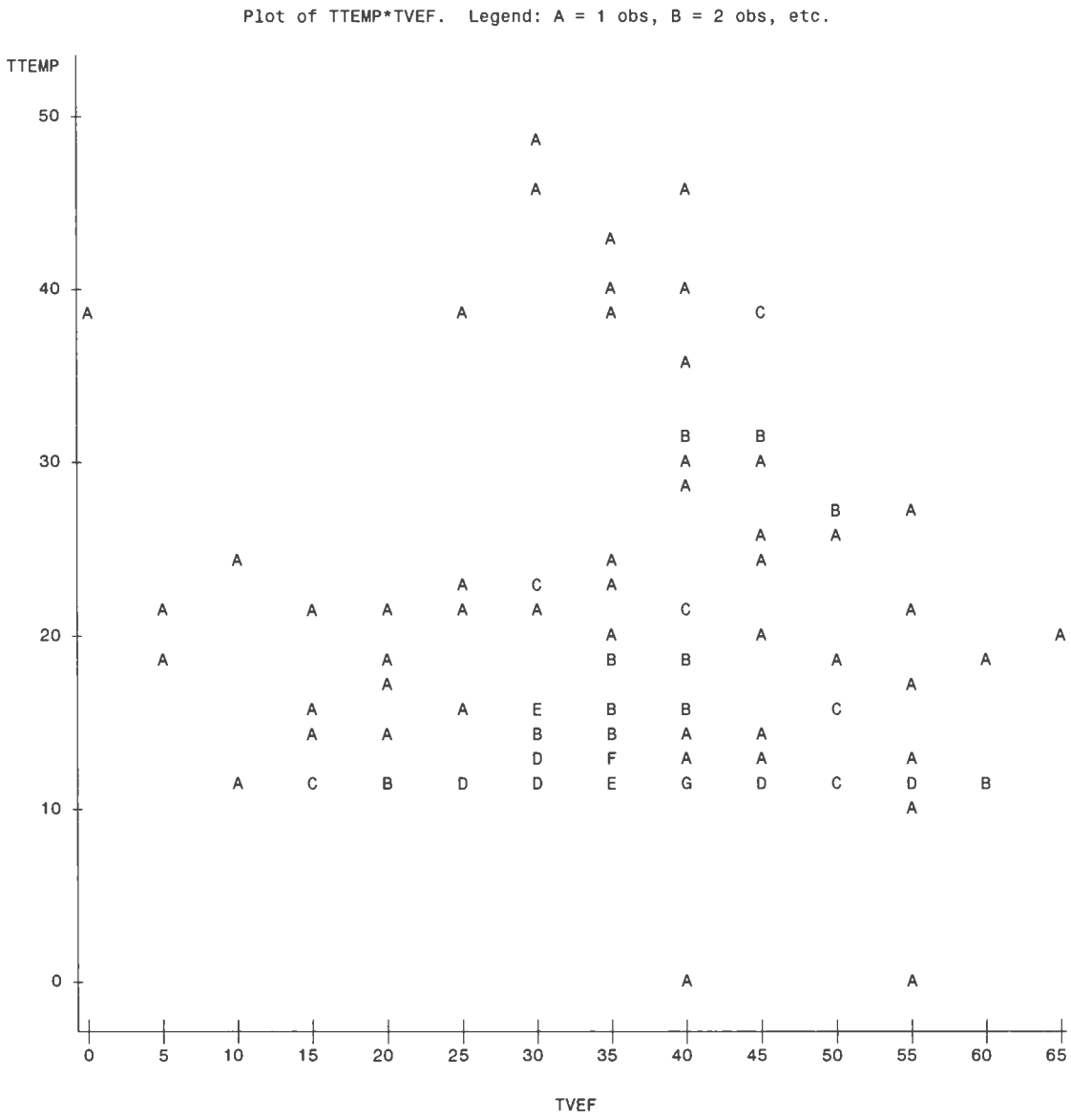
NOTE: 14 obs had missing values.

63. Plot of Percent of Doses Missed in the past Three Months vs General Mental Health



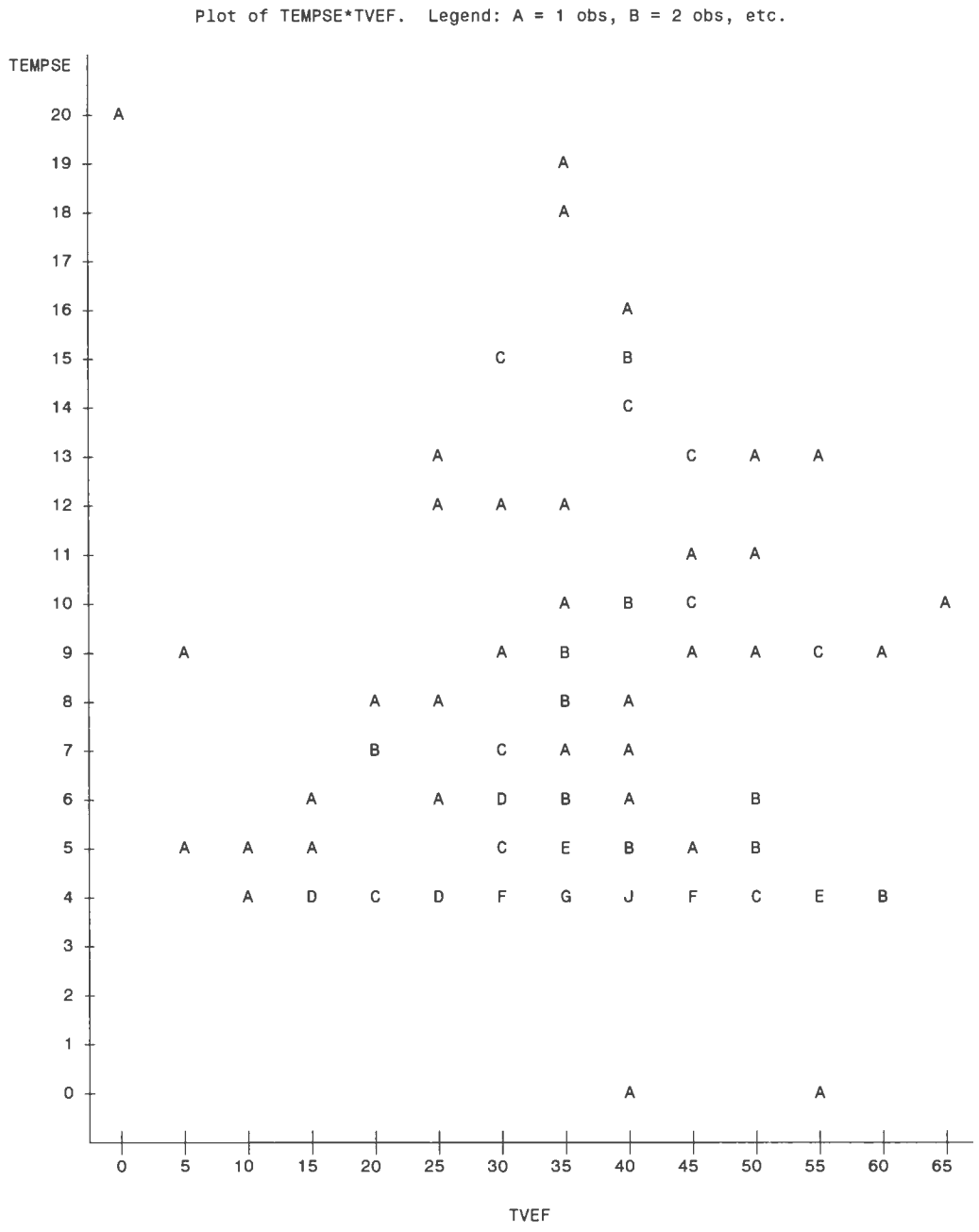
NOTE: 13 obs had missing values.

64. Plot of Temptation to Skip Antiretroviral Medication on the Total Scale vs Vitality, Energy or Fatigue



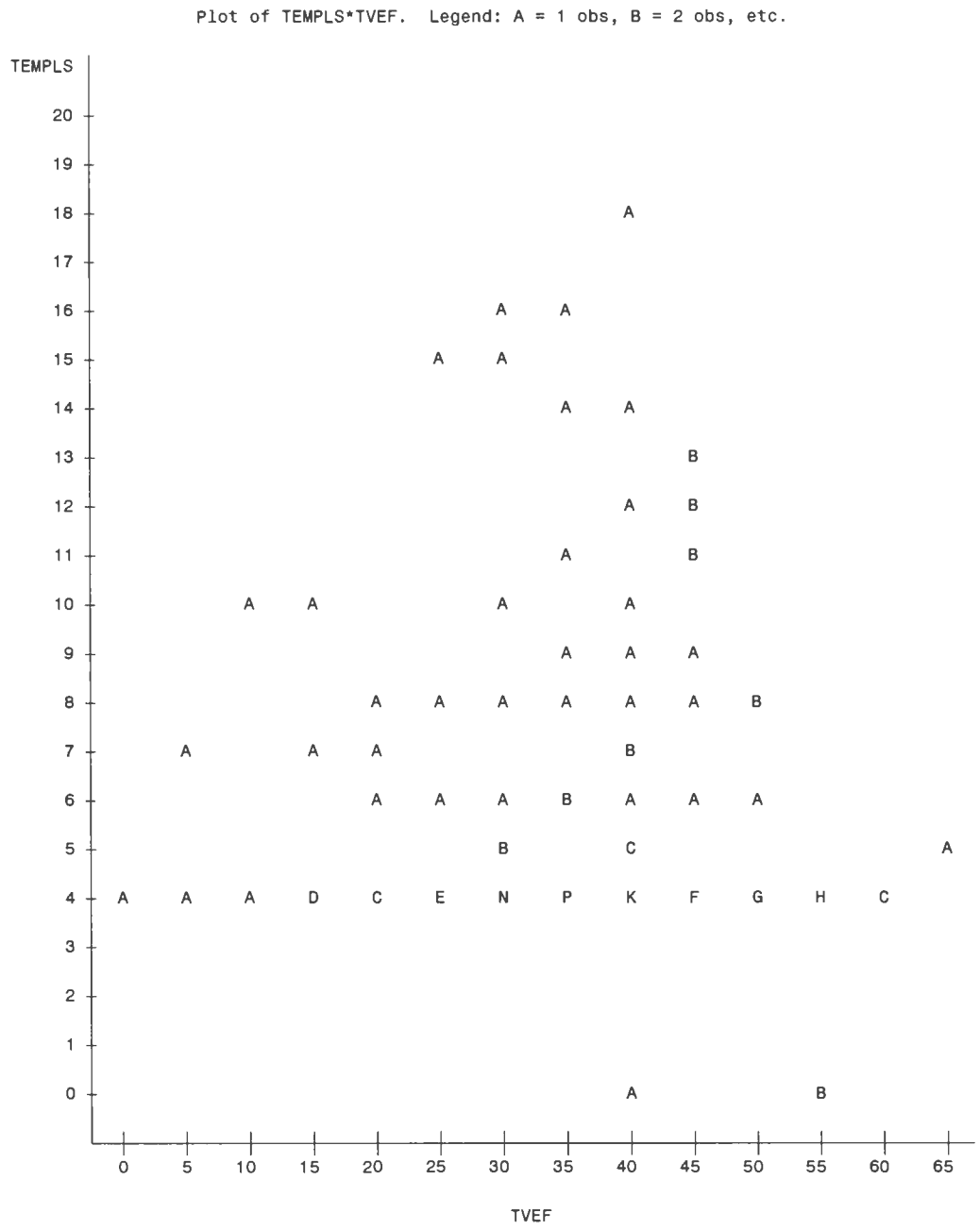
NOTE: 11 obs had missing values.

65. Plot of Temptation to Skip Antiretroviral Medication on the Side Effects Scale vs Vitality, Energy or Fatigue



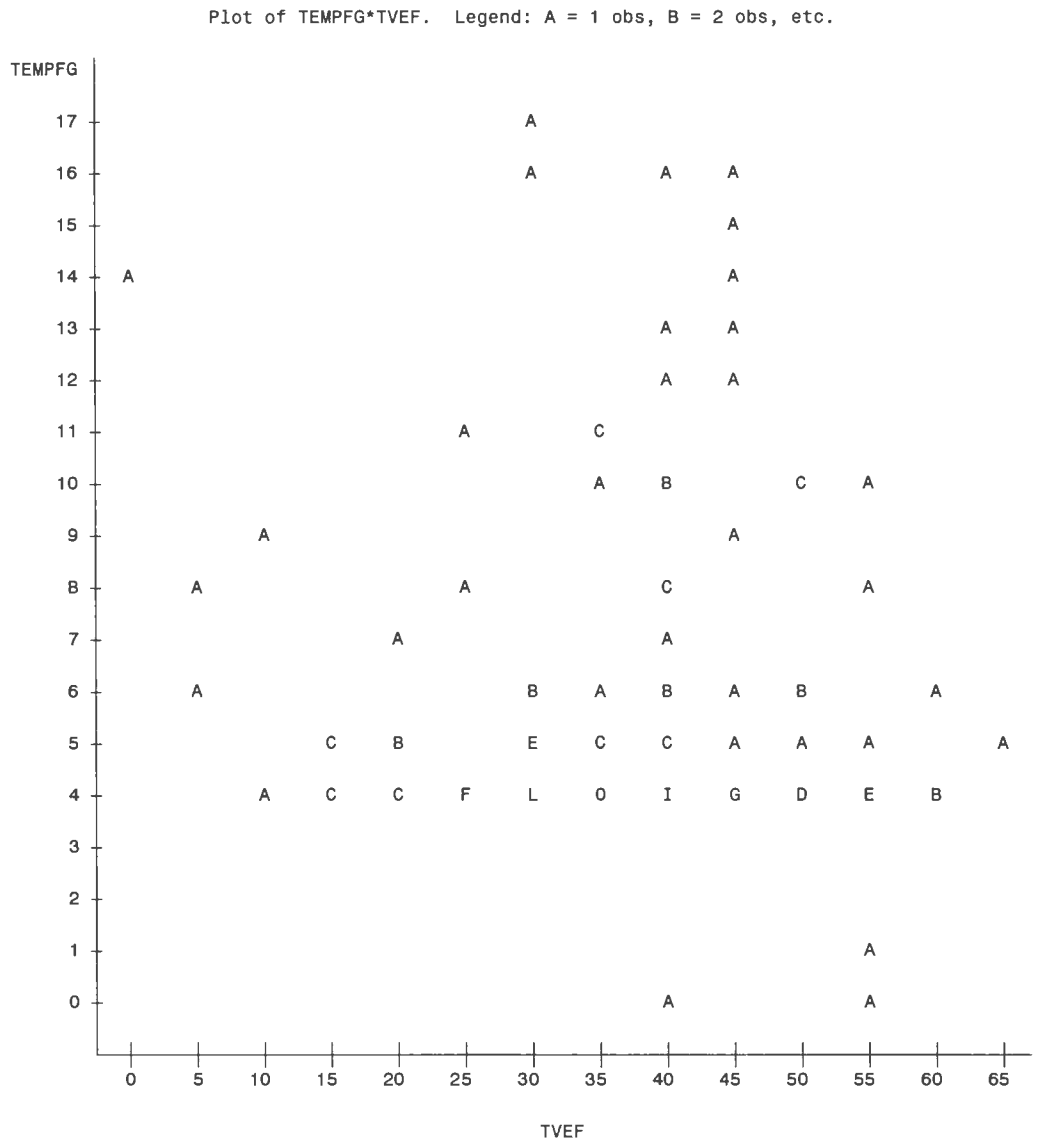
NOTE: 11 obs had missing values.

66. Plot of Temptation to Skip Antiretroviral Medication on the Lack of Support Scale vs Vitality, Energy or Fatigue



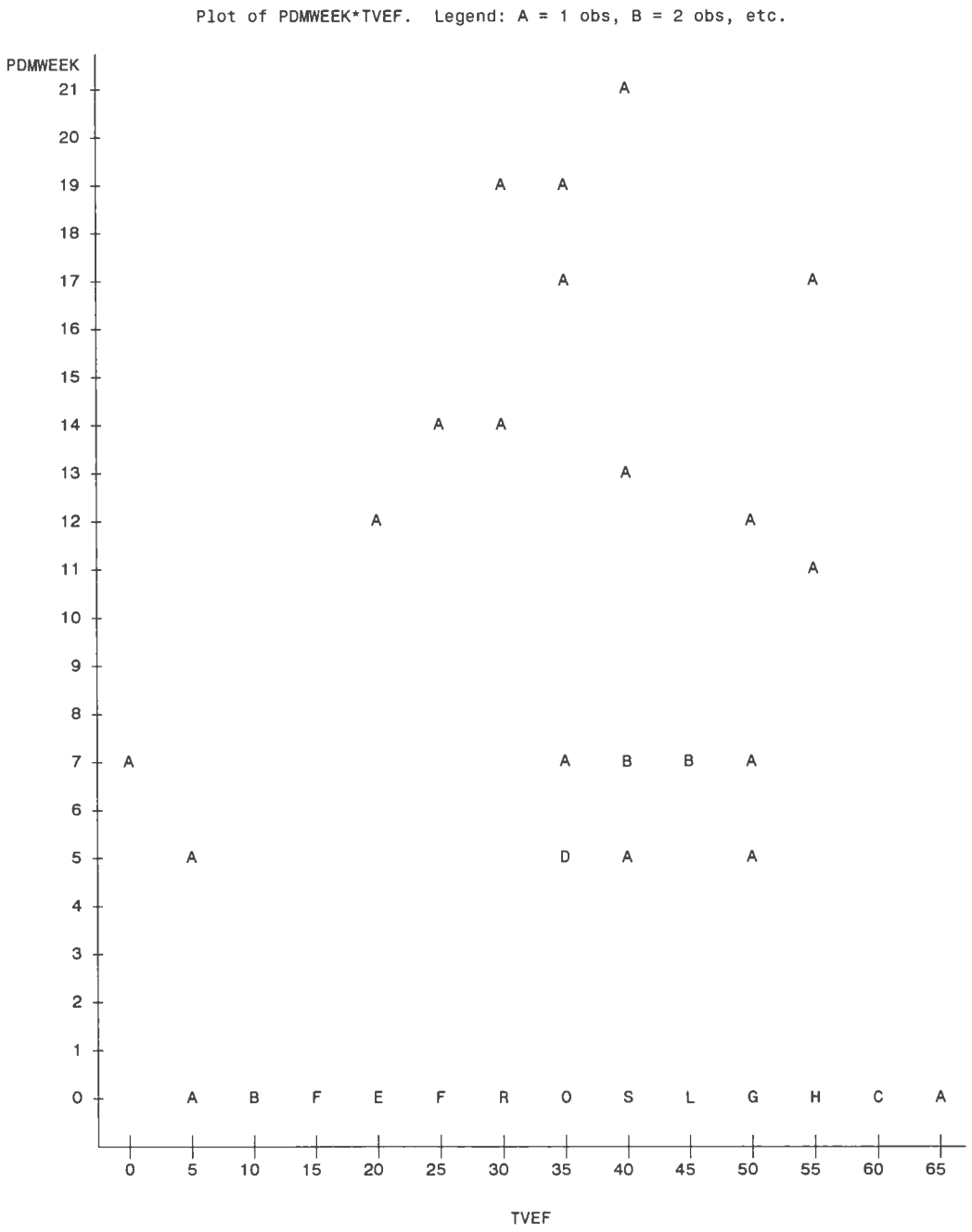
NOTE: 11 obs had missing values.

67. Plot of Temptation to Skip Antiretroviral Medication on the Feeling Good Scale vs Vitality, Energy or Fatigue



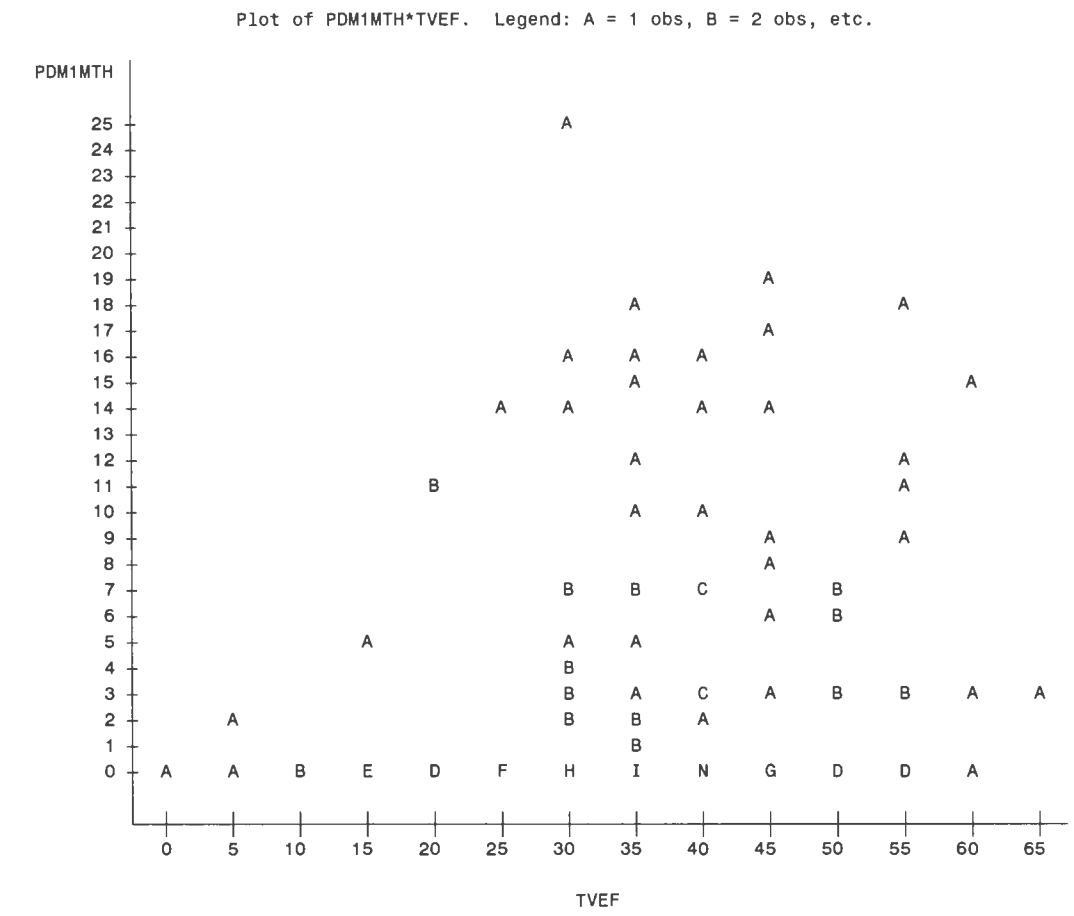
NOTE: 11 obs had missing values.

68. Plot of Percent of Doses Missed in the past Week vs Vitality, Energy or Fatigue



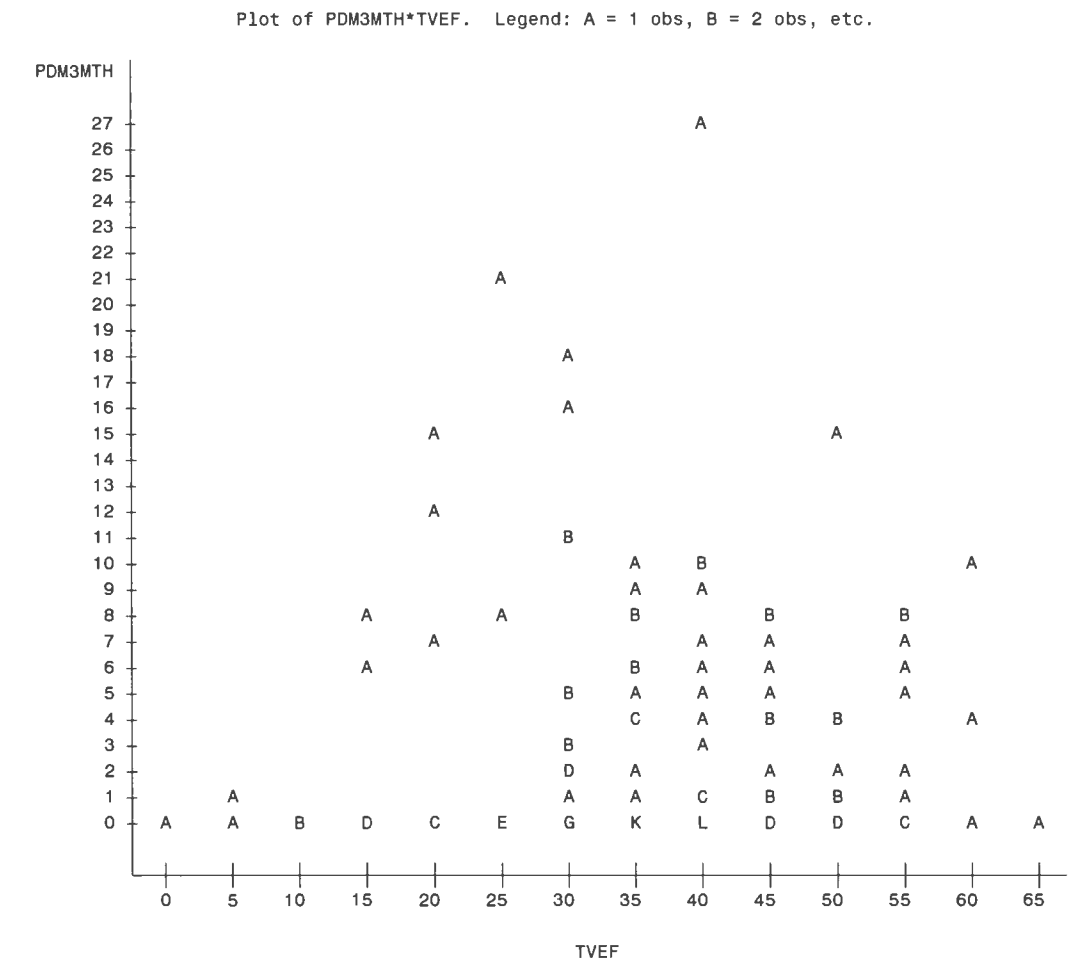
NOTE: 15 obs had missing values.

69. Plot of Percent of Doses Missed in the past Month vs Vitality, Energy or Fatigue



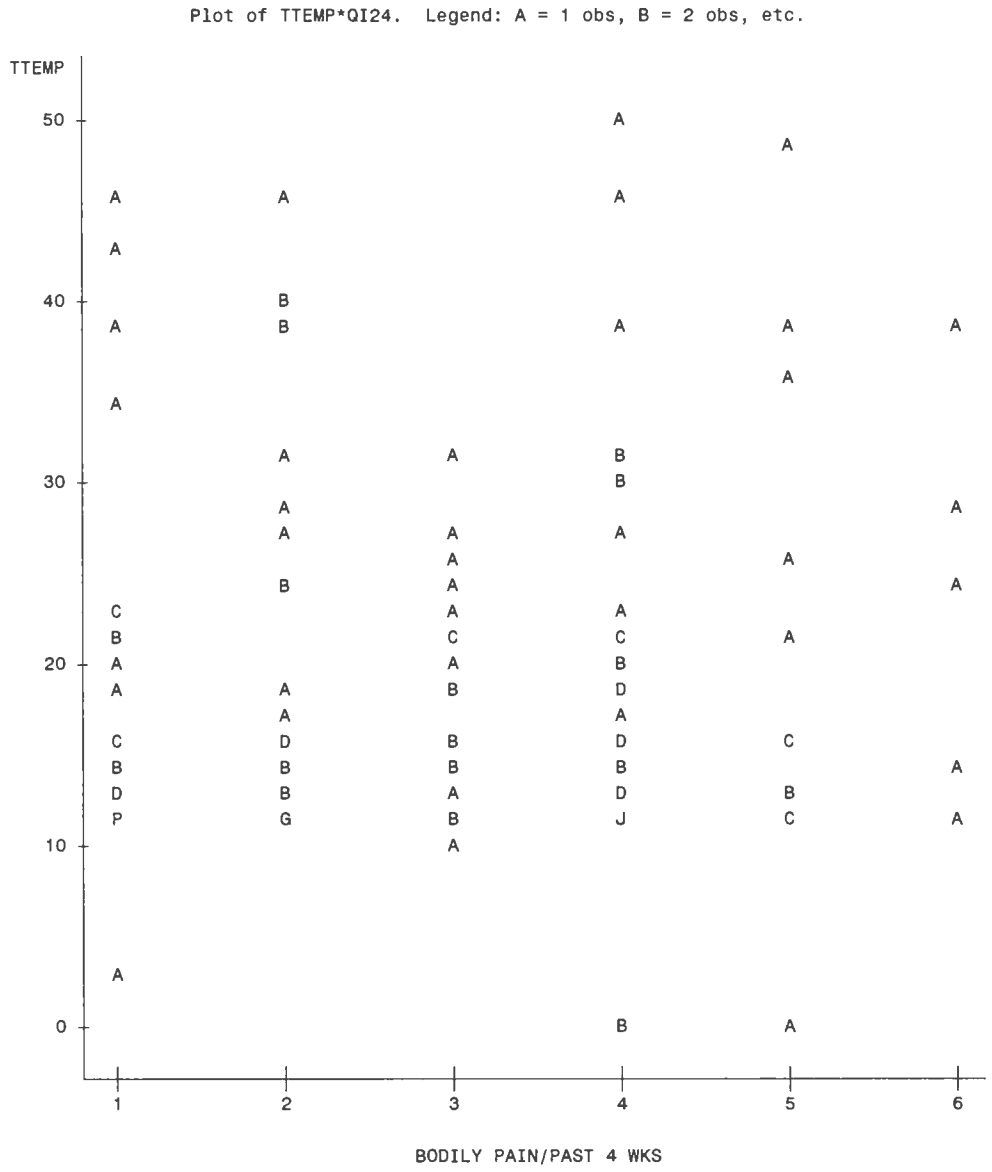
NOTE: 15 obs had missing values.

70. Plot of Percent of Doses Missed in the past Three Months vs Vitality, Energy or Fatigue

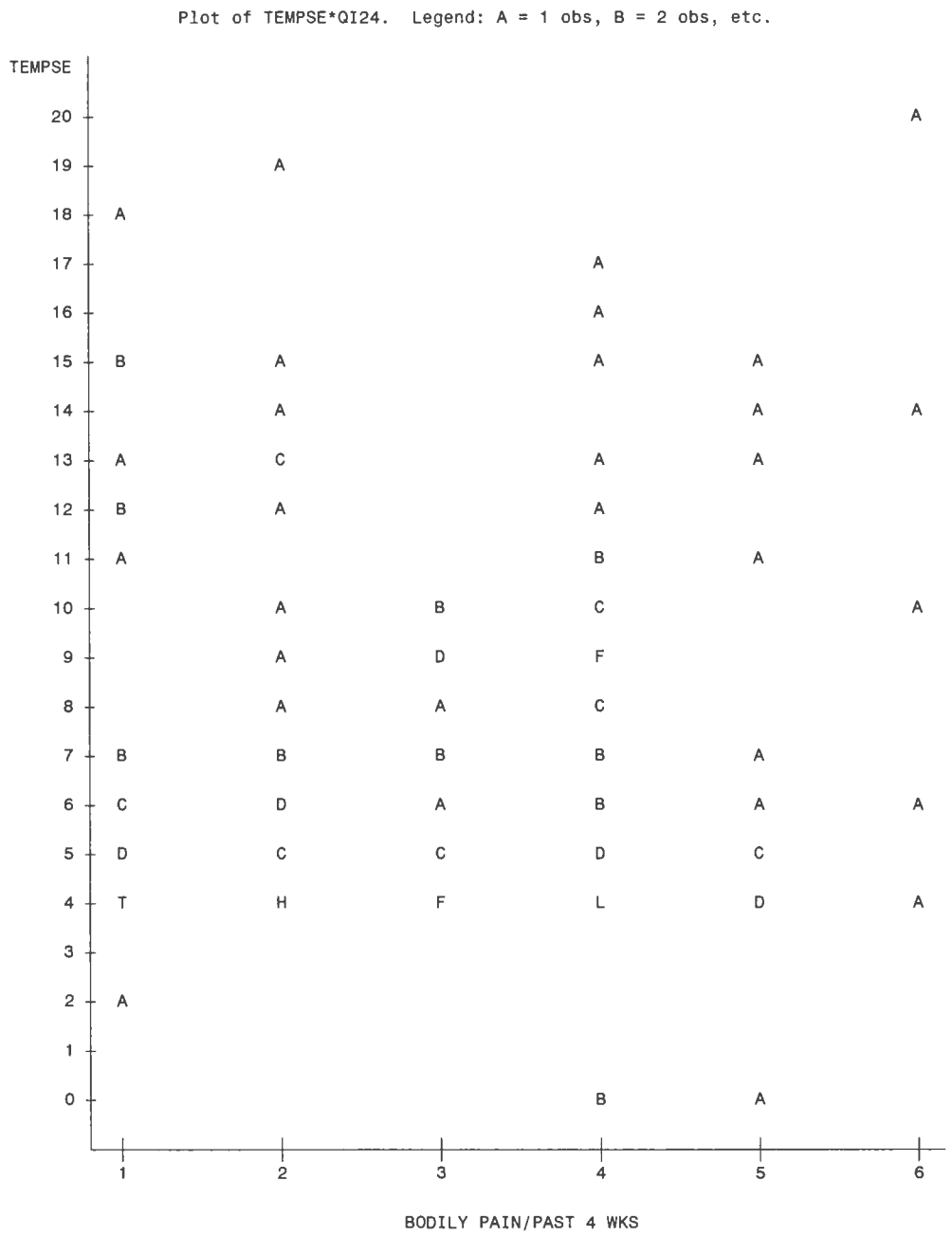


NOTE: 14 obs had missing values.

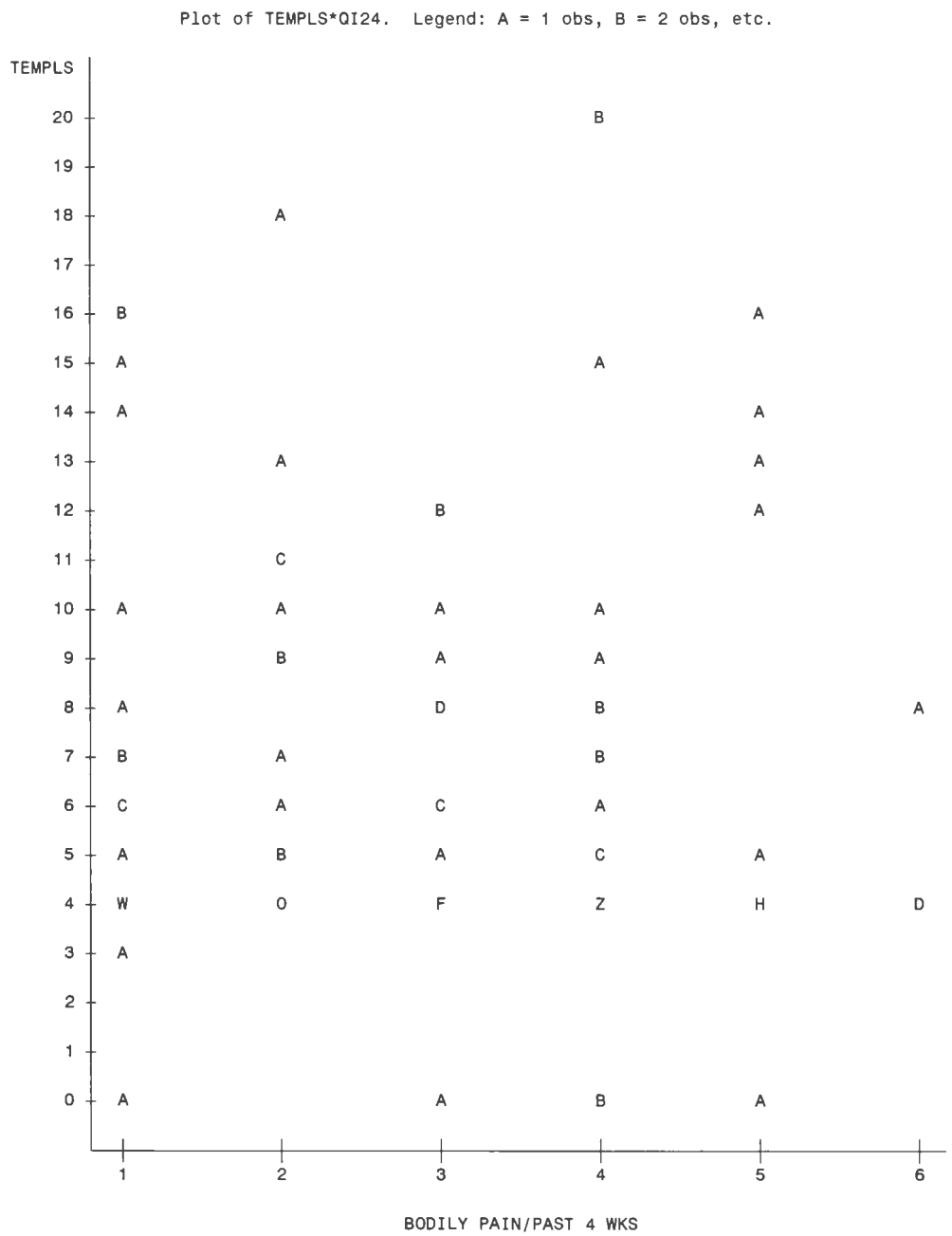
71. Plot of Temptation to Skip Antiretroviral Medication on the Total Scale vs Severity of Bodily Pain



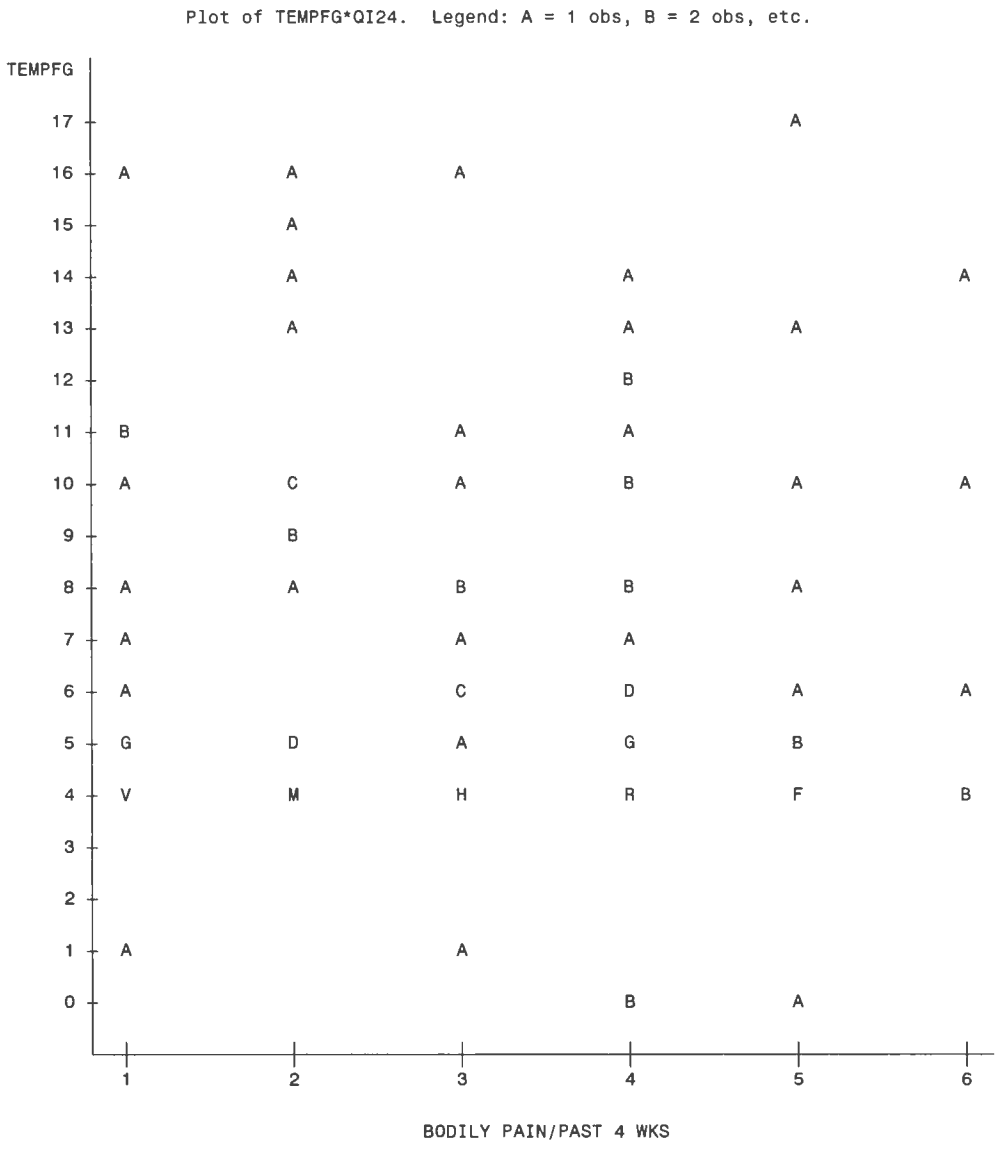
72. Plot of Temptation to Skip Antiretroviral Medication on the Side Effects Scale vs Severity of Bodily Pain



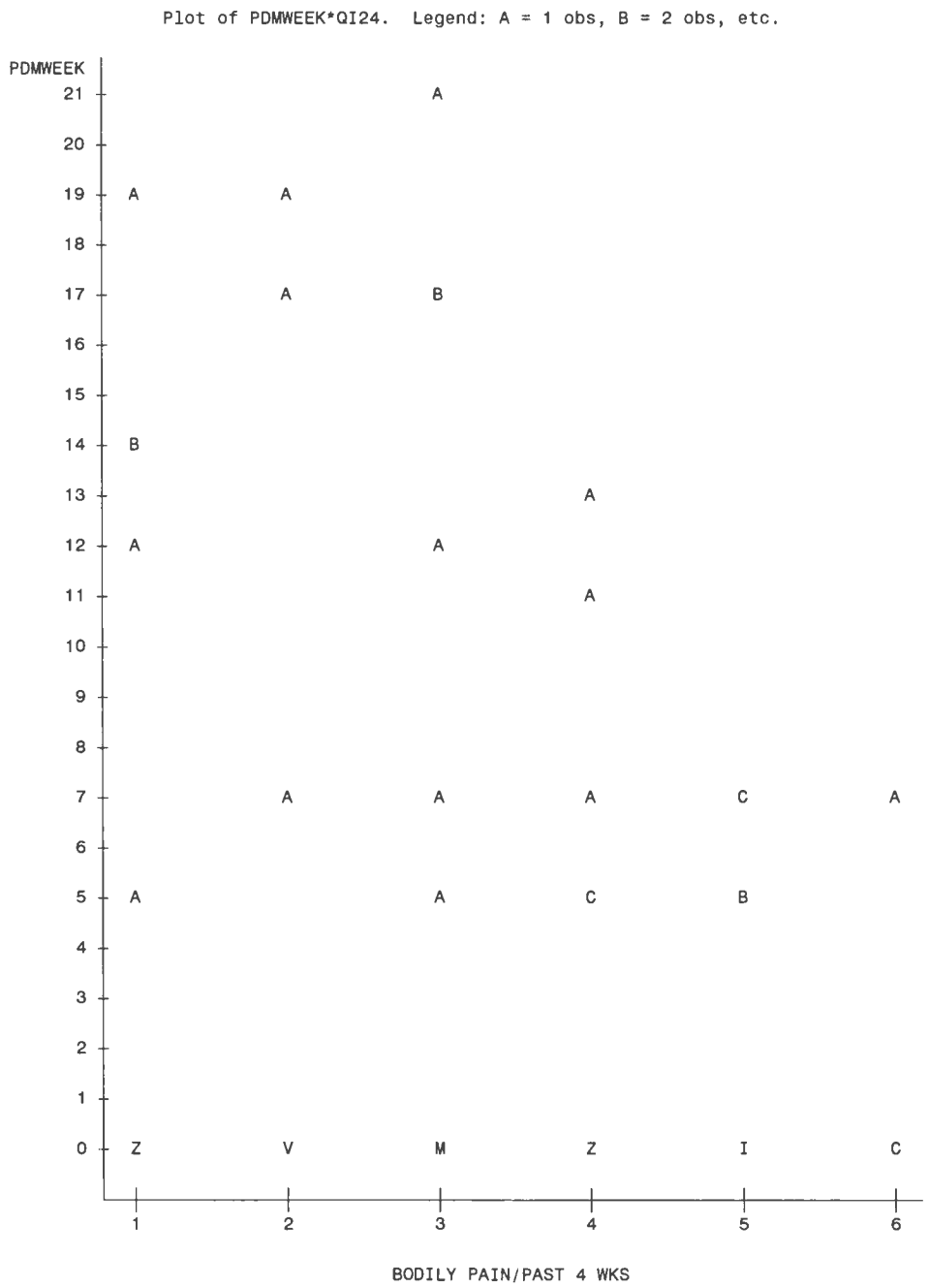
73. Plot of Temptation to Skip Antiretroviral Medication on the Lack of Support Scale vs Severity of Bodily Pain



74. Plot of Temptation to Skip Antiretroviral Medication on the Feeling Good Scale vs Severity of Bodily Pain

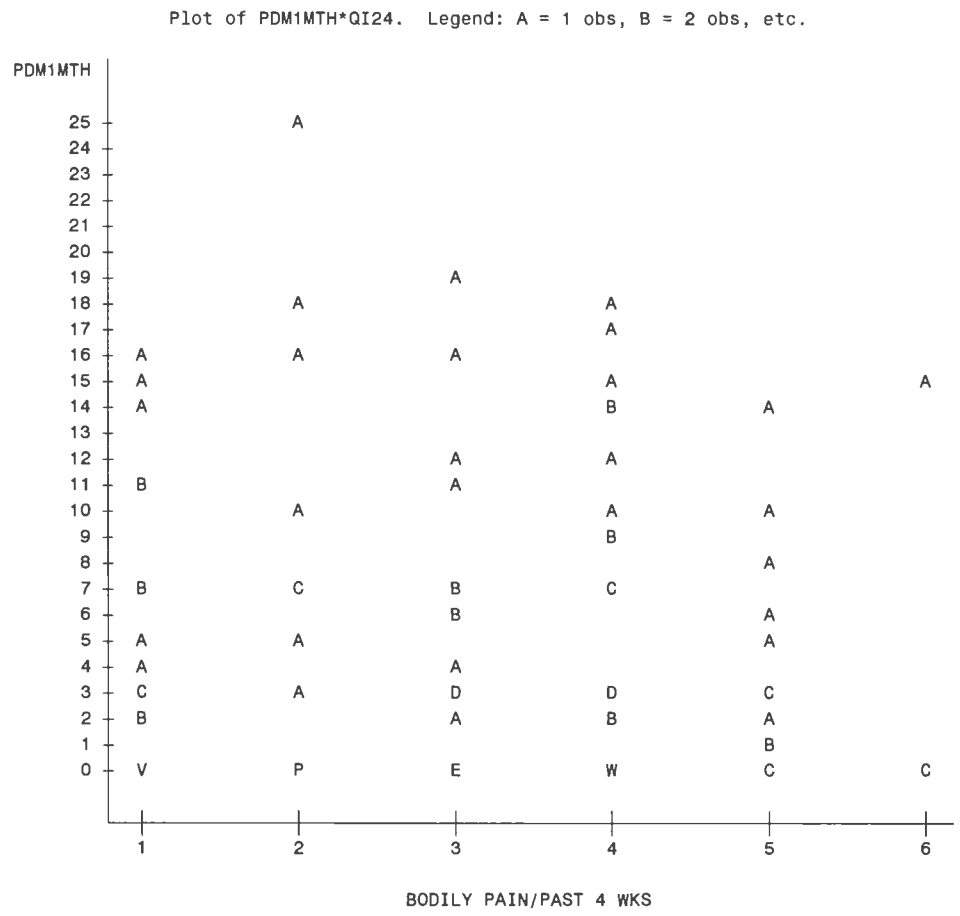


75. Plot of Percent of Doses Missed in the past Week vs Severity of Bodily Pain



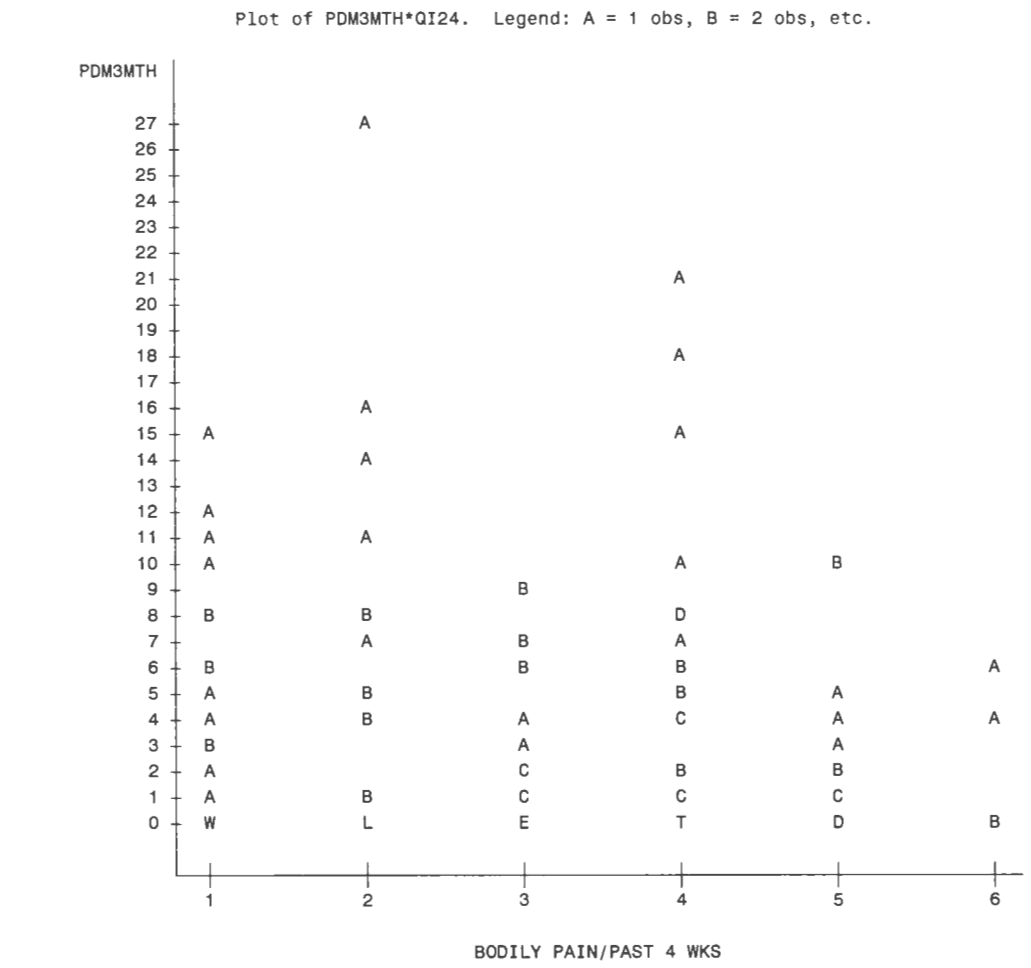
NOTE: 4 obs had missing values. 14 obs hidden.

76. Plot of Percent of Doses Missed in the past Month vs Severity of Bodily Pain



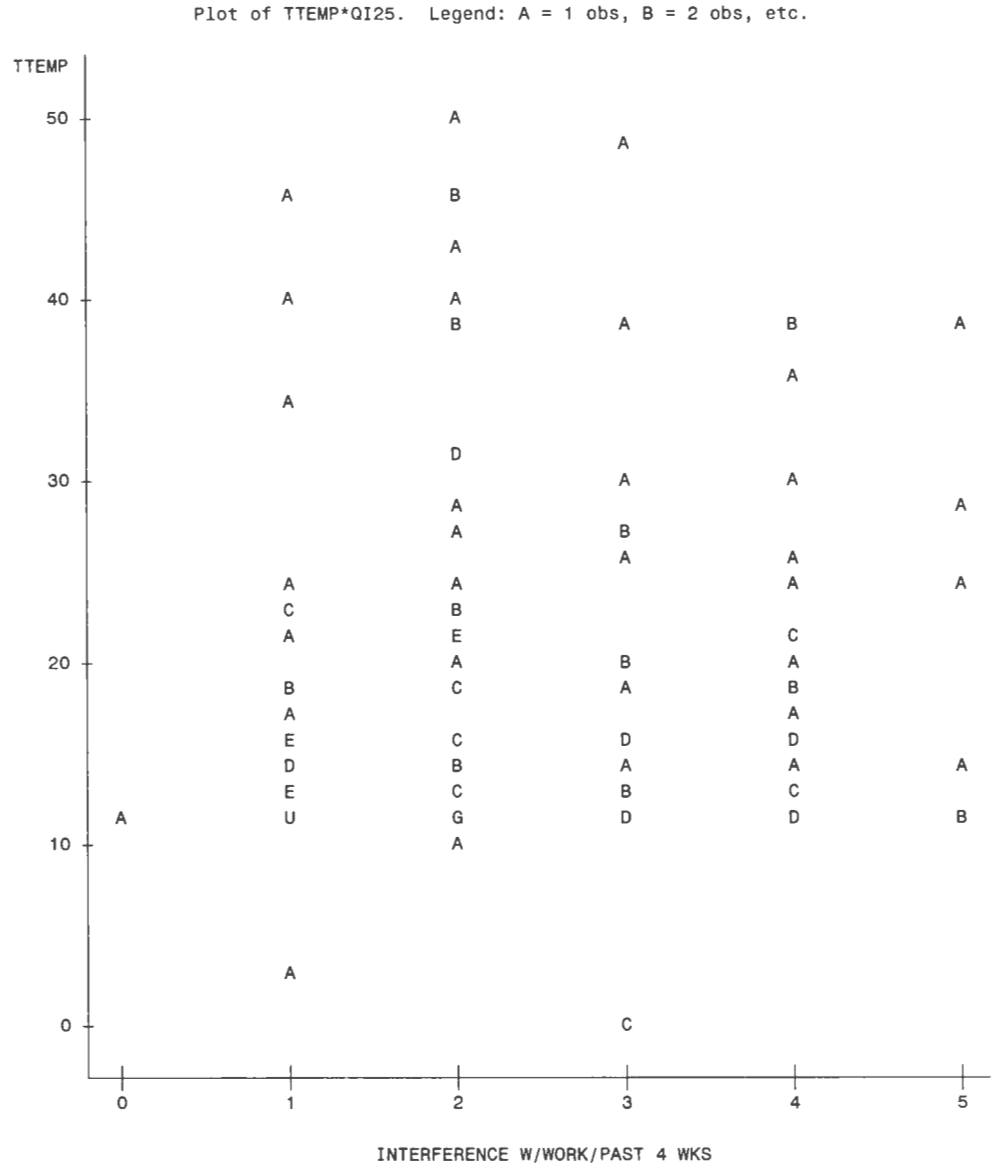
NOTE: 4 obs had missing values.

77. Plot of Percent of Doses Missed in the past Three Months vs Severity of Bodily Pain

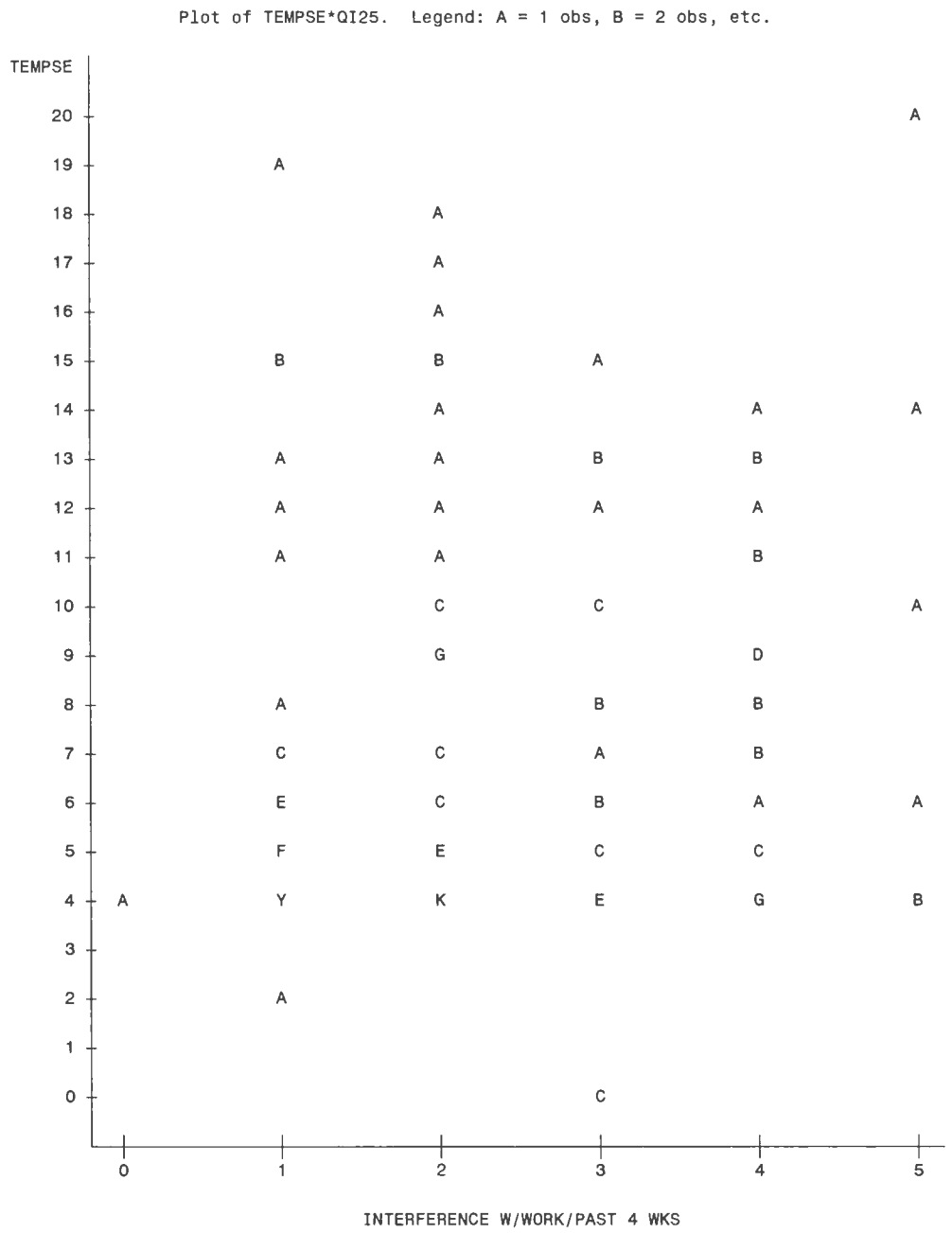


NOTE: 3 obs had missing values.

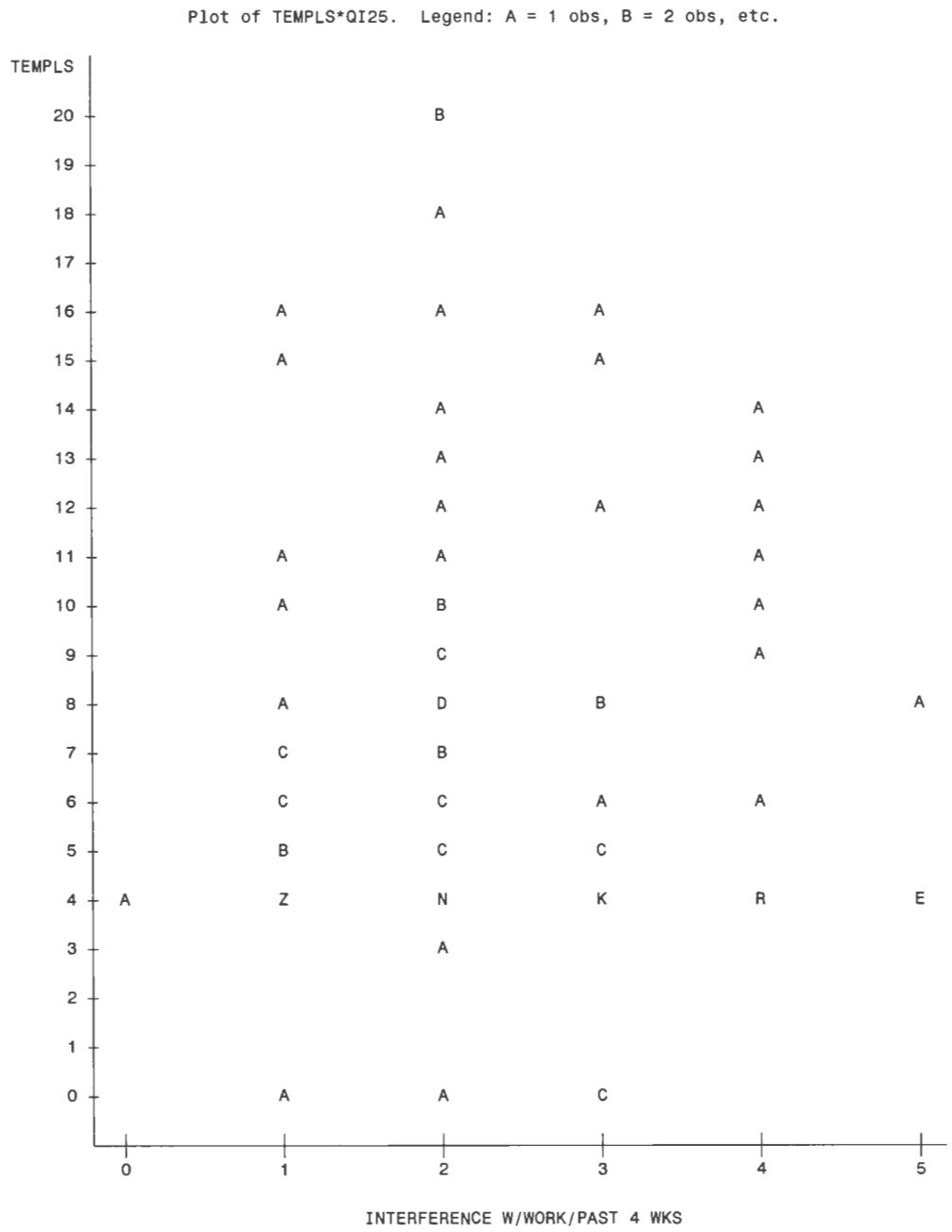
78. Plot of Temptation to Skip Antiretroviral Medication on the Total Scale vs Interference of Pain with Normal Work



79. Plot of Temptation to Skip Antiretroviral Medication on the Side Effects Scale vs Interference of Pain with Normal Work

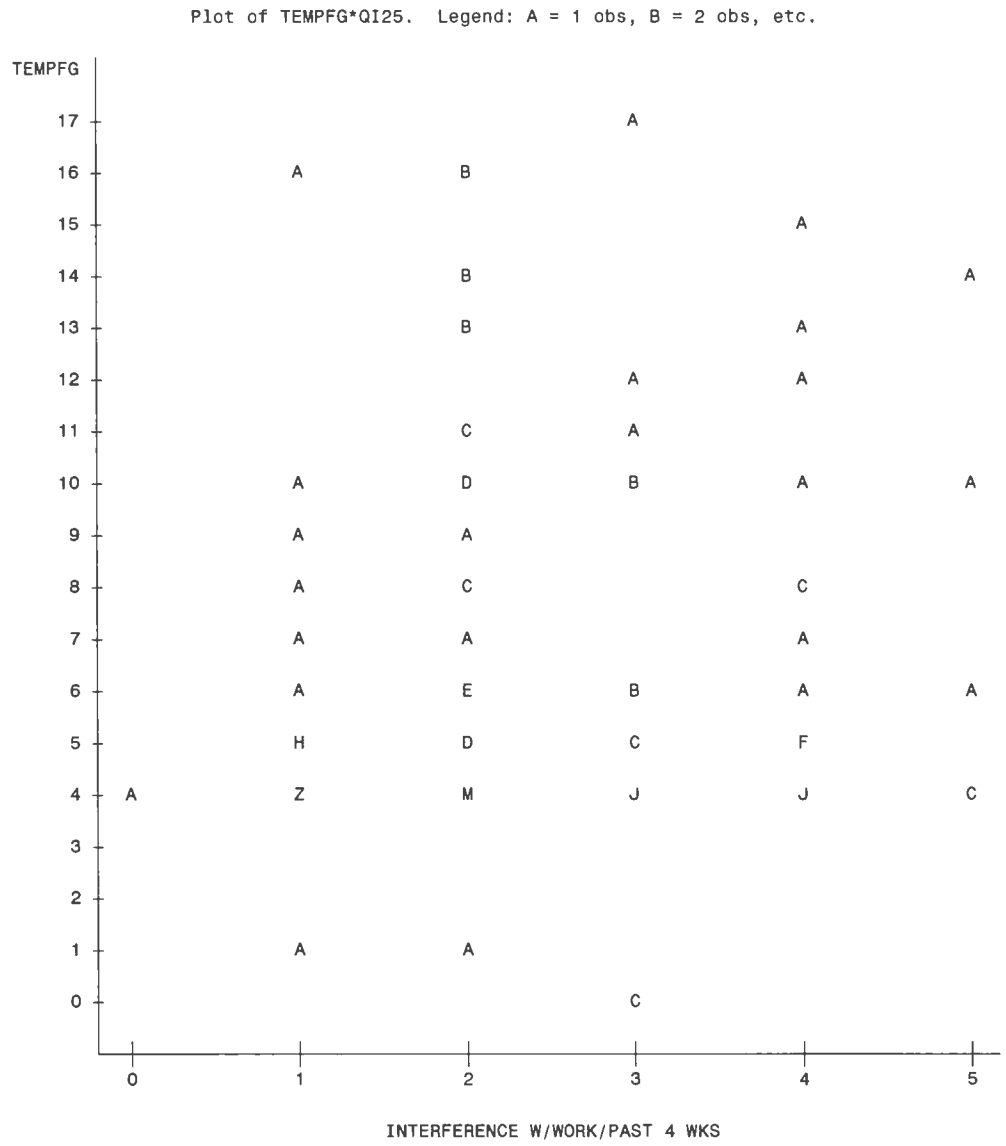


80. Plot of Temptation to Skip Antiretroviral Medication on the Lack of Support Scale vs Interference of Pain with Normal Work



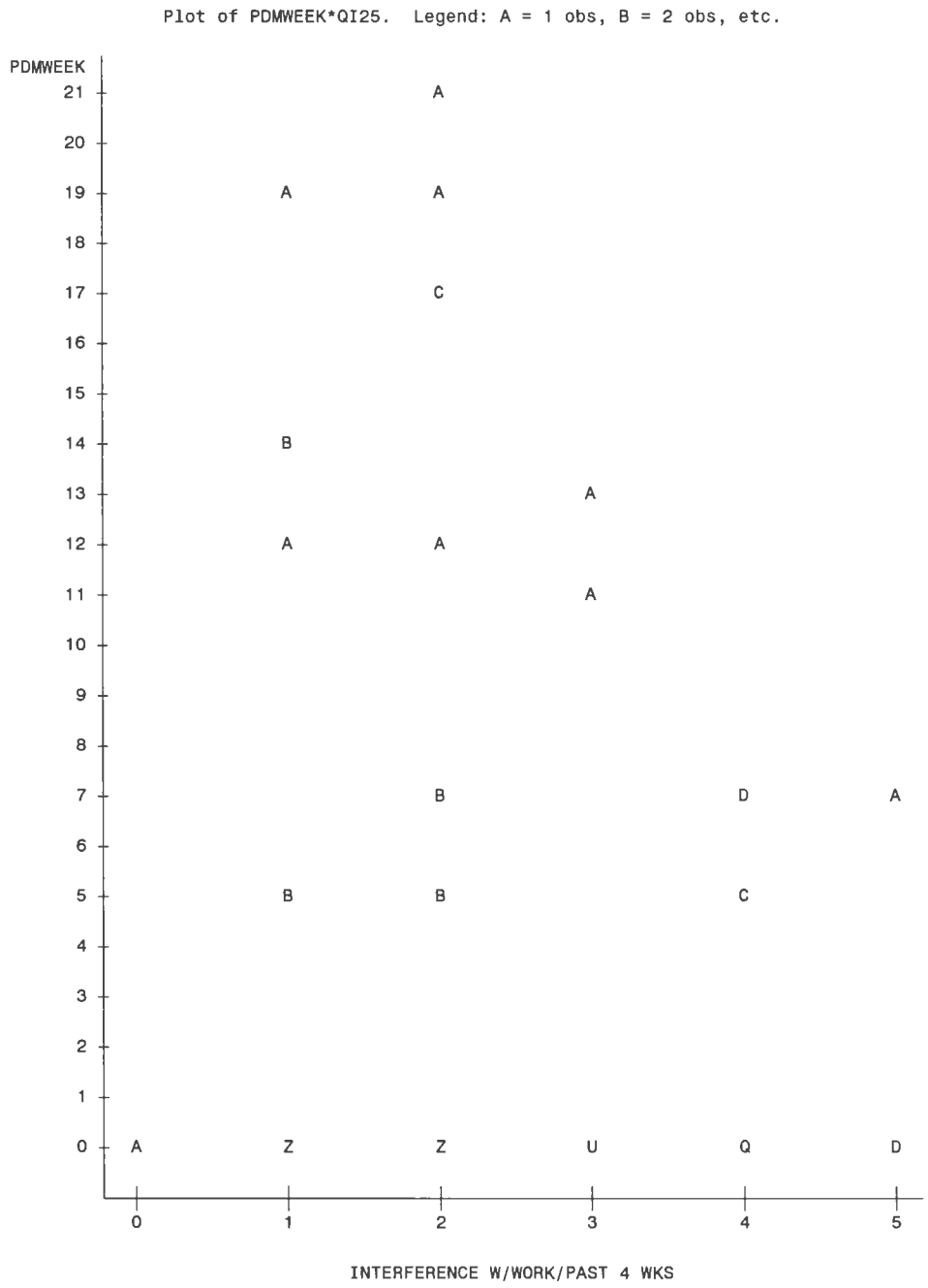
NOTE: 7 obs hidden.

81. Plot of Temptation to Skip Antiretroviral Medication on the Feeling Good Scale vs Interference of Pain with Normal Work



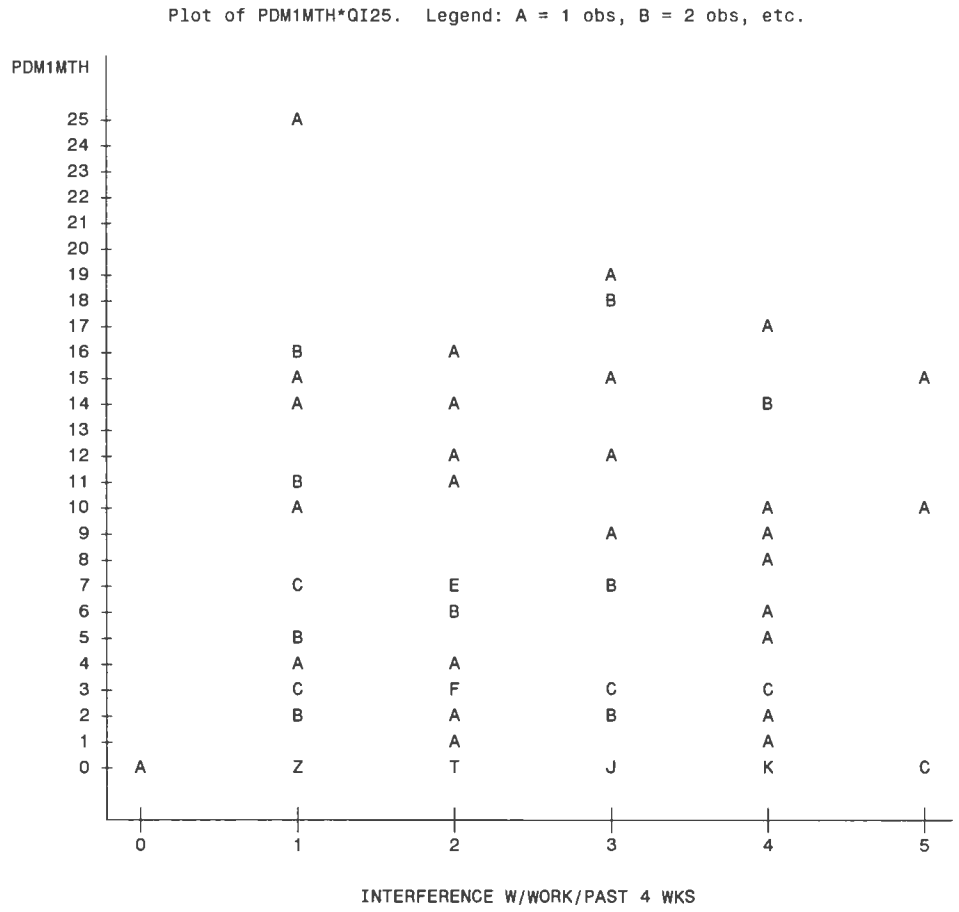
NOTE: 6 obs hidden.

82. Plot of Percent of Doses Missed in the past Week vs Interference of Pain with Normal Work



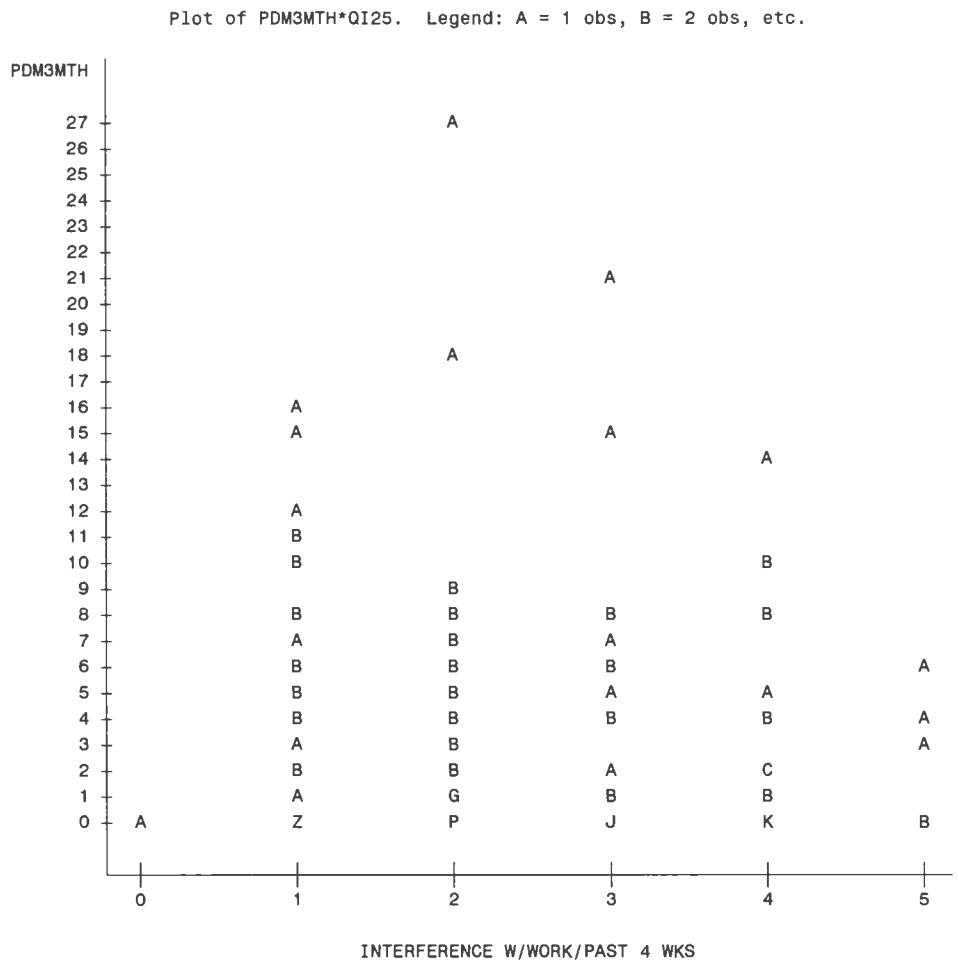
NOTE: 4 obs had missing values. 18 obs hidden.

83. Plot of Percent of Doses Missed in the past Month vs Interference of Pain with Normal Work



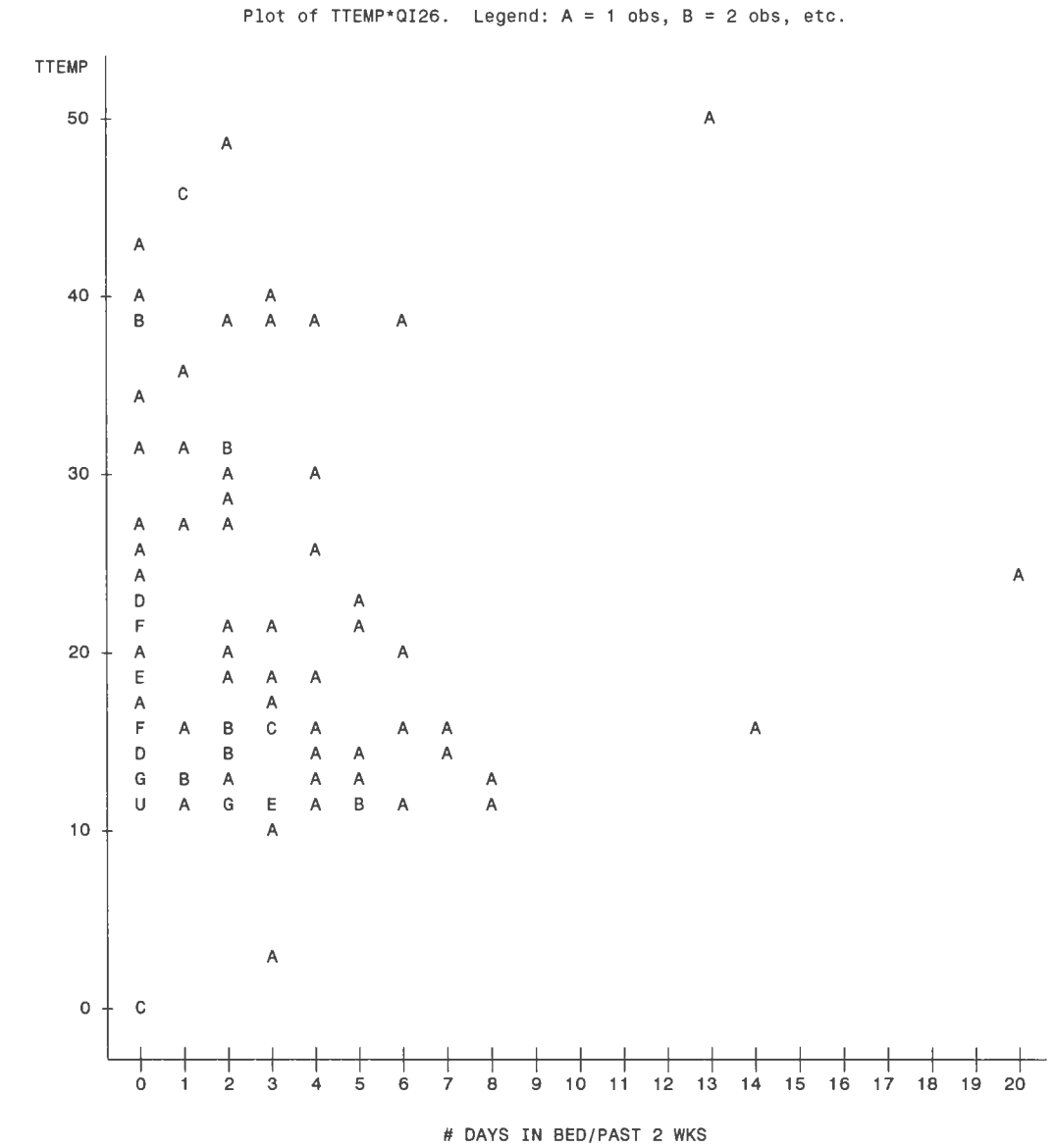
NOTE: 4 obs had missing values. 1 obs hidden.

84. Plot of Percent of Doses Missed in the past Three Months vs Interference of Pain with Normal Work



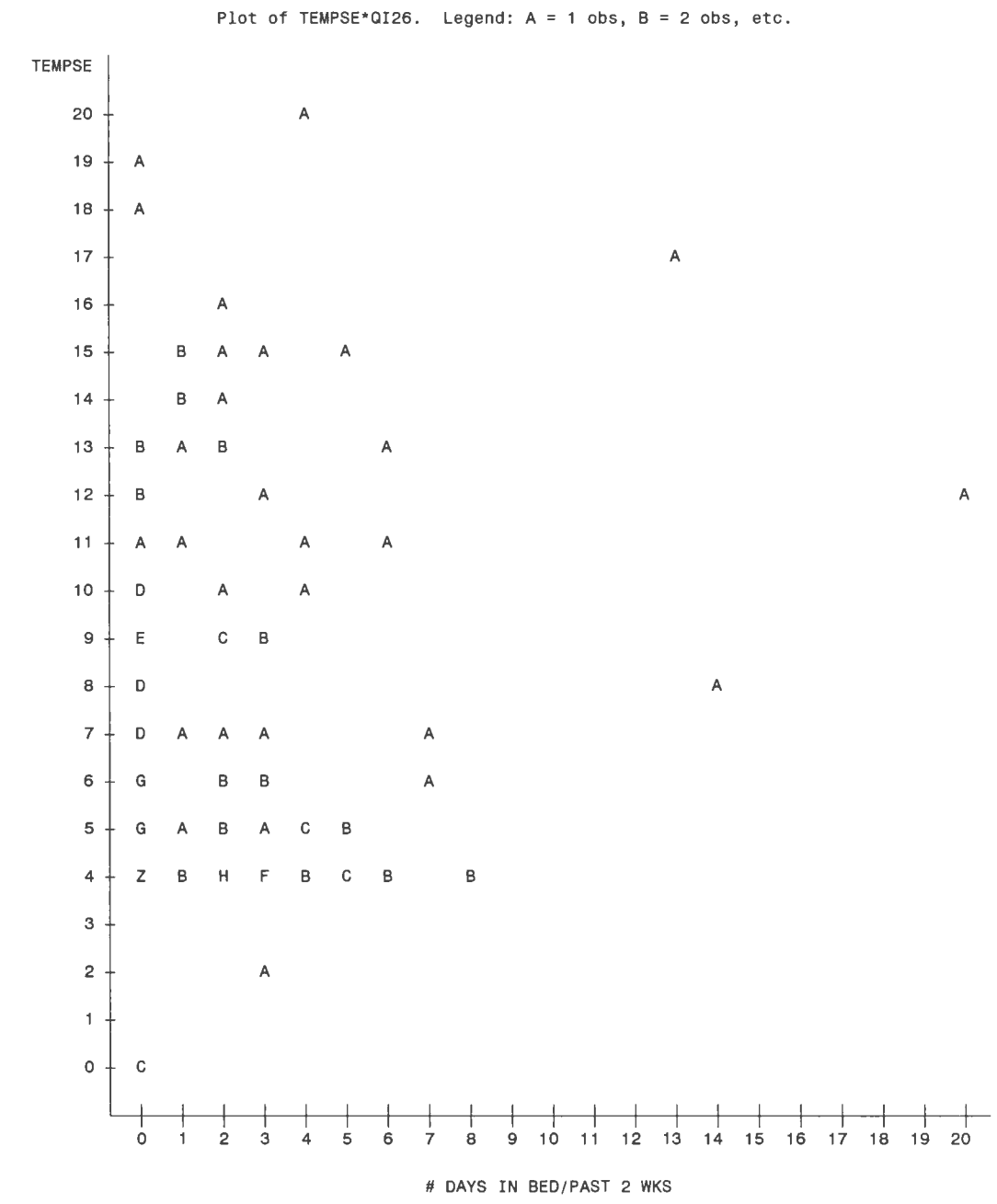
NOTE: 3 obs had missing values.

85. Plot of Temptation to Skip Antiretroviral Medication on the Total Scale vs Days in Bed



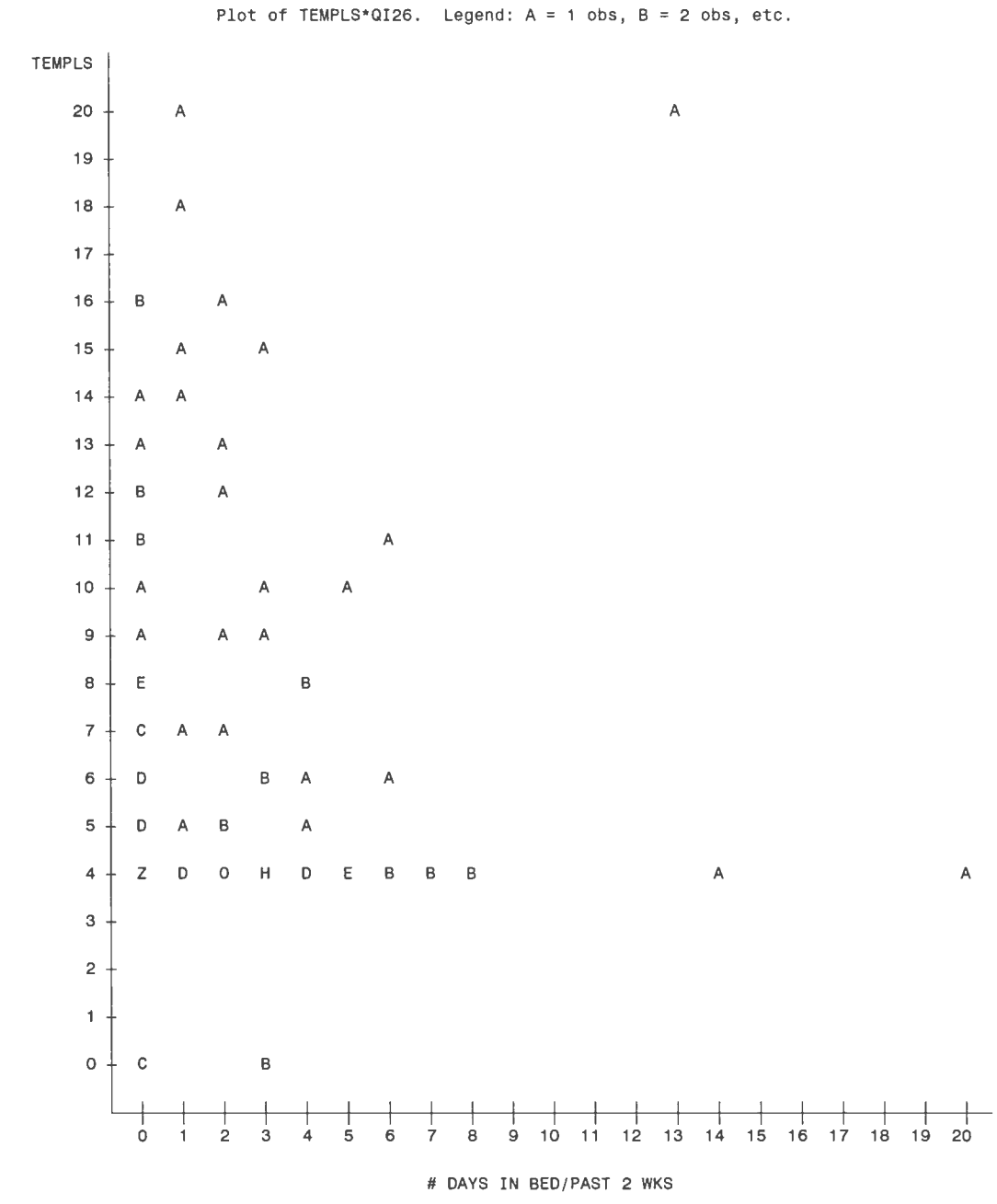
NOTE: 4 obs had missing values.

86. Plot of Temptation to Skip Antiretroviral Medication on the Side Effects Scale vs Days in Bed



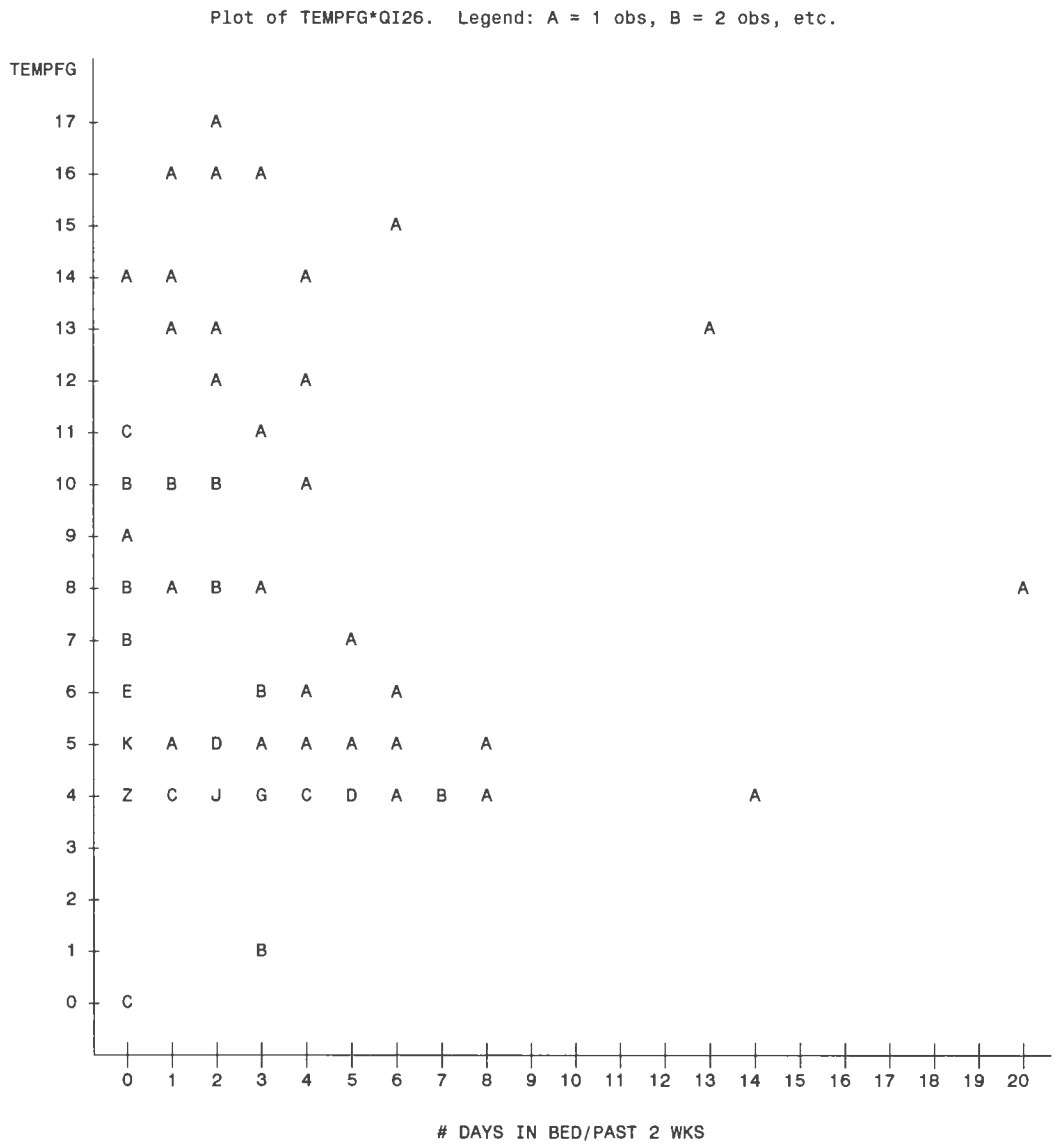
NOTE: 4 obs had missing values.

87. Plot of Temptation to Skip Antiretroviral Medication on the Lack of Support Scale vs Days in Bed



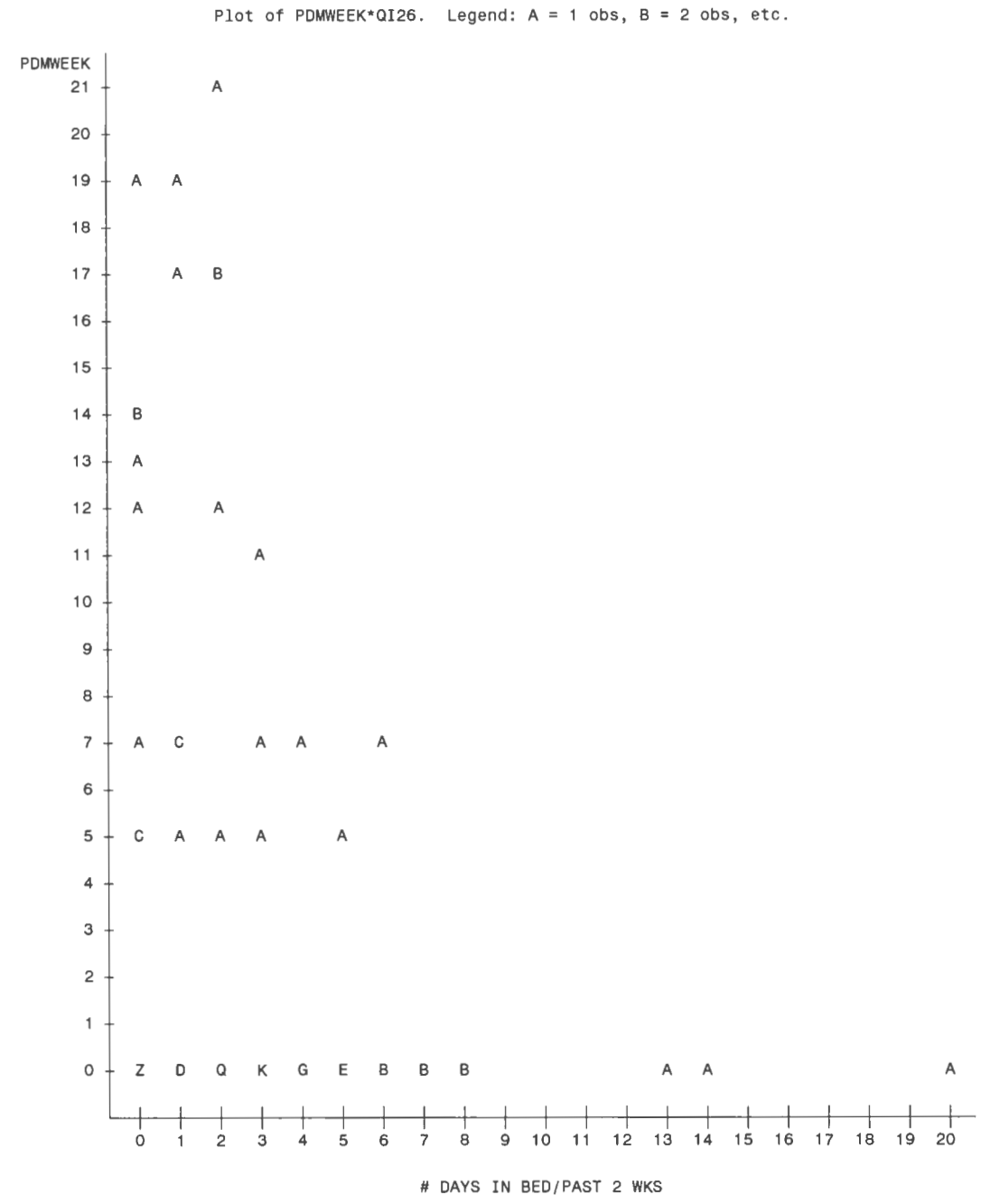
NOTE: 4 obs had missing values. 12 obs hidden.

88. Plot of Temptation to Skip Antiretroviral Medication on the Feeling Good Scale vs Days in Bed



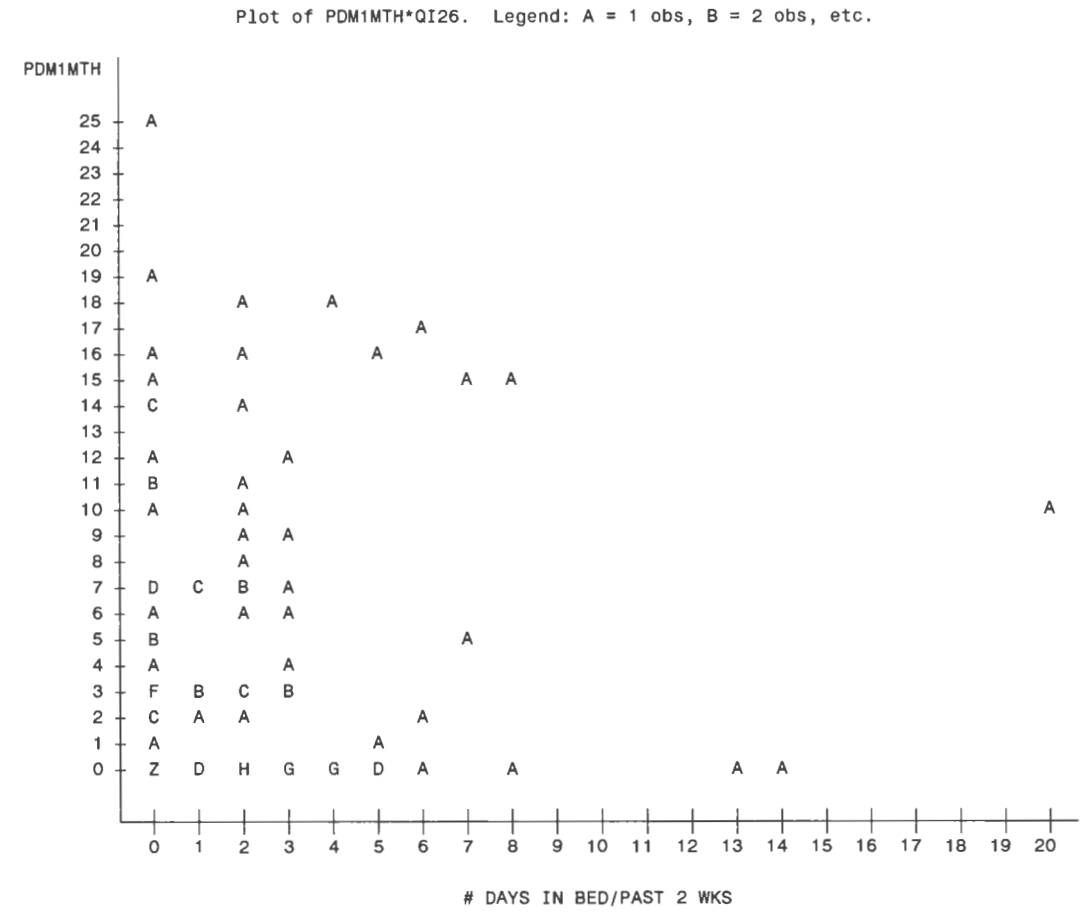
NOTE: 4 obs had missing values. 11 obs hidden.

89. Plot of Percent of Doses Missed in the past Week vs Days in Bed



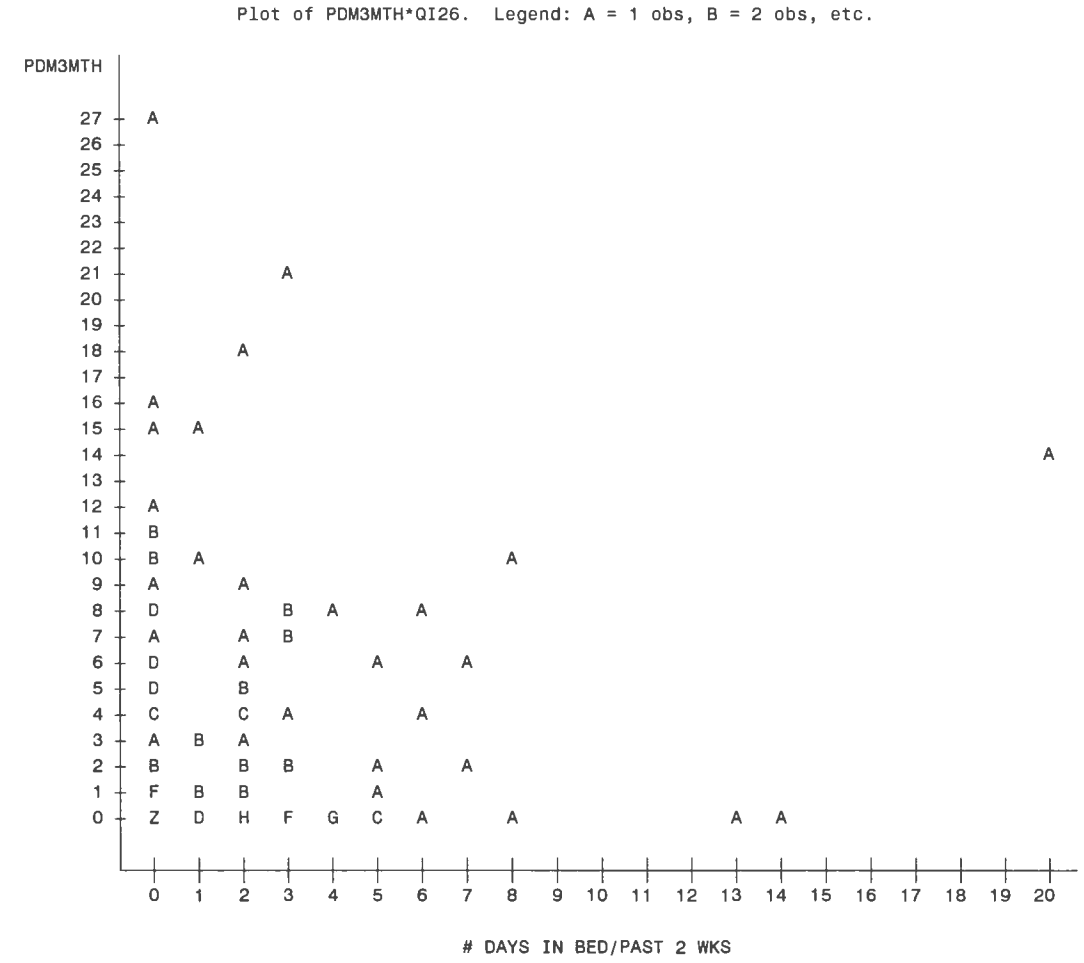
NOTE: 8 obs had missing values. 30 obs hidden.

90. Plot of Percent of Doses Missed in the past Month vs Days in Bed



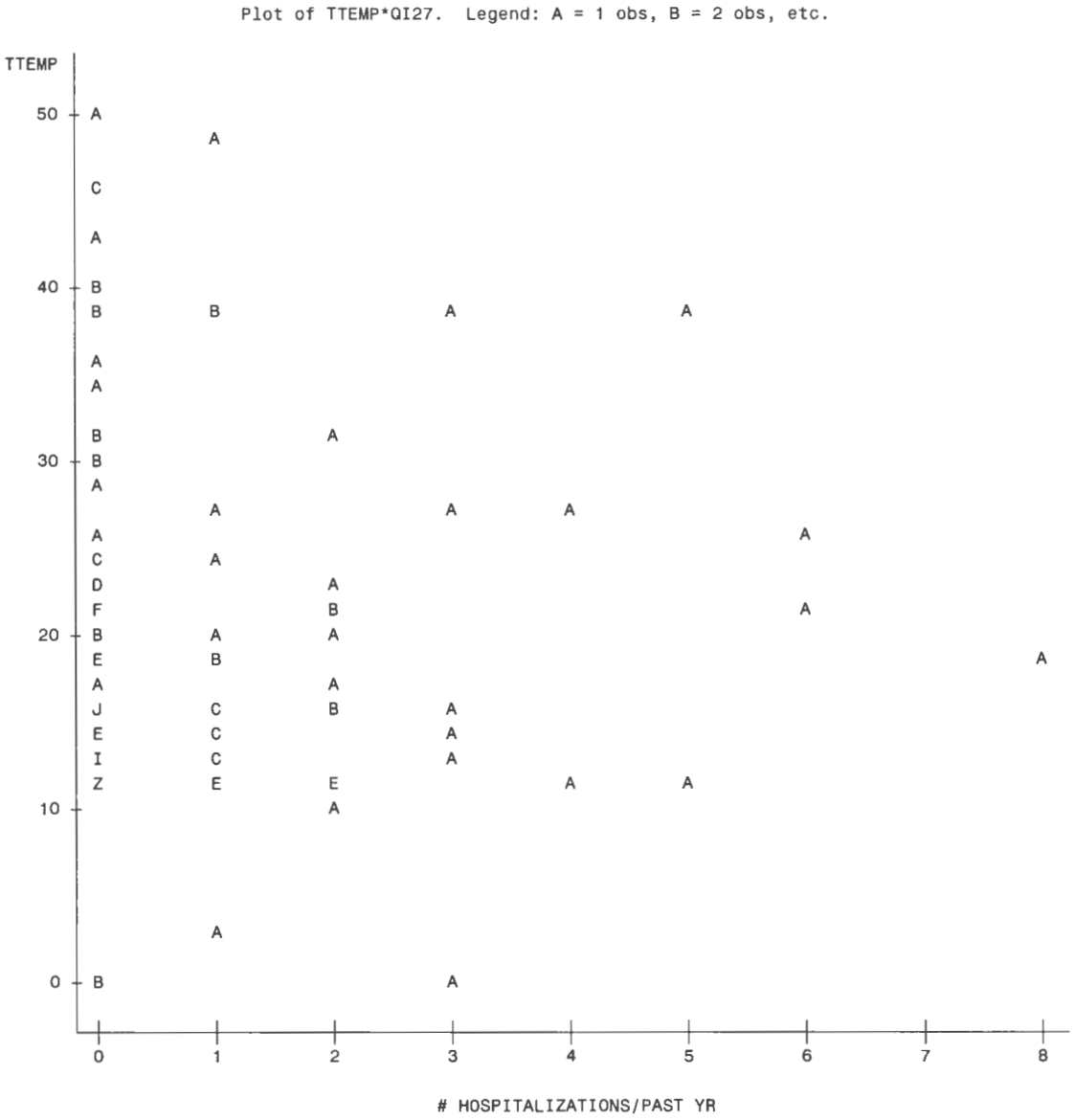
NOTE: 8 obs had missing values. 10 obs hidden.

91. Plot of Percent of Doses Missed in the past Three Months vs Days in Bed



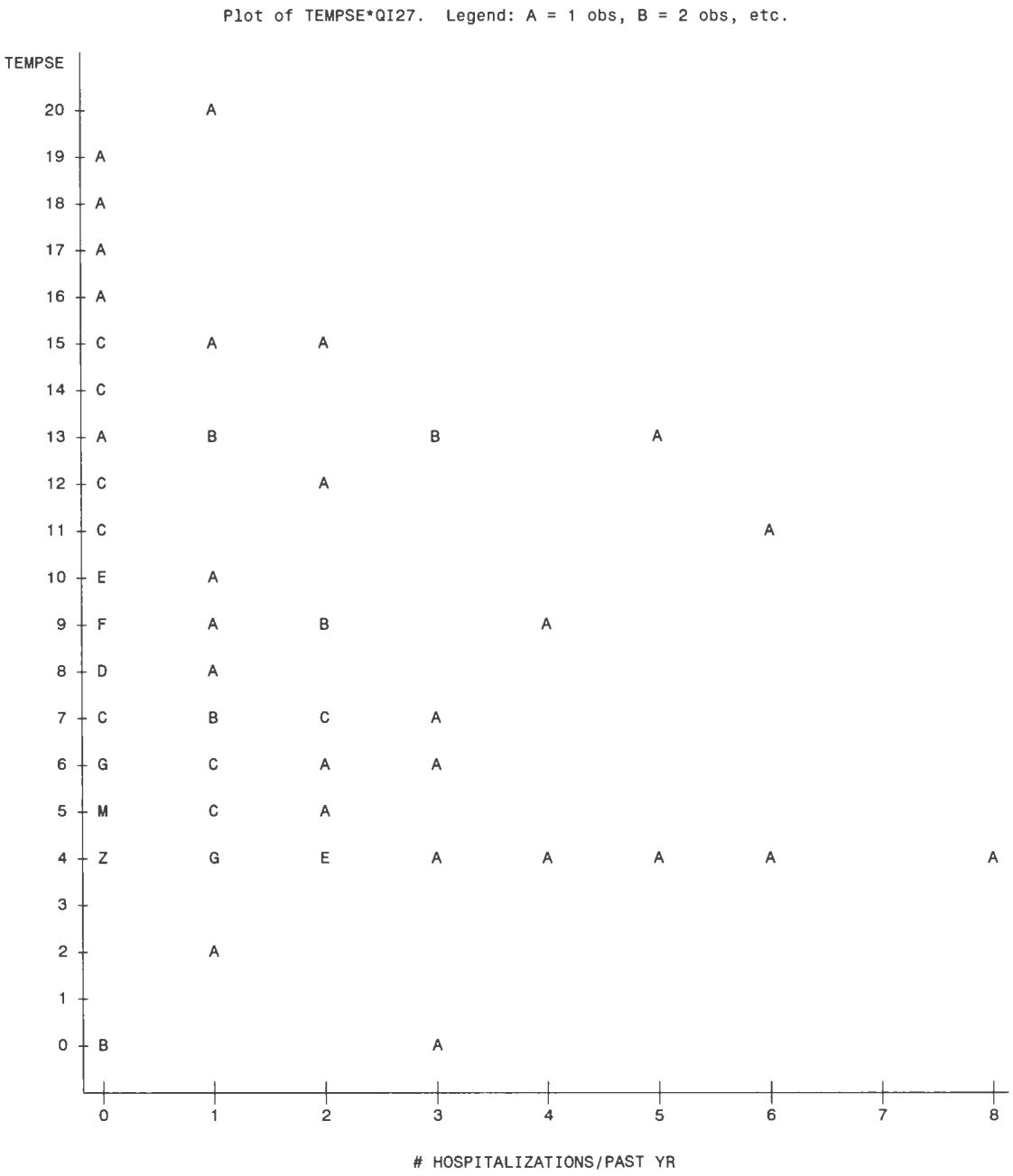
NOTE: 7 obs had missing values. 6 obs hidden.

92. Plot of Temptation to Skip Antiretroviral Medication on the Total Scale vs Hospitalizations



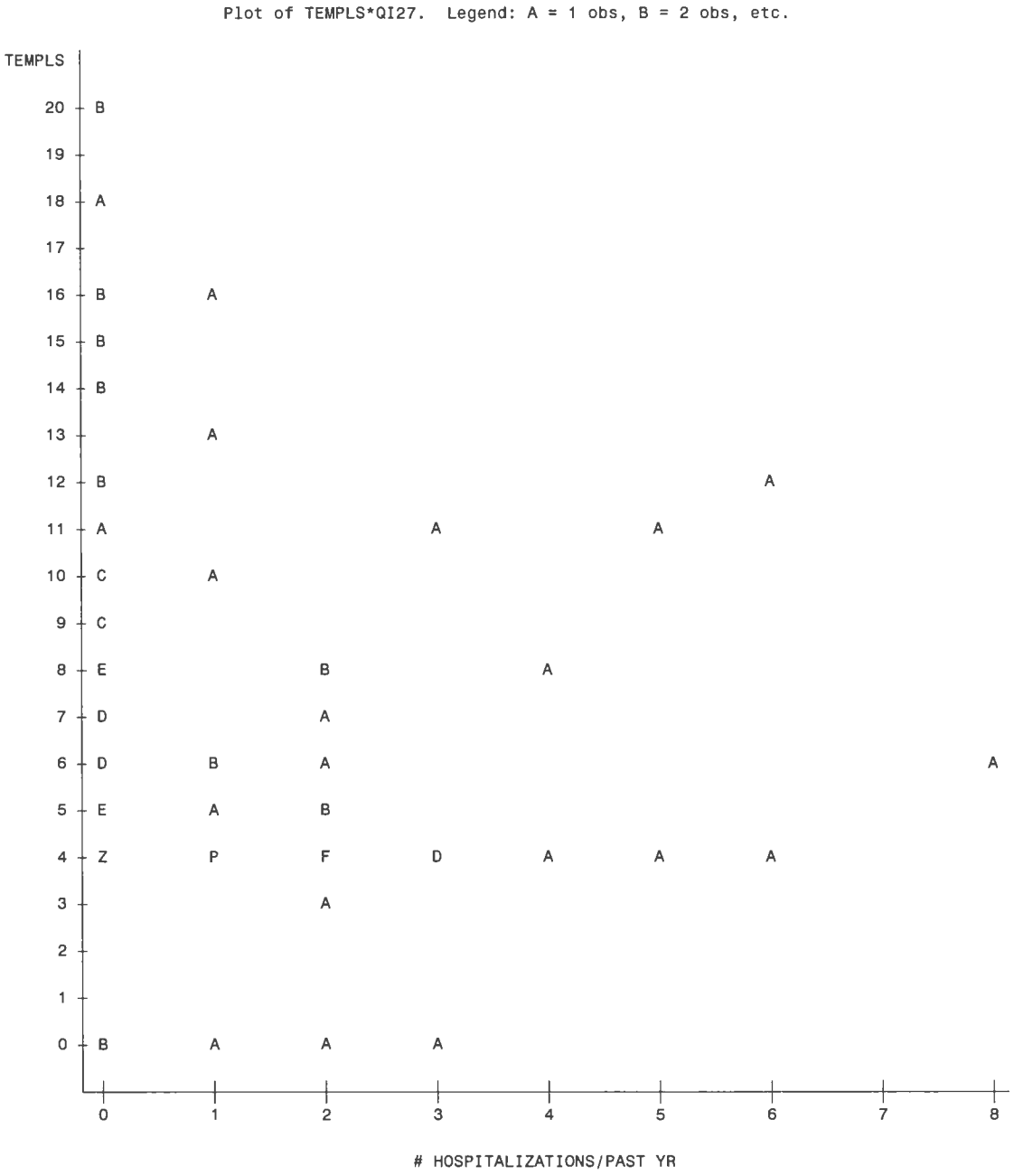
NOTE: 2 obs had missing values. 1 obs hidden.

93. Plot of Temptation to Skip Antiretroviral Medication on the Side Effects Scale vs Hospitalizations



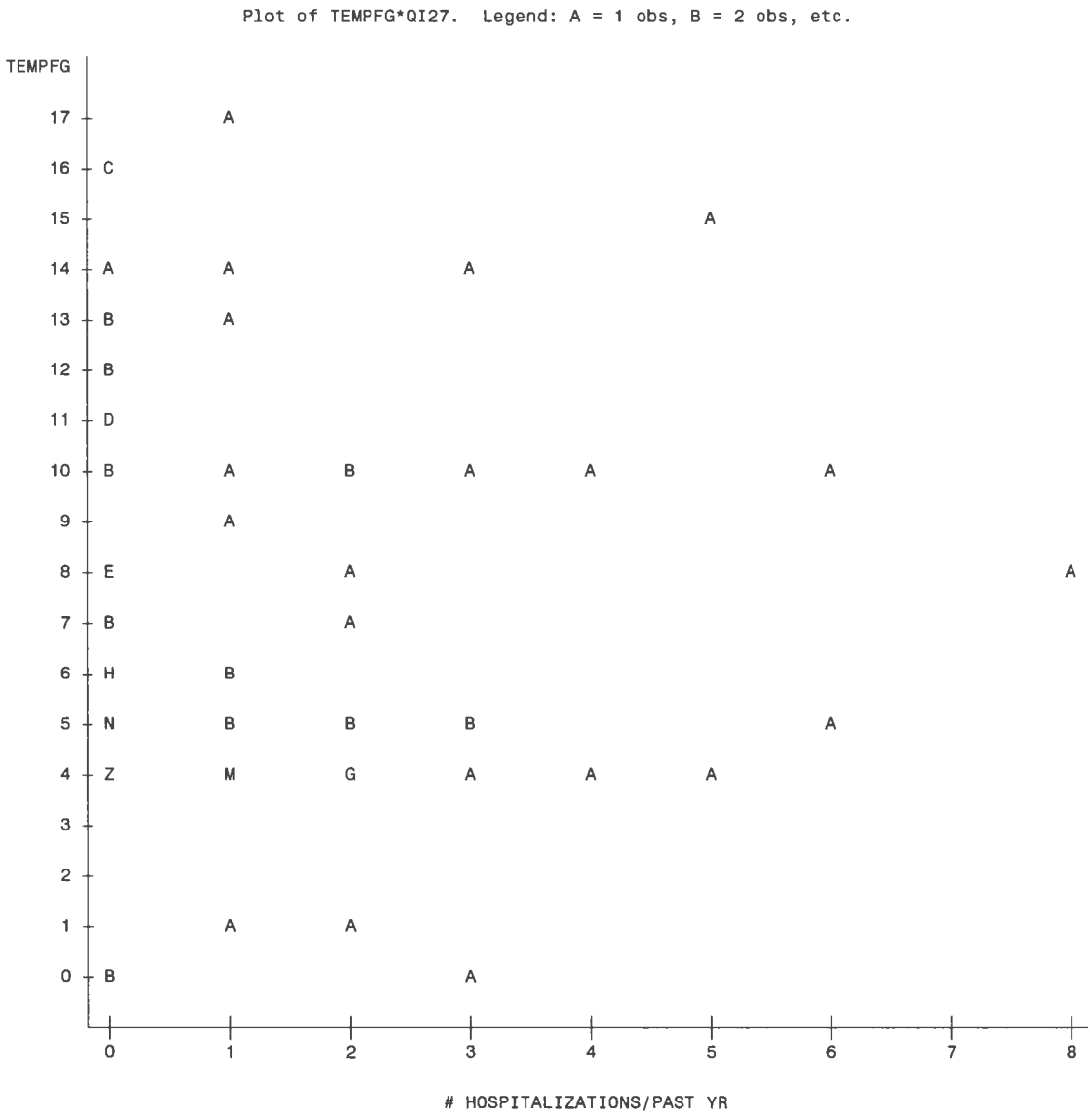
NOTE: 2 obs had missing values. 8 obs hidden.

94. Plot of Temptation to Skip Antiretroviral Medication on the Lack of Support Scale vs Hospitalizations



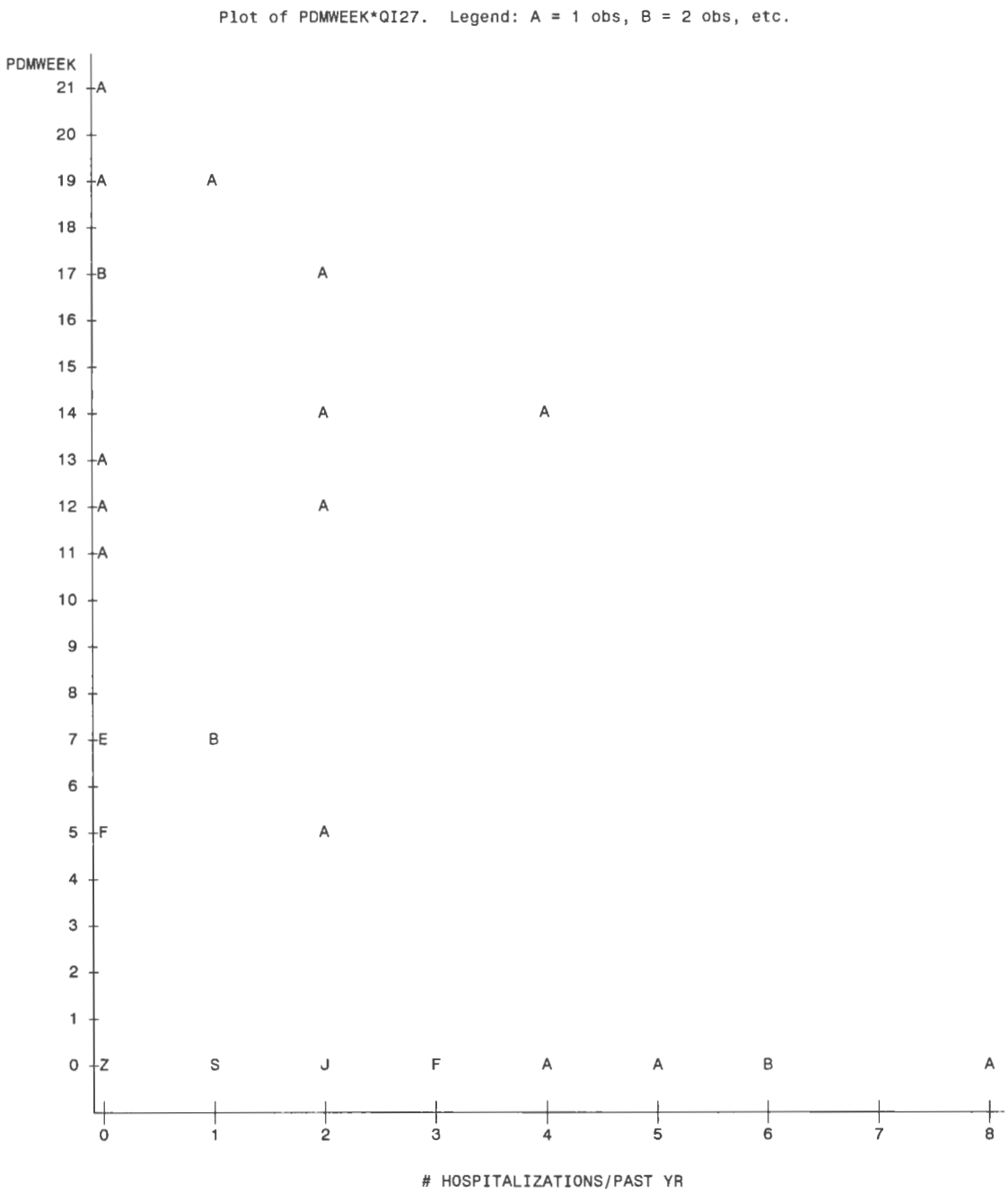
NOTE: 2 obs had missing values. 27 obs hidden.

95. Plot of Temptation to Skip Antiretroviral Medication on the Feeling Good Scale vs Hospitalizations



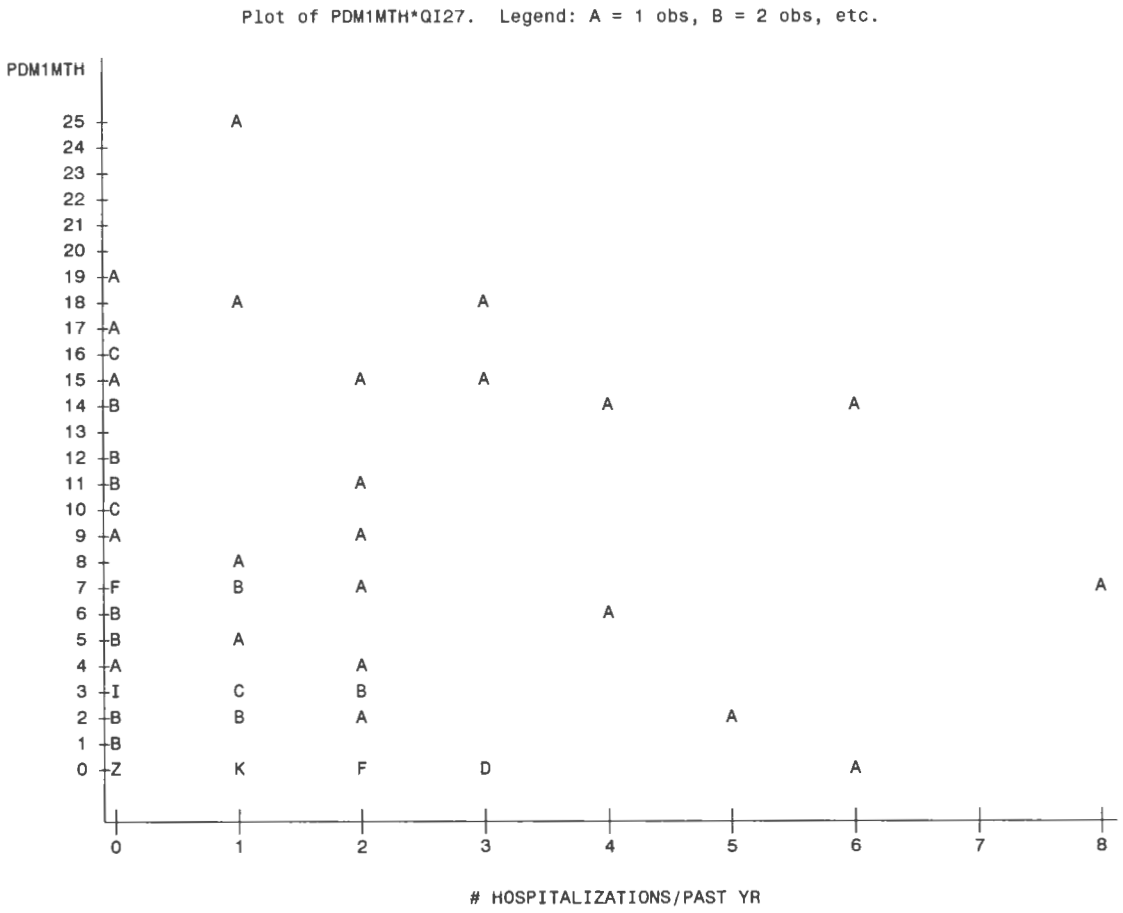
NOTE: 2 obs had missing values. 20 obs hidden.

96. Plot of Percent of Doses Missed in the past Week vs Hospitalizations



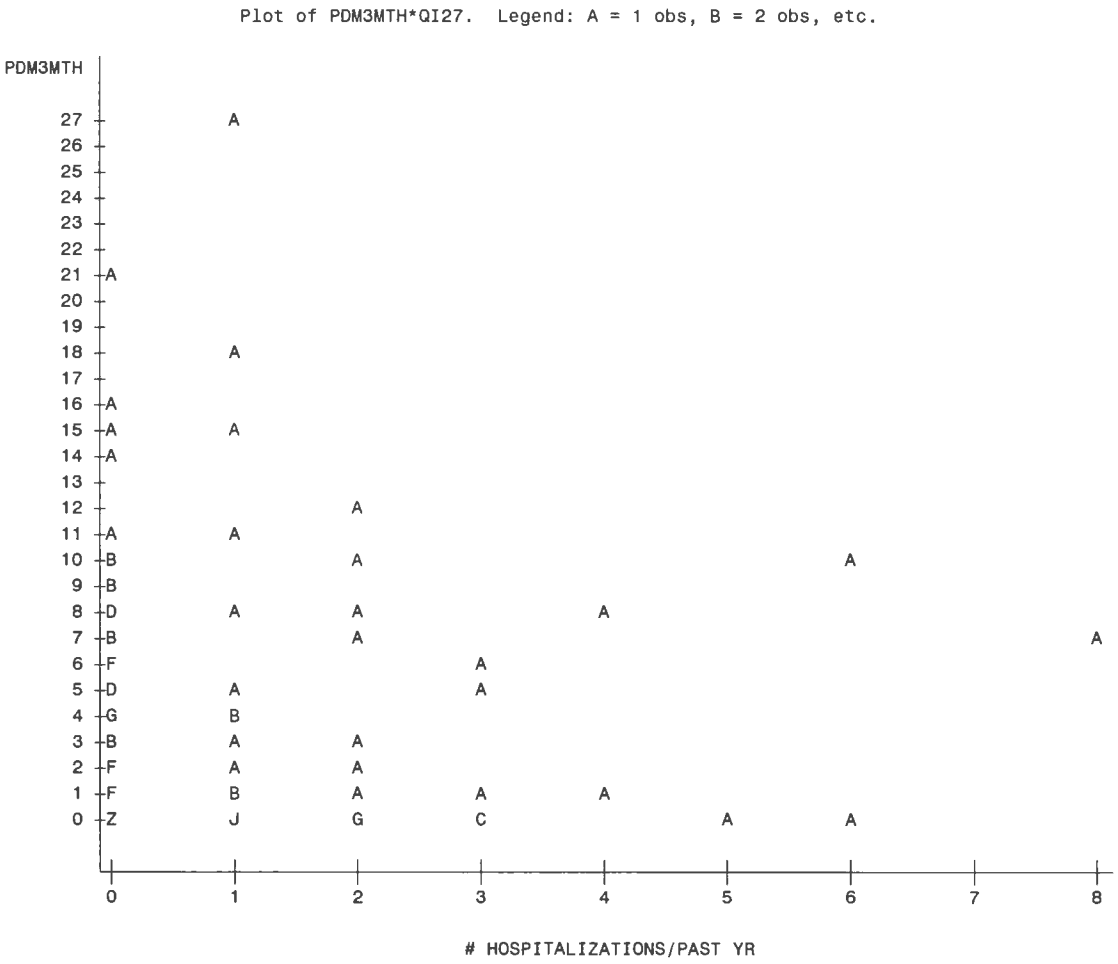
NOTE: 6 obs had missing values. 45 obs hidden.

97. Plot of Percent of Doses Missed in the past Month vs Hospitalizations



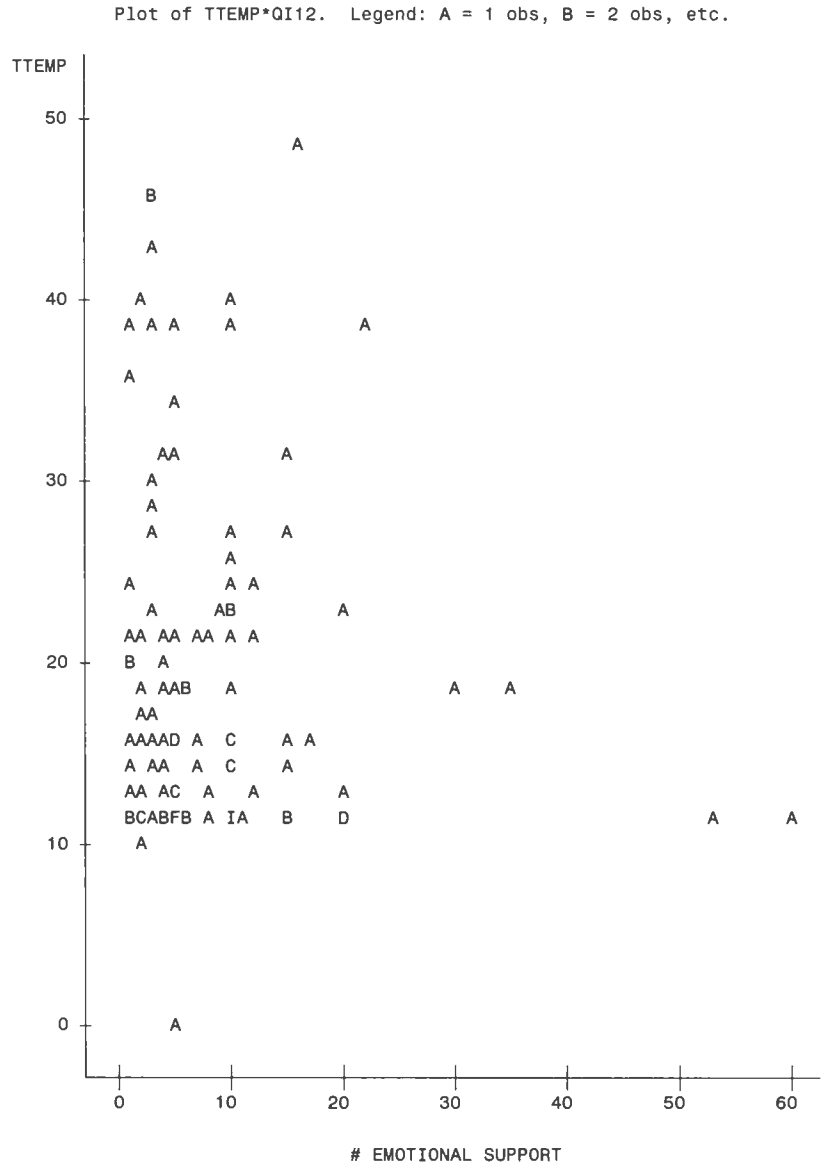
NOTE: 6 obs had missing values. 23 obs hidden.

98. Plot of Percent of Doses Missed in the past Three Months vs Hospitalizations



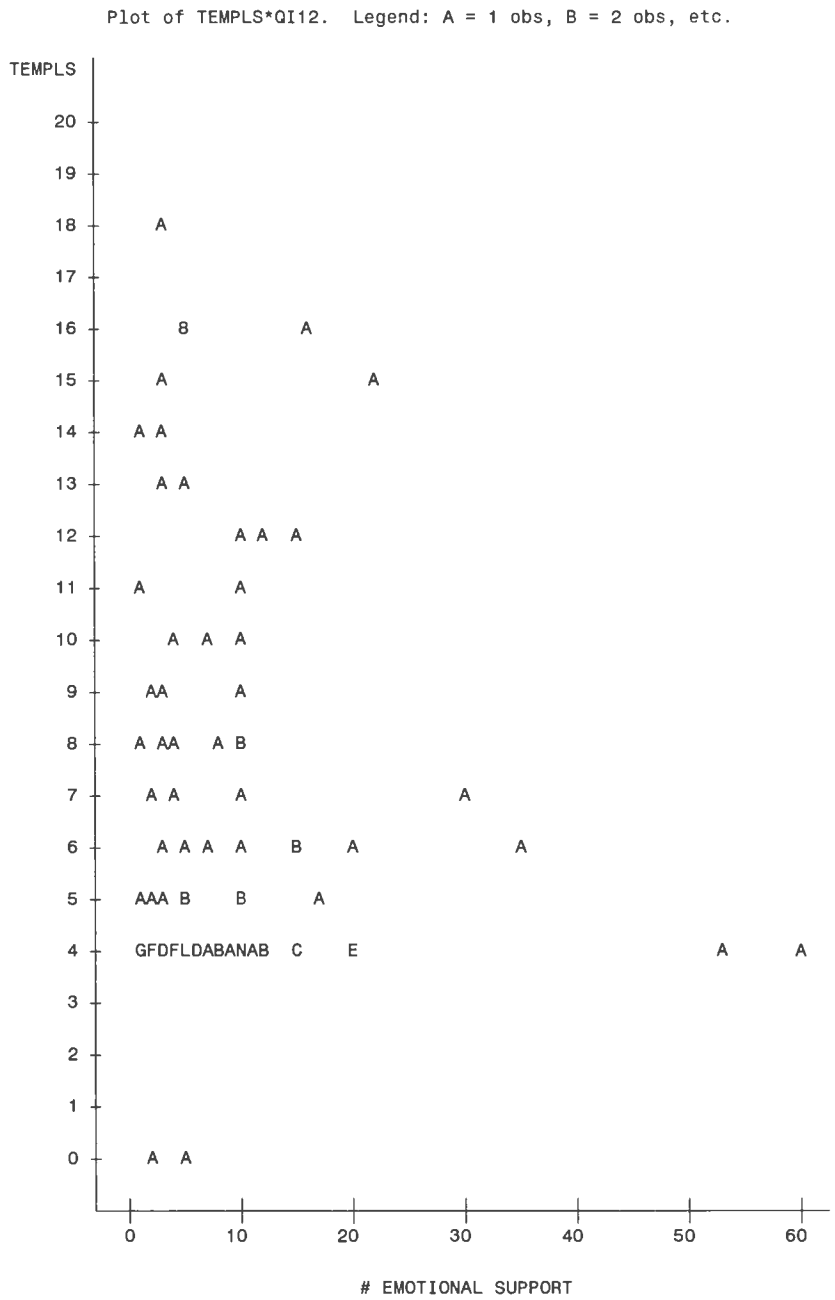
NOTE: 5 obs had missing values. 18 obs hidden.

99. Plot of Temptation to Skip Antiretroviral Medication on the Total Scale vs Persons giving Emotional Support



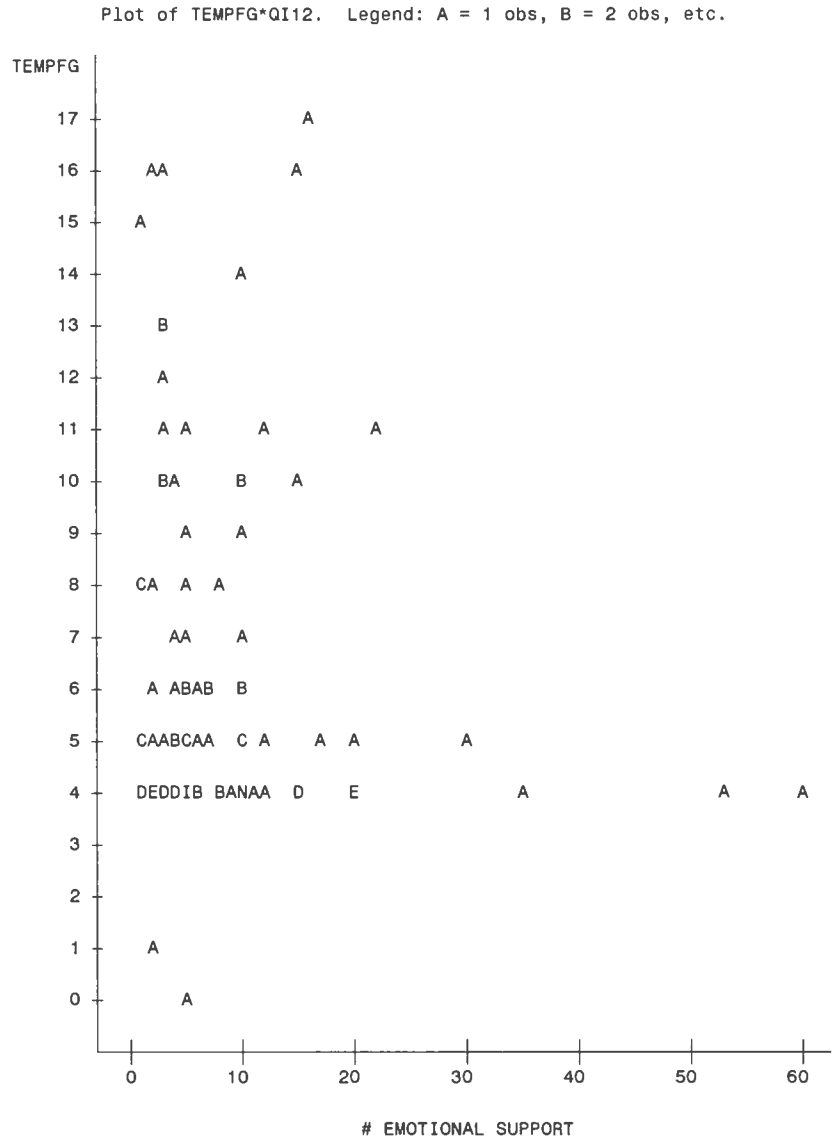
NOTE: 24 obs had missing values.

101. Plot of Temptation to Skip Antiretroviral Medication on the Lack of Support Scale vs Persons giving Emotional Support



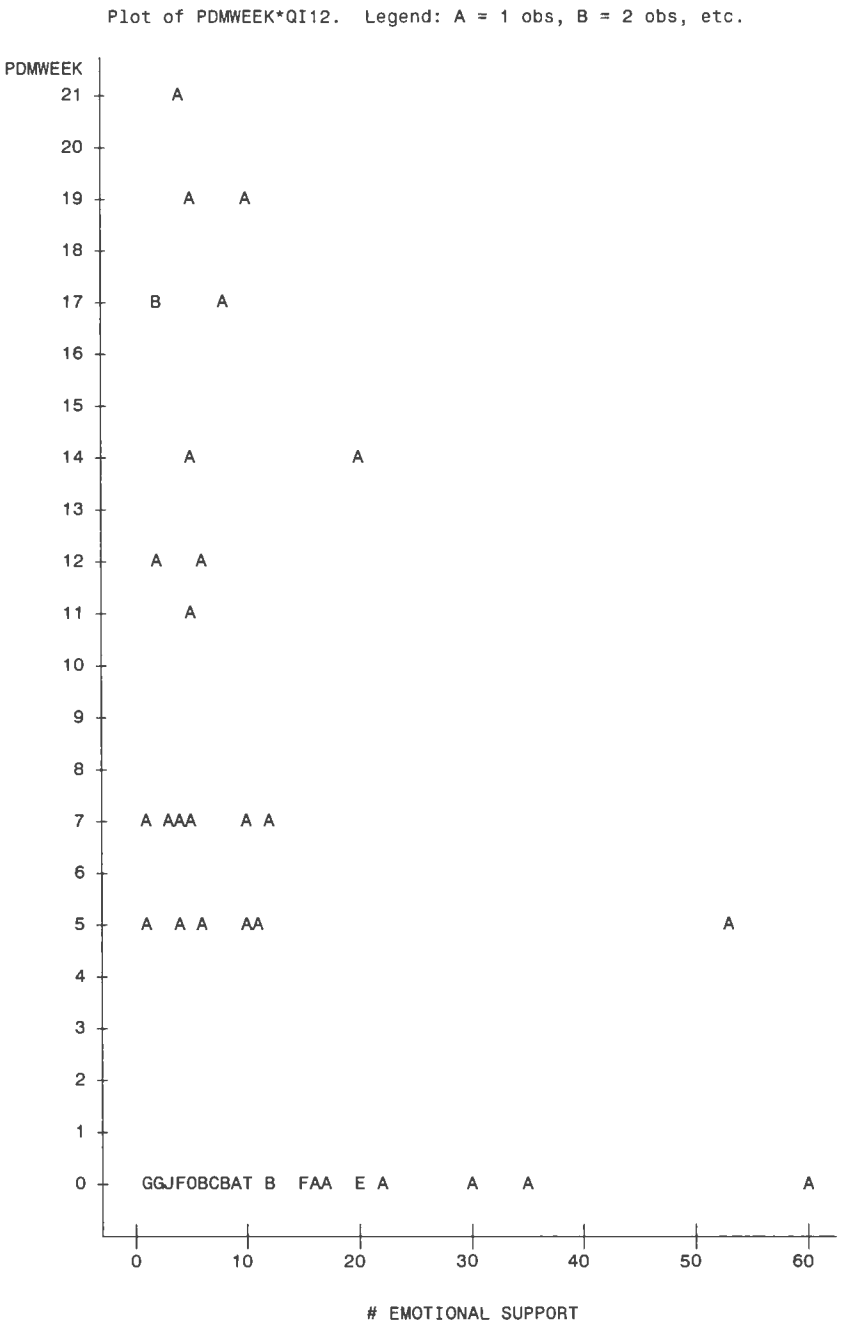
NOTE: 24 obs had missing values.

102. Plot of Temptation to Skip Antiretroviral Medication on the Feeling Good Scale vs Persons giving Emotional Support



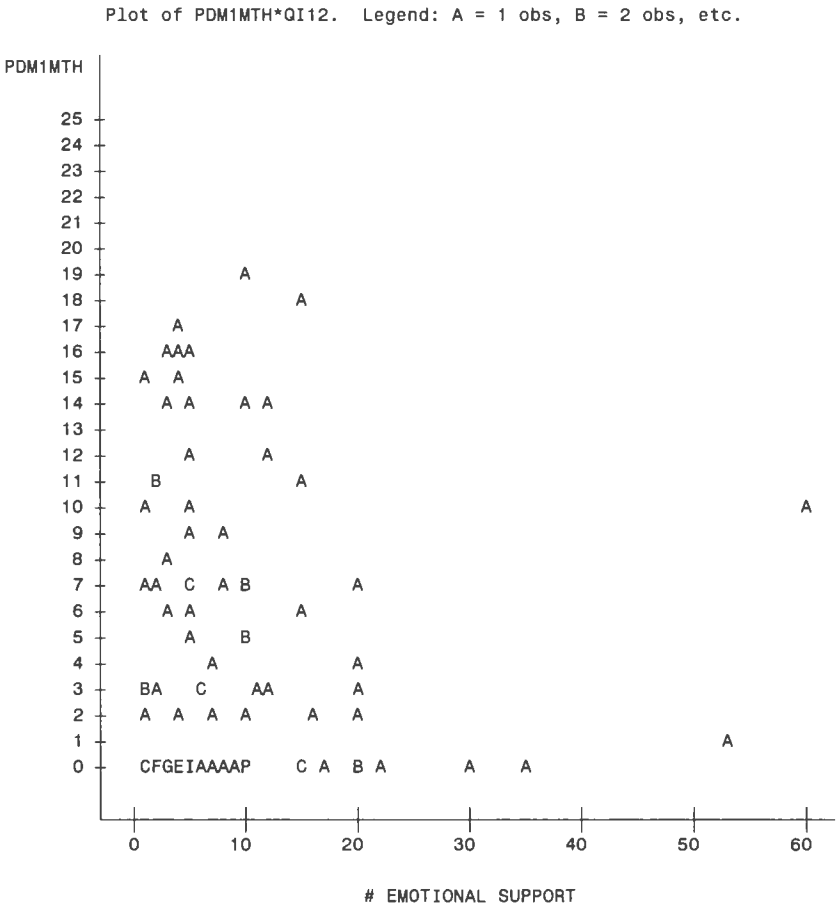
NOTE: 24 obs had missing values.

103. Plot of Percent of Doses Missed in the past Week vs Persons giving Emotional Support



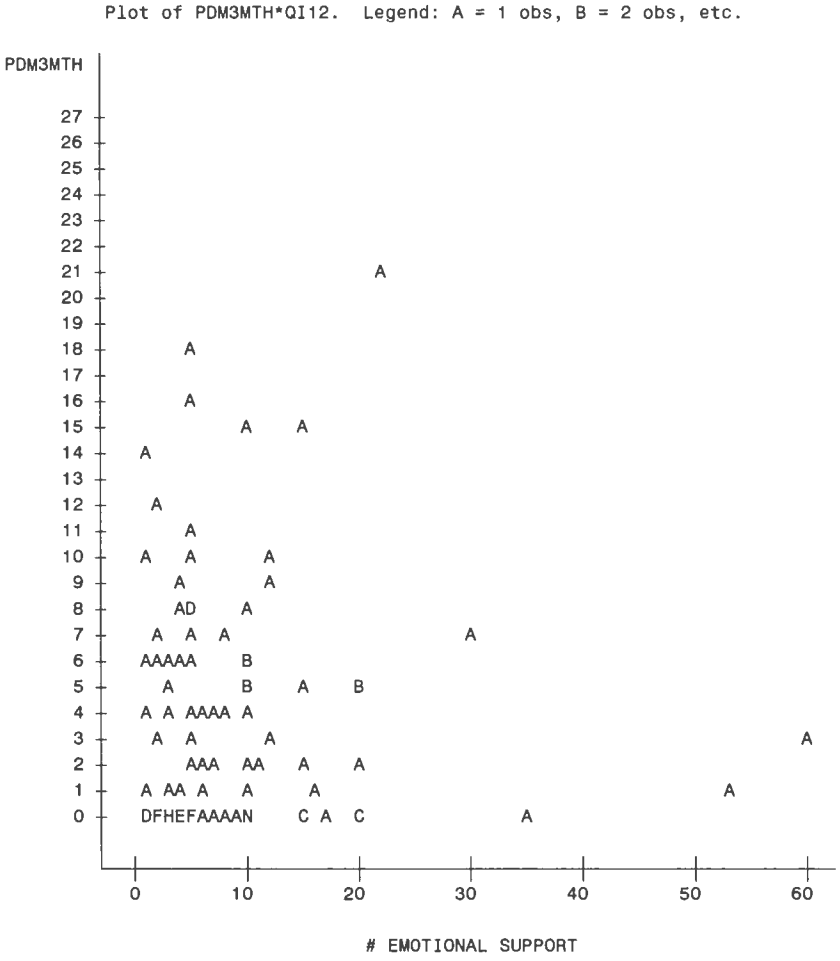
NOTE: 28 obs had missing values.

104. Plot of Percent of Doses Missed in the past Month vs Persons giving Emotional Support



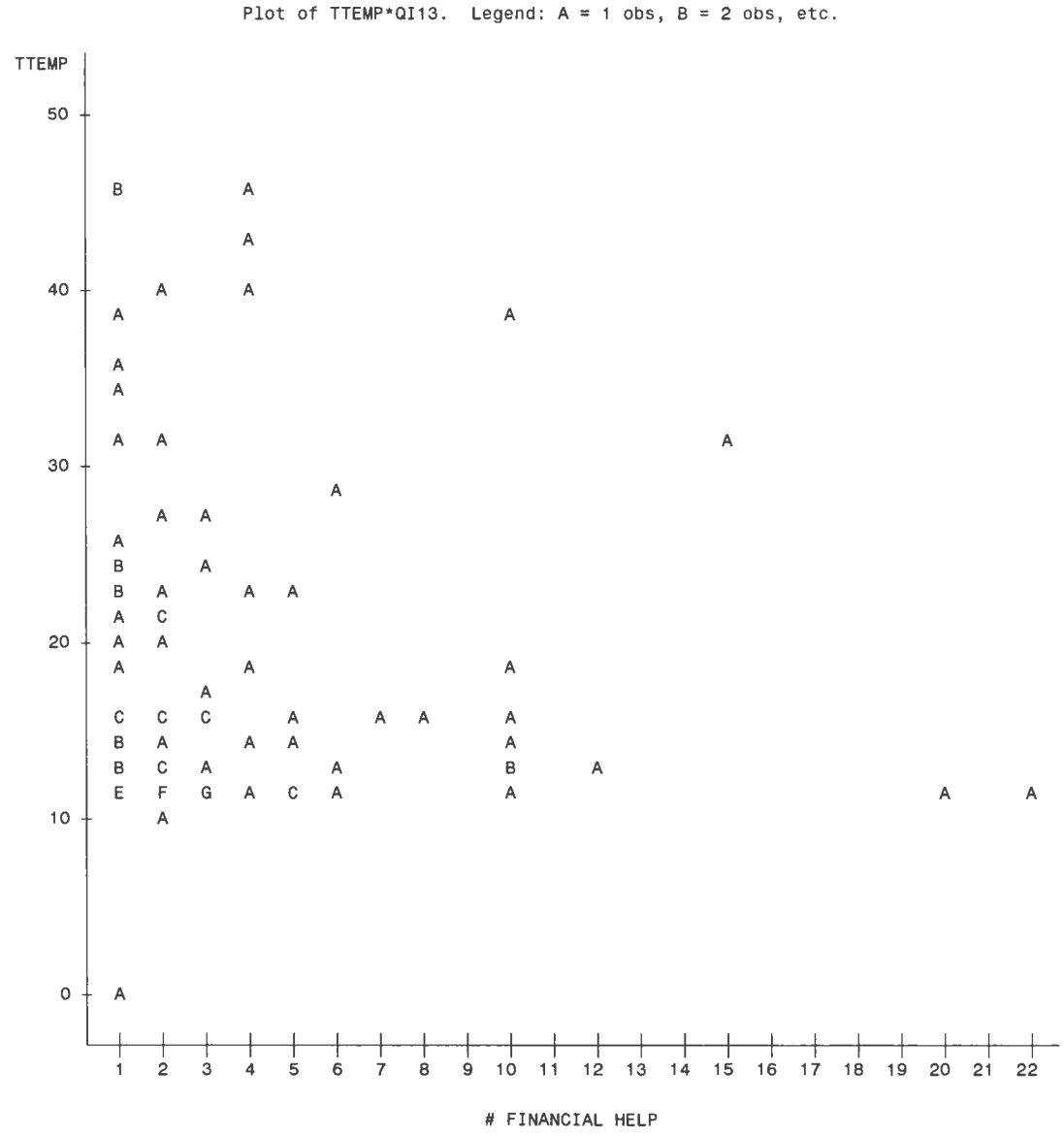
NOTE: 28 obs had missing values.

105. Plot of Percent of Doses Missed in the past Three Months vs Persons giving Emotional Support



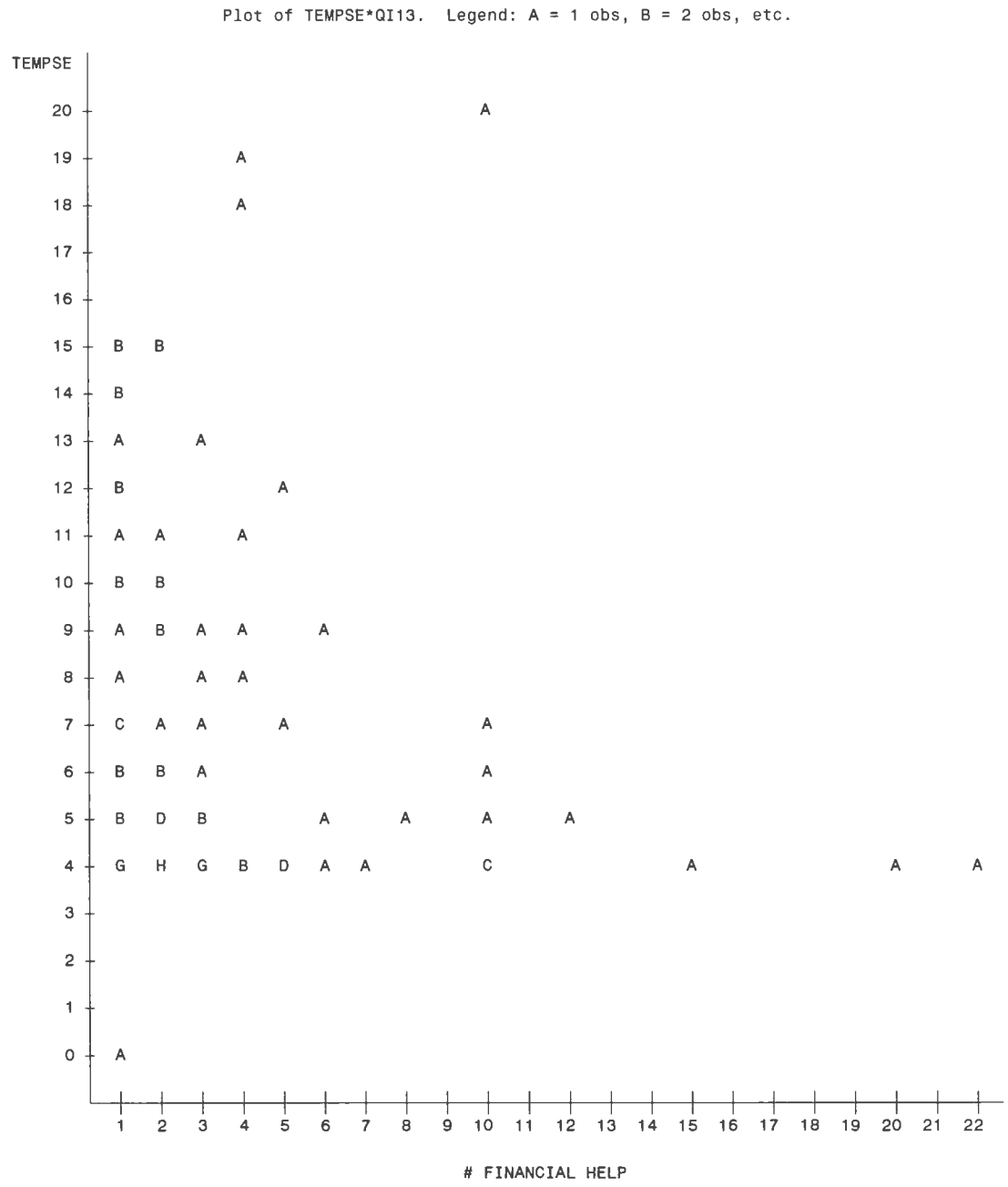
NOTE: 27 obs had missing values.

106. Plot of Temptation to Skip Antiretroviral Medication on the Total Scale vs Persons giving Financial Support



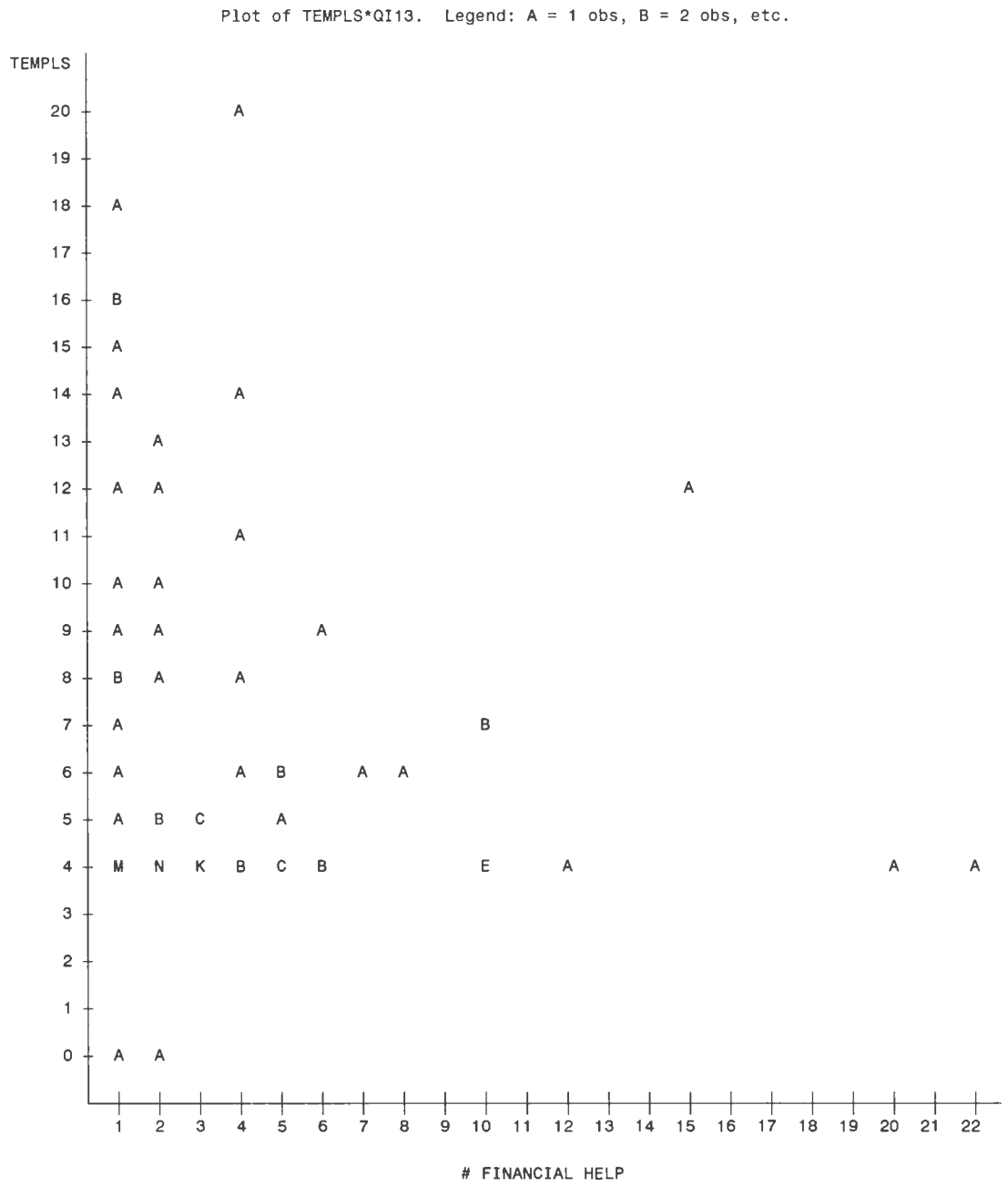
NOTE: 51 obs had missing values.

107. Plot of Temptation to Skip Antiretroviral Medication on the Side Effects Scale vs Persons giving Emotional Support



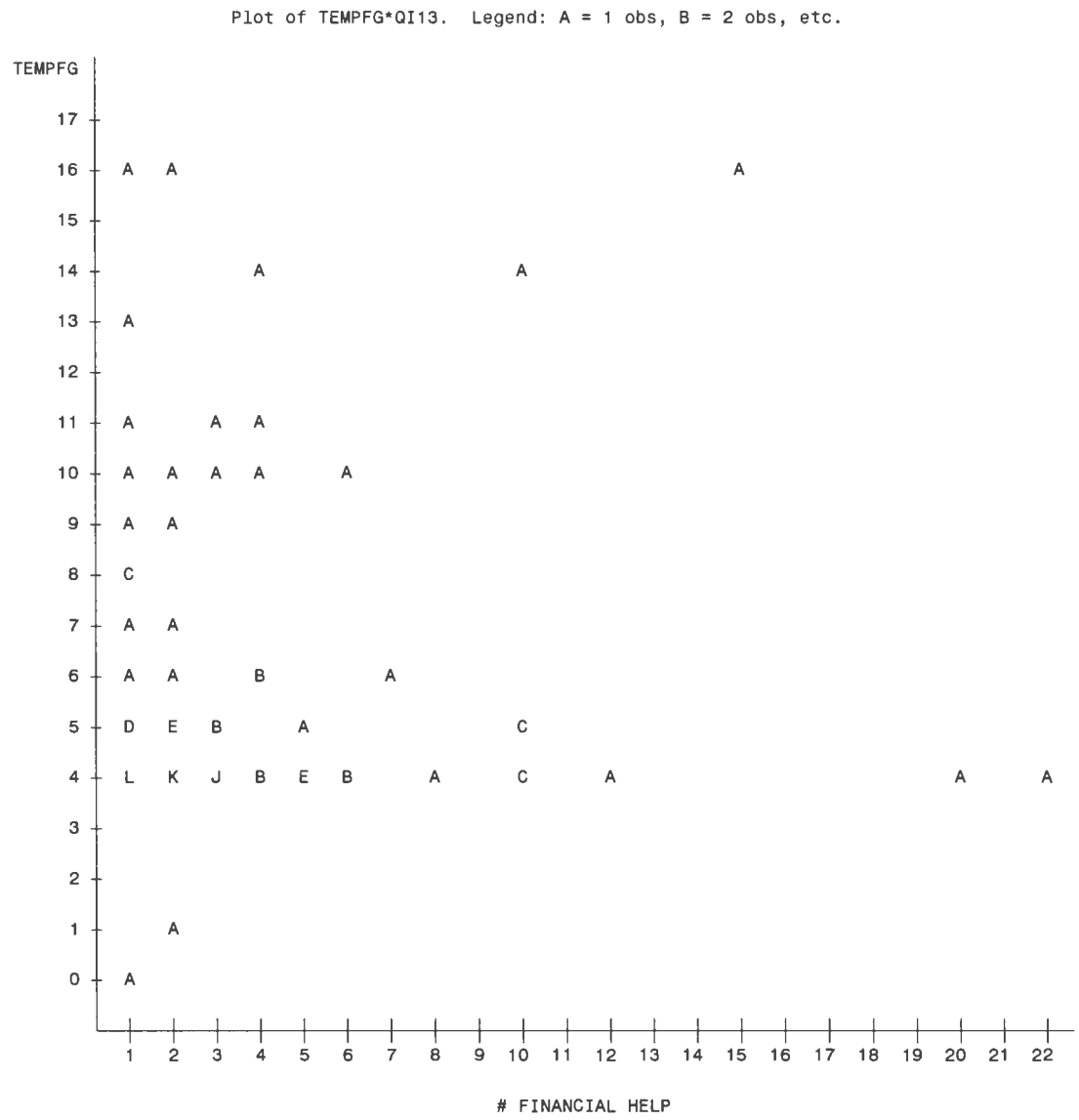
NOTE: 51 obs had missing values.

108. Plot of Temptation to Skip Antiretroviral Medication on the Lack of Support Scale vs Persons giving Emotional Support



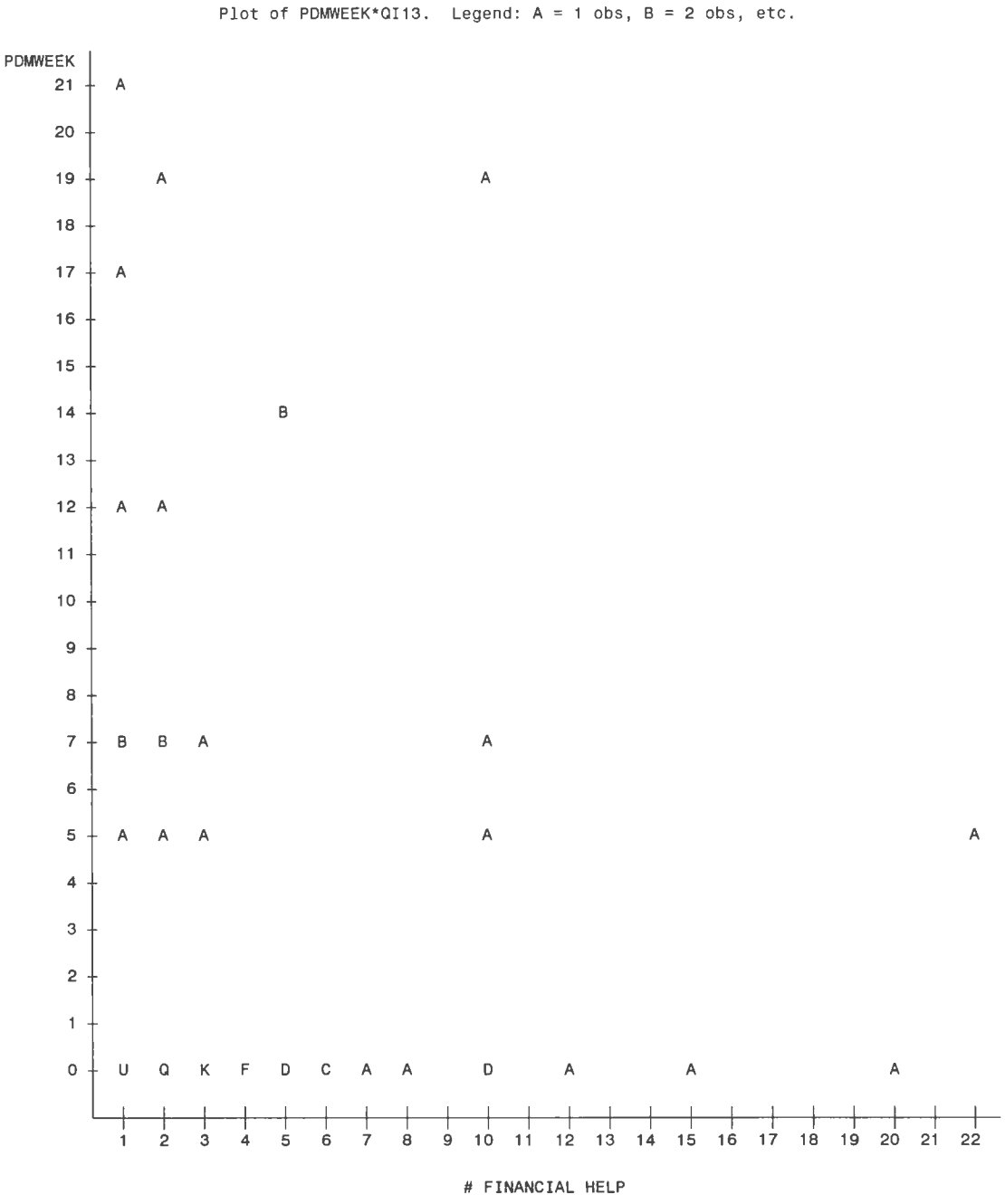
NOTE: 51 obs had missing values.

109. Plot of Temptation to Skip Antiretroviral Medication on the Feeling Good Scale vs Persons giving Financial Support



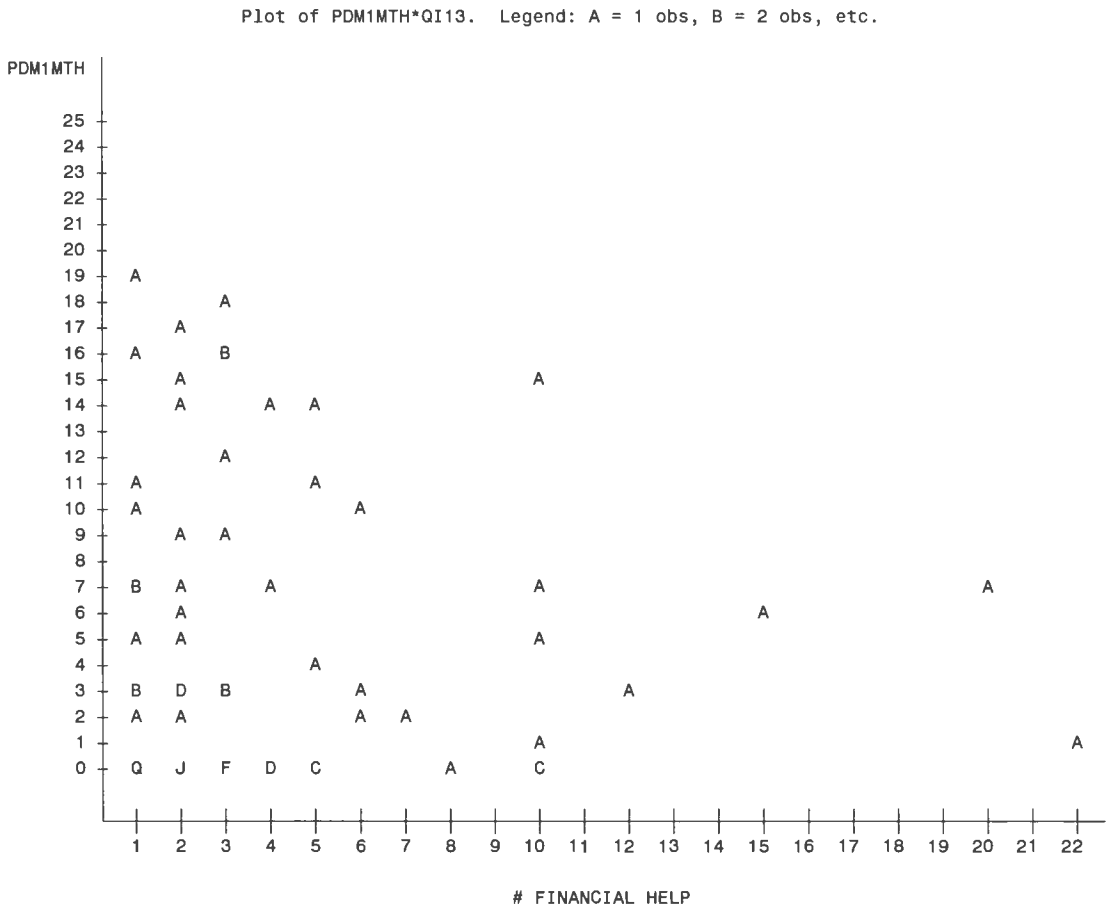
NOTE: 51 obs had missing values.

110. Plot of Percent of Doses Missed in the past Week vs Persons giving Financial Support



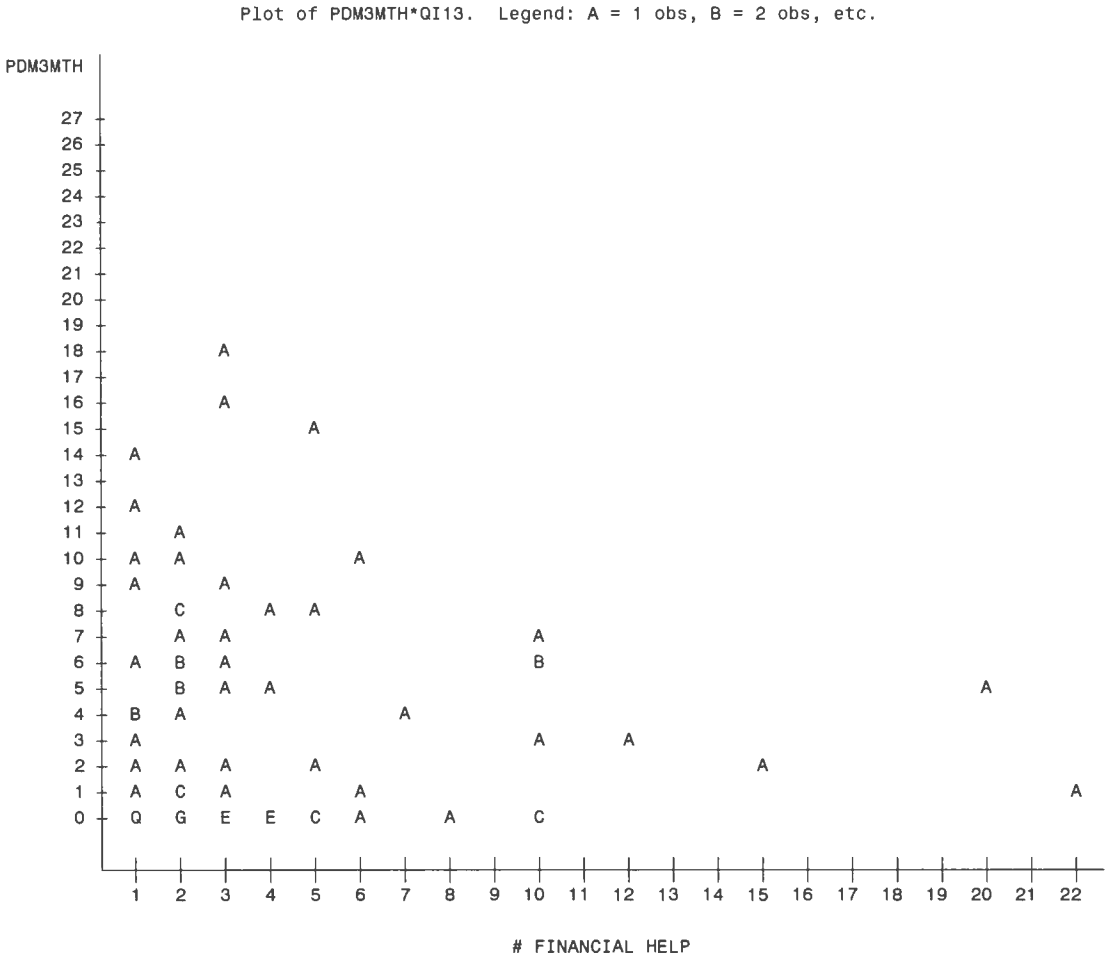
NOTE: 53 obs had missing values.

111. Plot of Percent of Doses Missed in the past Month vs Persons giving Financial Support



NOTE: 53 obs had missing values.

112. Plot of Percent of Doses Missed in the past Three Months vs Persons giving Financial Support



NOTE: 52 obs had missing values.

BIBLIOGRAPHY

Adams AS et al., Predicting Medication Compliance in a Psychotic Population, Journal of Nervous and Mental Disease, 1993; 181:558-560.

Anderson JF et al., Use of Antiretroviral Therapy by Intravenous Drug Users with HIV, Journal of the American Medical Association, 1999; 281(8):699-701.

Altice FL et al., The Era of Adherence to HIV Therapy, Annals of Internal Medicine, 1998; 129:503-505.

Bangsberg D et al., Protease Inhibitors in the Homeless, Journal of the American Medical Association, 1997; 278:63-65.

Carneiro M et al., The Effect of Drug-Injection Behavior on Genetic Evolution of HIV-1, The Journal of Infectious Diseases, 1999; 180:1025-1032.

Carrieri MP et al., Access to Antiretroviral Treatment among French HIV Infected Injection Drug Users: the Influence of Continued Drug Use, Journal of Epidemiology and Community Health, 1999; 53:4-8.

Celentano DD et al., Self-reported Antiretroviral Therapy in Injection Drug Users, Journal of the American Medical Association, 1998; 280(6):544-546.

Chesney MA et al., Adherence to HIV Combination Therapy, Social Science and Medicine, 2000; 50:1599-1605.

Chiswick A et al., The Edinburgh Cohort of HIV Positive Drug Users: who are they and who cares for them?, AIDS Care, 1992; 4(4):421-424.

Cummings et al., Coping with Chronic Illness: A Study of Illness Controllability and the Influence of Coping Strategies on Psychological Adjustment, Journal of Consulting and Clinical Psychology, 1982; 52:343-353.

Davis MS, Variation in Patients' Compliance with Doctors' Orders: Analysis of Congruence between Survey Responses and Results of Empirical Observations, Journal of Medical Education, 1966; 41:1037.

Davis S, Injection Drug Use and HIV Infection among the Seriously Mentally Ill: a Report from Vancouver, Canadian Journal of Community Mental Health, 1998; 17(1):121-127.

Dunbar J, Overview of Adherence to Medical Treatment. In: Program Summary of the Adherence to New HIV Treatments, A Research Conference. Washington, DC, the Forum of Collaborative HIV research (FCHR), the National Minority AIDS Council (NMAC), and the National Institute of Health Office of AIDS Research (OAR), 1997; 20-21.

Eldred L et al., Update on Adherence to HIV Therapy, The Hopkins HIV Report, The John Hopkins University AIDS Service, 1998.

Evans L et al., The Problem of Non-Compliance with Drug Therapy, Drugs, 1983; 5(1):63-76.

Fawzy FL et al., The Relationship between Medical and Psychological Status in Newly Diagnosed Gay Men with AIDS, Psychiatric Medicine, 1989a; 7:23-33.

Frank CD, SAS Application Programming: A Gentle Introduction, 1991.

Freeman RC et al., Compliance with AZT Treatment Regimen of HIV-Seropositive Injection Drug Users: A Neglected Issue, AIDS Education and Preventive, 1996; 8(1):58-71.

Friedland G., Adherence: The Achilles Heel of Highly Active Antiretroviral Therapy, Journal of the American Medical Association, 1997.

Gallant JE et al., Adherence to Antiretroviral Regimens in HIV-Infected Patients: Results of a Survey among Physicians and Patients, Journal of the International Association of Physicians in AIDS Care, 1998; 32-35.

Gray L et al, HIV Treatment Adherence: A Guide for Program Development, HIV/AIDS Project Development and Evaluation Unit, University of Washington School of Social Work, Seattle, Washington, 1998; 1-60.

Greensberg B et al., Evaluating Supervised HAART in Late-Stage HIV among Drug Users: A Preliminary Report, Journal of Urban Health: Bulletin of the New York Academy of Medicine, 1999; 76(4):468-480.

Haynes RB, A Critical Review of the 'Determinants' of Patient Compliance with Therapeutic Regimen, Sackett and Haynes (Eds.) Compliance with Therapeutic Regimens, 24-40 (John Hopkins University Press, Baltimore 1979)

Haynes RB, Introduction, in Haynes et al., (Eds.) Compliance in Health Care, 1-7 (John Hopkins University Press, Baltimore 1979).

Heinzelman F, Factors in Prophylaxis Behavior in Treating Rheumatic Fever, Journal on Health and Human Behavior, 1962; 3:72.

Higginbotham S et al., HIV/AIDS among Men who have Sex with Men and Inject Drugs – United States, 1985-1998, Journal of the American Medical Association, 2000; 284(2):170-172.

Holland JC et al., The Psychological and Neuropsychiatric Sequel of Immunodeficiency Syndrome and Related Disorders, Annals of Internal Medicine, 1985; 103:765-767.

Holzemer WL et al., Predictors of Self-reported Adherence in Persons Living with HIV Disease, Aids Patient Care and STDs, 1999; 13(3):185-197.

Ickovics JR et al., Adherence in AIDS Clinical Trials: a framework for clinical research and clinical care, Journal of Clinical Epidemiology, 1997; 50:385-91.

Jarlais C et al., Psychoactive Drug Use and Progression of HIV Infection, Journal of Acquired Immune Deficiency Syndromes and Human Retrovirology, 1999; 20:272-274.

Johnson, D.A.W.: A Study of the Use of Antidepressant Medication in General Practice, British Journal of Psychiatry, 1974; 125:186.

Kitayaporn D et al., Infection with HIV-1 Subtypes B and E in Injecting Drug Users Screened for Enrollment into a Prospective Cohort in Bangkok, Thailand, Journal of Acquired Immune Deficiency Syndromes and Human Retrovirology, 1997; 19:289-295.

Klaus BD et al., Assessing and Enhancing Compliance with Antiretroviral Therapy, Nurse Practitioner, 1997; 22:211-19.

Malow RM et al., Adherence to Complex Combination Antiretroviral Therapies by HIV-Positive Drug Abusers, Psychiatric Services, 1998; 49(8):1021-1024.

McDowell I et al., Measuring Health (A Guide to Rating Scales and Questionnaires), 2nd edition, 1996.

Mocroft A et al., A Comparison of Exposure Groups in the EuroSIDA Study: Starting Highly Active Antiretroviral Therapy (HAART), Response to HAART, and Survival, Journal of Acquired Immune Deficiency Syndromes, 1999; 22:369-378.

Montaner JS et al., A randomized double-blind trial comparing combinations of nevirapine, didanosine, and zidovudine for HIV-infected patients: the INCAS Trial.

Italy, The Netherlands, Canada and Australia Study, Journal of the American Medical Association, 1998; 279:930-7.

Monteiro E, An Audit of Antiretroviral Prescribing in HIV Patients, International Journal of STD and AIDS, 1999; 10:692-693.

Morse EV et al., Determinants of subject compliance within an experimental anti-HIV drug protocol, Social Science and Medicine.1991; 32:1161-7.

Norell SE et al., Methods of Assessing Drug Compliance, Social Science Medicine, 1981; 6:35-40.

O'Connor PG et al., Medical Care for Injection Drug Users with Human Immunodeficiency Virus Infection, New England Journal of Medicine, 1994; 331(7):450-459.

Ott L, An Introduction to Statistical Methods and Data Analysis, 4th Ed, 1992.

Prien RF et al., Long Term Maintenance Drug Therapy in Recurrent Affective Illness; Current Status and Issues, Disease of the Nervous System, 1977; 38(12):991.

Sherer R, Adherence and Antiretroviral Therapy in Injection Drug Users, Journal of the American Medical Association, 1998; 280(6):567-8.

Simoni JM, Keeping it up: Maintaining Adherence to Antiretroviral Therapies, Body Positive, 1998; 11(4-5):20-23.

Solomon GF, Psychoneuroimmunology and Human Immunodeficiency Virus Infection, Psychiatric Medicine, 1985; 7:47-57.

Strathdee SA et al., Barriers to Use of Free Antiretroviral Therapy in Injection Drug Users, Journal of the American Medical Association, 1998; 280(6):547-549.

Tabachnick B et al., Using Multivariate Statistics, 3rd Ed., 1996.

Wesolowsky G, Multiple Regression and Analysis of Variance, 1976.

Willey C et al., Stages of Change for Adherence with Medication Regimens for Chronic Disease: Development and Validation of a Measure, Clinical Therapeutics, 2000; 22(7):858-871.

Zuger A, Adherence to Highly Active Antiretroviral Therapy, AIDS Clinical Care, 1997; 9(11):86-87.