NEW YORK CITY

DEPARTMENT OF HEALTH

BUREAU OF TUBERCULOSIS

TUBERCULOSIS IN NEW YORK CITY - 1987

1987 STATISTICS

1987 - 1988 PROGRAM ACTIVITIES

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Message to the Community

February 1989

The New York Lung Association is pleased to publish this report as a service to our fellow New Yorkers, to the medical community and public health workers, and to the Department of Health.

Data and program activities described in the report were collected and prepared by the Bureau of Tuberculosis of the New York City Department of Health. Its publication by the New York Lung Association is illustrative of the long standing history of collaboration between us. We are joined in a common goal, and an increasingly strengthened working relationship.

NYLA conducts several other programs aimed at eradicating tuberculosis. They include extensive public education, conferences for health care professionals, and assistance with TB screening.

We are pleased to note a small decline in new cases during 1987 and look toward continuation of this. Our goal is to reduce the case rate for New York City from its present 31.1 per 100,000 to the goal established by the Centers for Disease Control which is to achieve a case rate of 3.5 per 100,000 by the year 2000. Given that we have the necessary knowledge about cause and cure, control of TB is within our grasp.

Edith Ewenstein

Edith Ewenstein
General Director

THE CITY OF NEW YORK
COMMISSIONER OF HEALTH
Stephen C. Joseph, M.D., M.P.H.

125 WORTH STREET
NEW YORK, N.Y. 10013

January 1, 1989

To the Mayor and the Citizens of New York City:

Tuberculosis control remains one of the highest priorities of the Department of Health. There were 2,197 cases reported in 1987, which was not an increase over the number reported the previous year. The New York City case rate is more than three times the national average, and the disease is most prevalent among persons 25 to 44 years of age.

Two screening programs were conducted in 1987 because of the concern that a high rate of disease in the child bearing age group might adversely affect the health of the city's children. A screening of children in randomly selected schools and one conducted in family hotels provided some information on infection in children.

Research projects are continuing to study the relationship between tuberculosis and AIDS/HIV infection. All Department of Health chest clinics are offering confidential HIV testing to infected and diseased persons on a voluntary basis so that appropriate therapy can be prescribed and maintained.

A review of the city's tuberculosis program by the Department of Health, in consultation with the Centers for Disease Control, has provided the impetus for several new program activities, including the creation of a citywide Expert Panel on Tuberculosis.

This year's initiatives in tuberculosis control include appointment of a new Bureau Director, Dr. Jack J. Adler, a project to house homeless men with tuberculosis, x-ray screening in the homeless shelters, field follow-up on high risk preventive patients, and updated computer technology with which to follow tuberculosis patients.

This report details the epidemiology of tuberculosis in New York City and describes the activities of the Department of Health in identifying, treating and following tuberculosis cases and their contacts.

Sincerely,

Stephen C. Joseph, M.D., M.P.H.
Commissioner of Health

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The City of New York

DEPARTMENT OF HEALTH
BUREAU OF TUBERCULOSIS CONTROL
125 WORTH STREET, NEW YORK, N.Y 10013

Telephone

BUREAU OF TUBERCULOSIS

MESSAGE FROM THE DIRECTOR

My recent appointment to the position of Director of the Bureau of Tuberculosis has presented me with an enormous challenge. The medical battle against tuberculosis has been won, but the public health problem has re-emerged.

This is an opportune time to join the fight against tuberculosis; the commitment made by the Department of Health should make success easier to achieve.

An important goal that I have set for the Bureau is the standardization of tuberculosis care among the city's multiplicity of providers. To that end, an Expert Panel on Tuberculosis has been formed and will meet regularly to unify services for tuberculosis patients and high risk contacts.

The Department of Health is supporting the expansion of activities which target some of the groups most vulnerable to disease; for example, the homeless, children, and HIV/TB dually infected persons.

With the support of our government, voluntary agencies and tuberculosis care providers, as well as a new public awareness, I am confident that we will win this battle, and ultimately the war, over one of mankind's most persistent diseases.

Sincerely,

Jack J. Adler MD

Jack J. Adler, M.D., F.A.C.P.
Director
Bureau of Tuberculosis

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PREFACE

Public Health Advisors are the foot soldiers in the war against tuberculosis in New York City. These men and women carry out difficult work with sometimes difficult patients, often under difficult circumstances. The description of a typical working day of a Public Health Advisor (PHA) in the Bureau of Tuberculosis follows.

The PHA's day usually begins with a visit to one of his assigned hospitals. A check with Infection Control staff informs the PHA of any new tuberculosis cases and brings him up to date on current cases, including response to treatment and discharge information, when appropriate.

A critical part of the hospital visit is the education and interview of newly identified patients with tuberculosis. The interview seeks to elicit the names of contacts who were exposed to the infectious patient. The interview also serves to assess future patient compliance and design strategies with which to best assure such compliance.

The PHA then checks with the clinics at which the patient had an appointment. He communicates with the nurse or social worker to ensure that the patient came in for medication and/or examination. If a patient missed an appointment, the PHA attempts to reach the patient to return him to treatment.

The PHA searches for patients and contacts of infectious cases in locations where the patient has been found before or is known to "hang out." These locations often include such places as homes of friends and relatives, parks, vacant buildings, vans, rehabilitation programs, and other known hangouts. Much time is spent in these searches and traveling between them.

In addition to these duties, some PHA's may have primary responsibility to a specific unit of the Bureau of Tuberculosis. For example, some PHA's cover the city shelters and follow individuals with tuberculosis who are homeless. Another group of PHA's monitor and directly observe medication taking of a group of hard core noncompliant or homebound patients.

The role of the PHA is critical in ensuring that tuberculosis patients are monitored until completion of treatment so that the patient receives adequate therapy and the public's health is protected.

I. Introduction

Tuberculosis rates in New York City in 1987 were slightly lower than in 1986. In 1987 there were 2,197 new cases of tuberculosis reported to the New York City Department of Health, a rate of 31.1 per 100,000 population. This represents a decrease of 1.2% from 1986 (Table 1, Figure 1), and is more than triple the national rate of 9.3 per 100,000. In 1987, New York City had the sixth highest case rate of US cities with a population of at least 250,000, whereas in 1986 it had the fifth highest case rate.

This report outlines the demographic and geographic distribution of tuberculosis in 1987. In addition, it reviews tuberculosis control activities carried out by the Bureau of Tuberculosis of the New York City Department of Health during 1987 and 1988, especially among high risk groups.

II. Epidemiology

In general, the highest rates of disease appear in those populations with the poorest socioeconomic conditions. The areas of the city in which those most adversely affected live exhibit typical characteristics of urban poverty: overcrowding, substandard housing, low income, high unemployment, high maternal and infant mortality rates, and drug abuse. In addition, areas with high rates of tuberculosis also coincide with areas with a high incidence of AIDS.

As in 1985 and 1986, rates increased among 25-44 year old black and Hispanic males although whites saw a decrease in this age group. However, rates decreased 14% in those 45 year and older in all racial/ethnic groups.

A. Distribution by Sex, Age, and Race/Ethnicity

(Figures 2-10 and Tables 2-4)

1) Males

From 1986 to 1987, the incidence rate of tuberculosis in males of all ages decreased by 3%, from 49 to 47.5 cases per 100,000 population. Between 1985 and 1986, the rate in this group increased by 25%. There were declines among male children, teenagers and those 45 years and older, but increases in 20-44 years old (Table 3). Although some of the largest increases in 1986 occurred among males 65 years and older, in 1987 the rate in that group declined 31%.

Black males continued to experience the highest incidence of tuberculosis, although 12 fewer cases were reported in this group in 1987 (866) than in 1986 (878). As in the four previous years, incidence rates in black males in 1987 peaked in the 35-44 year old age group with a case rate of 299 per 100,000, the highest in any age, sex, race cohort.

Figure 7 represents rates among black males for the years 1984-1987. A steady annual increase is seen among those 25-45 years.

Of the males with tuberculosis in 1987, 59% were in the 25-44 year age range; in 1986, 54% were in that age group. Among black males, that proportion was 63% in 1987, up from 58% in 1986. Although the case rate among all males decreased slightly, it increased in those aged 25-44 and in blacks.

While rates among black males of all ages decreased by 1.4% in 1987, Hispanic males experienced a 14% increase in incidence. The incidence in this group had increased 44% from 1985 to 1986. The rise among Hispanic males was concentrated in 25-44 years old (a 22% increase in 1987 following an increase of 68% between 1985 and 1986). Figure 8 shows the steady increase of cases in this age group from 1984.

Asian males experienced a 20% decrease in the tuberculosis rate from that of 1986. Although the age-specific rates are high for Asians, the 79 cases reported in 1987 are the smallest number for males in all racial/ethnic groups and 2.5 times less than that of the next lowest group. Tuberculosis incidence among white males decreased 24% after a 3% increase in 1986. Although males 65 years and older showed a large increase in cases in 1986, there was a decline of 31% in the 1987 case rate (49.4 vs. 34.2 per 100,000) among the oldest male cohort.

2) Females (Figures 2, 9, 10 and Table 4)

Tuberculosis incidence in females increased by 4% in 1987, somewhat less than the 11% increase of the previous year. The greatest increase occurred among black women; incidence jumped 10.5% in this group (from 35.6 to 39.4 cases per 100,000). Hispanic women had an 8.5% increase and the rates in white and Asian women decreased slightly. The overall rate in black women is nearly twice that of Hispanic women, and white women have maintained the lowest rate in all ethnic/racial groups (4 per 100,000).

Figure 9 shows the consistent rise in cases over a four year period among black women 25-44 years old. Although the rates are lower than those of black men, the age pattern is similar.

Figure 10 shows that the largest increase in incidence among Hispanic women occurred in 1986, although there has been a steady increase over the past four years, especially in the 20-40 year old range. White females showed no consistent pattern of disease.

3) All Ages (Figures 2, 3, 6 and Table 2)

There was a 10% decrease in reported cases among individuals younger than 20 years - from 93 cases in 1986 to 84 cases in 1987. Cases among those 45 years and older also decreased 14% from 1986. However, the age group 25-44 years showed 70% increase in cases. Figure 6 shows the case rates over an eight year period by age group. The consistent rise in cases over time among those aged 25-44 is particularly striking.

4) Pediatric Cases

Although there was an increase in tuberculosis incidence in the age groups most likely to transmit the disease to children (those of parental ages 20-44), rates in children under five years of age declined slightly in 1987 from 5.9 to 5.4 cases per 100,000 (Table 5). Cases in Hispanic children rose from 8 in 1986 to 15 in 1987, while black childhood cases decreased from 20 to 13. There were no cases reported among Asian children and two among whites, for a total of 30 pediatric cases.

B. Geographic Distribution

Age-adjusted incidence rates by health district of residence were calculated for 1980, 1986, and 1987 (Table 6). Age standardization is a numerical technique that adjusts observed rates in different age groups to a standard population age distribution so that different populations can be compared. Age standardization of the rates removes age, per se, as a possible explanation for the difference in rates. Only two districts in Manhattan and the Bronx and one in Queens experienced increased rates since 1986, while rates in six districts in Brooklyn increased. Overall, of the 30 health districts, 12 (40%) had increased rates while the majority of districts had decreased rates.

Of the six districts with the highest rates in 1987, four also had the highest rates in 1986: Central Harlem, Bedford, Lower East Side and Morrisania. The two additions to the highest case rates this year are Washington Heights and Mott Haven. These were also the two health districts with the largest rate increases. A doubling of cases reported from Columbia-Presbyterian and Lincoln Hospitals were responsible for the increases in these two districts.

1. Manhattan

Except for Washington Heights and Central Harlem, all health districts in Manhattan experienced decreases in tuberculosis case rates in 1987. The most notable changes are the drop of 30% in the Lower West Side and the increase of 67% in Washington Heights. The rate in Central Harlem remains the highest in NYC at 134.9 per 100,000.

2. Bronx

Except for Fordham-Riverdale and Mott Haven, Bronx health districts experienced a decline or remained the same as in the previous year. The 65% increase in Mott Haven is attributable to the increase in cases reported by Lincoln Hospital. Mott Haven represents the second highest age-adjusted case rate in the city. Of note is the decrease of cases in Tremont after a 43% rise in 1986.

3. Brooklyn

The highest case rate increases in Brooklyn were seen in Bedford (14%), Brownsville (28%) and Williamburg-Greenpoint (37%). Declines in Bushwick, Flatbush and Fort Greene averaged 11% from the previous year. Overall, Brooklyn experienced an average increase of 2.3 cases per 100,000 population over last year.

4. Queens

Except for Jamaica East, which had a 23% increase over last year, incidence decreased in Queens. The largest decrease (35%) occurred in Jamaica West. Astoria, which rose 60% in 1986, decreased by 24% in 1987.

5. Staten Island

Only 20 cases of tuberculosis were reported from Staten Island in 1987, yielding an age adjusted rate of 6.1 per 100,000. This is a 20% decrease since 1986 and represents the second lowest rate in the city, with only Maspeth-Forest Hills, Queens being lower.

C. Distributions of Age-Specific Tuberculosis by Area of Birth

In 1987, as in the three previous years, approximately one-quarter of all newly reported cases of tuberculosis occurred among individuals born outside the continental United States (Table 7). The Caribbean area accounted for 57% of those born outside the continental United States, the largest group represented. A total of 67 countries were reported as place of birth for those tuberculosis cases born outside the continental United States.

D. Tuberculosis among Immigrants and Aliens

The United States Public Health Service's Foreign Quarantine Service screens immigrants for tuberculosis before they enter this country. The screening process consists of a general physical examination and, for persons 15 years of age and older (one year of age for Indochinese refugees), a chest X-ray. Those under 15 years old receive a chest X-ray if clinically indicated, or if they are members of a family where one or more persons had an abnormal chest X-ray.

Individuals with abnormal results on chest X-rays are then classified for tuberculosis control purposes as either having, or as suspected of having, tuberculosis in an active state (Class A), or as infected, with no evidence of active disease (Class B).

Among New York City immigrants during 1987, 362 Class A aliens (immigrants and/or refugees) and 1,450 Class B aliens were screened within two weeks of entering into the U.S. Among these there were six Class A and 3 Class B discovered to have pulmonary tuberculosis on the basis of a positive culture for M. tuberculosis.

Table 8 summarizes these data for the years 1976 to 1987. There was almost a doubling in the number of of Class A persons screened in 1987 and an increase of 25% in Class B over 1986. The nine cases of tuberculosis identified represents an increase over previous years. A new system of identifying and cross checking newly arrived immigrants was initiated in 1987, so that previous years' data might not be entirely comparable. The Department of Health will continue to monitor this population and evaluate the trends in persons entering the country who prove to have active disease.

E. Site of Disease

In 1987 pulmonary tuberculosis accounted for 82.6% of all cases. Of cases with extrapulmonary disease, lymphatic tuberculosis was the most prevalent form of disease. Of all cases reported in 1987, 8.3% had both pulmonary and extrapulmonary disease, a significant increase over the 5.9% reported in 1986. Table 9 compares the site of disease in the two year period.

F. Reactivated Cases

Patients who were previously treated for tuberculosis are considered to be new cases if they have not been under medical supervision for twelve months and are diagnosed again with disease. There were 44 reactivated cases in 1987, which represents a 29% decrease from the 62 reactivators reported in 1986 (Tables 10 and 11).

Approximately 75% of reactivators were males, and 48% of these cases occurred among those ages 25-44. Reactivators accounted for 2.0% of all cases in 1987, down from 2.8% in 1986.

G. Drug Resistance

Drug resistance in New York City in patients being treated for the first time is relatively uncommon. Resistance is more likely to be acquired as a result of failure of the patient to take the required amount of medication regularly or from a failure on the part of health care providers to properly prescribe the medication.

The actual prevalence of citywide drug resistance is difficult to assess. Because of the large number of laboratories which perform drug sensitivity studies, the difference in technologies used, and the patient selection process, there is no single number which can be used to reliably obtain the actual prevalence of resistant patients. The information on drug resistance which is obtained by the Department of Health is derived from information from individual institutions which test selected cultures for evidence of resistance to anti-tuberculosis medication.

Two reports of drug resistance from major city hospitals indicate similar prevalence rates. Dr. Phillip Steiner of Kings County Hospital Center in Brooklyn reported a drug resistance rate of 17% among children whose sputums were tested from 1983 - 1986.

A retrospective chart review by Dr. Lisa Kanengiser at Bellevue Hospital revealed 15% resistance among tuberculosis patients who were intravenous drug abusers and 20% drug resistance among all others. The percentages were similar when only the charts of those with no previous treatment history were examined, demonstrating primary resistance. These figures are higher than the 5% to 10% reported elsewhere.

H. Mortality

Mortality figures presented in this year's report are based on statistics issued by the Bureau of Health Statistics and Analysis.

In 1987, there were 219 deaths in New York City in which tuberculosis was categorized as the underlying cause on the death certificate. The crude tuberculosis mortality rate of 3.1 is a 19% increase over 1986. (Table 12, Figure 1).

In 1986, pulmonary tuberculosis accounted for approximately 78% of the tuberculosis deaths, whereas in 1987, pulmonary tuberculosis deaths decreased to 64% of the total.

The increase of 33 tuberculosis deaths in 1987 over 1986 resulted primarily from an additional 28 cases reported by the Brooklyn borough Medical Examiner, three-fourths of which were of intravenous drug users. Brooklyn was the only borough to report a large increase in tuberculosis deaths; other boroughs remained within 5 deaths of 1986.

In reviewing the Brooklyn deaths, it appears that the excess is due to HIV infection among drug users with concomitant tuberculosis.

The mean age of those who died from tuberculosis was 51 years in 1986 and 48 years for those who died in 1987. Males represented 82% of the tuberculosis deaths in 1987 and 74% in 1986. Blacks accounted for 53% of deaths in 1987; whites 13%; Hispanics 18%; and others 16%. This represents a 13% decrease in tuberculosis deaths among blacks from 1986 and a 33% increase in deaths among Hispanics; white deaths remained about the same.

There were, in addition, 199 deaths in which tuberculosis was mentioned on the death certificate but was not coded as the underlying cause of death, compared to 160 in 1986; 47% of these deaths had AIDS listed as the underlying cause of death. This represents an increase over 1986 when AIDS was the cause of death in 41% of death certificates in which tuberculosis was mentioned.

III. Bureau of Tuberculosis

The mission of the Bureau of Tuberculosis is to prevent the spread of tuberculosis and eliminate it as a public health problem in New York City. The Tuberculosis Control Program has the following goals in achieving its mission:

1) To render noninfectious all individuals with disease who are capable of transmitting infection to others;

2) To ensure that all individuals with disease who are noninfectious remain noninfectious; and

3) To ensure that all individuals who are infected but without disease do not break down with disease.

The Bureau achieves its goals through a multifaceted approach which includes education, surveillance, enforcement and direct patient care. Specific mandated activities include:

1) Ensuring that cases of tuberculosis identified in all facilities in New York City are reported to the Bureau and documented on a computerized case registry;

2) Conducting intensive case interviews and maintaining an effective field outreach program so that tuberculosis cases, identified contacts, and reactors receive appropriate medical care, and that these patients remain under medical supervision until the completion of treatment;

3) Monitoring and documenting the status of all patients; and

4) Taking positive action to correct medical deficiencies and to return delinquent patients to supervision.

The organization of the Bureau of Tuberculosis is shown on Figure 11.

IV. Tuberculosis Control Activities

A. Surveillance

The basic surveillance mechanism used is case reporting; the New York City Health Code requires that all health facilities and private physicians report confirmed or suspected cases of tuberculosis within 24 hours of diagnosis. Measures are taken to ensure that such reporting is done in a timely and thorough manner, and corrective actions are taken when reports are not received. Cases are monitored to completion of therapy to assure that appropriate treatment is rendered.

The Bureau field workers, or Public Health Advisors, audit hospital laboratory log books for positive smear and culture results. This information, when combined with case reports, assists the Bureau to identify and correct reporting inadequacies, thus improving the completeness of reporting.

In addition, the field workers are responsible for routine communication with select personnel in hospitals and other health care facilities. Staff visit facilities to review medical records, consult, and provide educational support. The Bureau solicits and receives patient update information on known or suspected tuberculosis patients, so that the number of patients receiving adequate treatment can be maximized.

B. Containment

The primary containment goal of the Department of Health is to assure that patients receive prompt and specific therapy, adequate to halt transmission of tuberculosis. Case management activities require the monitoring of the treatment of diseased patients and taking corrective action to return delinquent patients to medical supervision.

In situations when standard case management activities are not sufficient, special programs which require more intensive patient follow-up have been implemented. Two such programs are the Supervised Therapy and Homeless Programs.

1. Supervised Therapy Program (STP)

The objective of the Supervised Therapy Program (STP) is to treat the proven noncompliant patient, and it is designed to provide adequate therapy to those individuals who would otherwise not obtain it due to a wide variety of social and psychological problems.

Medical facilities throughout New York City are encouraged to refer tuberculosis patients meeting the criteria for STP admission to the Department of Health in order to initiate an evaluation and follow-up. The criteria for admission to the STP are one or more of the following:

- frequently missed clinical appointments
- drug resistance
- mental incompetence
- chronic alcoholism
- failure to respond to therapy
- continued positive bacteriology
- failure to self-administer medication
- more than two hospital admissions for tuberculosis
- a living condition conducive to noncompliance

All patients identified with chronic delinquencies and persistent positive sputa are evaluated for admission to this program. Once admitted, these patients have their medication delivered to them at home or at an alternate site on a daily or intermittent basis. The field worker actually observes ingestion of the prescribed medication.

During 1987, 173 patients were referred to the STP program for follow-up. Of the patients referred, 61 were located, enrolled, examined and began receiving medication through the program. During the year 49 patients completed therapy.

2. Homeless Tuberculosis Program

In general, homeless people with tuberculosis are in special need of therapy and supervision. The transient nature and diversity of the lodging offered by the shelter system are not conducive to the systematic and orderly ingestion of medication by the patient. The homeless patient is often an individual who misses clinic appointments, shows drug resistance, evidences mental incompetence, or has substance abuse and/or alcohol problems.

During 1987, 226 homeless tuberculosis patients were identified through computerized matching of addresses, as well as the efforts of outreach workers. In 1987, 11% of these patients completed treatment; 17% were no longer homeless; 16% died; and 56% were lost to follow-up. Department of Health staff members work with the shelter management to monitor the treatment of these patients. Follow-up often involves tracking transient individuals in order to ensure medication taking.

C. Prevention

The reduction of future disease is dependent upon the identification of close contacts of persons with disease and ensuring that those who are infected undergo a course of preventive treatment.

Prevention activities include identification and skin testing of close contacts of infected persons by Public Health Advisors and the provision of prophylactic treatment to infected persons. Contacts with positive skin tests are X-rayed. If tuberculosis is not diagnosed, chemoprophylaxis is recommended for individuals under 35 or for those with known risk factors.

In 1987, 2,827 contacts were identified and 84% of them were examined (Table 13). The rate of 3.9 contacts per case for 1987 represents a decrease over 1986. Anecdotal evidence indicates that a larger number of patients than previously reported were drug addicts, many of whom frequented "crack" houses and were reluctant or unable to give contact names. The rate of contacts found to be infected has remained constant for the past four years at around 27%, and the contacts who are found to have disease has been between 2 and 5% for the past four years.

D. Clinical Services

The City of New York provides tuberculosis services at its 11 municipal hospitals and at nine New York City Department of Health District chest clinics throughout the City. Each hospital/clinic is located in an area where there is a need for health services and which is easily accessible to the public. The staff of the New York City Department of Health chest clinics includes physicians, clinic managers, nurses, nurses aides, X-ray technicians and clerical personnel.

Tuberculosis diagnostic, treatment and preventive services are also provided by a number of diverse medical facilities in New York City, from private physicians' offices to tertiary care centers. As mandated by New York State law, these services are available to every person, regardless of their ability to pay.

The Department of Health works closely with all providers to ensure patient compliance and accurate case reporting. In 1987, 48% of new cases were reported by municipal hospitals, 43% by voluntary hospitals, 3% by the Department of Health clinics and the remaining 6% by private physicians and other clinical settings.

V Bureau of Tuberculosis Programs

A. Reimbursement

The Reimbursement Unit was initiated in July 1987. Under the New York State Public Health Laws, tuberculosis care is to be rendered free of charge to any individual who does not have third party coverage; patients cannot be forced to pay for tuberculosis care rendered by a medical care provider. This law goes into effect after all third party reimbursement possibilities have been exhausted. Facilities seeking to be reimbursed for this service can apply to the Health Department for reimbursement, provided that they follow specific guidelines issued by New York State Department of Health. In fiscal year 1988, reimbursement was paid in the amount of $1,992,000.

B. Screening Survey of School Children

In order to determine whether or not the recent increase in tuberculosis impacts directly on the health of school children, ages 5-15, the Bureau of Tuberculosis, in cooperation with the Board of Education, conducted a screening survey. This screening was designed to identify infected children and provide ongoing containment and surveillance activities.

The screening began in October 1987. Twenty-six schools were screened, and 5,653 children had skin tests implanted and read. An infection rate of 4.8% was found in this preliminary study. This rate is higher than the expected rate of 3% in this age group.

The voluntary nature of screening was a major obstacle in obtaining the required 80% of testees for random sample validity. While every effort was made to prepare, educate, and inform students and parents, as well as to establish communications and support from the schools and school administration, only 20% of the enrollees actually participated in testing had their tests read.

The high prevalence rate demonstrated in this preliminary sampling, however, provokes the suspicion that a majority of infected students remain unidentified and lack preventive prophylaxis. In order to identify these students, the Department of Health is exploring legislation mandating tuberculin skin testing on all new enterers of the city's elementary and secondary schools.

C. Family Hotel Screenings

The Bureau of Tuberculosis in cooperation with the Human Resources Administration, conducted a skin test screening at seven family hotels during the summer of 1987. The Bureau focused its screening on children ages 1 through 15 years. Eight hundred and ninety-three children were tested and 778 skin tests were read. Of those children tested and read, 0.9% had a positive reaction to the skin test, which is less than the 2-3% anticipated for a population between the ages of 5 and 15 years.

While the final number of children screened during this tuberculosis survey fell about 10% short of the target, the results obtained would seem to indicate that children aged 1-15 years who are presently housed in the family hotels do not demonstrate a larger than expected degree of tuberculosis infection.

D. HIV Counseling and Testing

In mid-1986, the Centers for Disease Control (CDC) recommended the cross testing of individuals who were positive for either Human Immunodeficiency Virus (HIV) or tuberculosis. In response to CDC recommendations, New York City has initiated confidential, voluntary counseling and testing in its chest clinics citywide. This entails the placing of tuberculin tests on all those individuals found to be HIV seropositive and, conversely, that HIV testing be recommended to patients with tuberculosis and tuberculosis infection.

This program is the only one in the nation established to cross test tuberculin reactors. Ongoing evaluation of counseling techniques and patient status will provide information about acceptance of testing. Preliminary results as of October 1988, showed that of the 785 persons counseled, 260 or 33%, accepted HIV testing. There were 28 persons who were HIV positive. Intense monitoring of those dually (HIV/TB) infected/diseased includes follow-up with one year of INH prophylaxis for those infected and extended chemotherapy for diseased patients.

E. Screening in NYC Shelters

In an attempt to improve identification of infected persons and identify cases of tuberculosis, the Bureau initiated a PPD (Mantoux) skin test screening program for 5,500 individuals domiciled at 24 Human Resource Administration and private shelters. To date, screening has identified one active case of tuberculosis. However, only 1,901 (60%) of the 3,186 tested returned for reading of the test results. Of those 550 identified as positive, 35% returned for the required X-ray and follow-up.

As an alternative to skin testing, a program of X-ray screening was initiated. This program was designed to overcome the problems encountered at the skin test screenings, such as poor attendance and waiting 72 hours for test results. It was felt that X-ray screening would improve compliance and follow-up examination for rapid identification and treatment.

From December 2, 1987 to January 4, 1988, X-ray screening was provided by the Washington Heights Chest Clinic of the Department of Health, located across the street from the Fort Washington Armory Men's Shelter, a large shelter serving an adult male population. Among the 850 clients who frequent the Fort Washington Shelter, 545 individuals were screened. Of these, two had positive cultures and were not previously known to the Bureau.

Because of the success of this screening, it was decided to put a greater emphasis on X-ray screening among the homeless. A mobile van was leased in order to permit maximum flexibility of movement between shelters. Monetary incentives were offered for participation in the screenings. Eight shelters were screened from March through December of 1988. A total of 2,569 persons were screened. One new case of tuberculosis was identified to date. The Health Department is reviewing the results of this screening to determine the direction of future X-ray screening activities.

F. CDC Review

At the request of the Health Department, in early September the Centers for Disease Control (CDC) Division of Tuberculosis Control performed a program review led by its Director, Dixie Snider, M.D. This review put particular emphasis on the homeless initiative, and it provided some critical feedback and several suggestions for the improvement of overall tuberculosis control activities.

The CDC review team voiced agreement with current policies and strategies for screening and treating homeless individuals with tuberculosis. Some of their recommendations for enhanced program success included additional ongoing training of field staff, reassessment of our computer technology, creation of an Advisory Board, restructuring of Bureau staff and targeted treatment of HIV seropositive individuals. These suggestions have provided the impetus for new program initiatives.

G. Expert Panel on Tuberculosis

Because of the large cadre of tuberculosis care providers throughout the city, there is no standardized treatment and follow-up in use by hospitals, clinics and physicians. An Expert Panel on Tuberculosis has been formed of professionals in public health, pulmonary medicine, microbiology, health care delivery, and epidemiology. The Panel's role is to both review citywide policies and procedures in diagnosis, treatment and management of tuberculosis and to recommend procedural strategies to the Commissioner of Health. The Panel has outlined its recommendations concerning the management of tuberculosis in New York City. This report will soon be available to tuberculosis care providers.

H. Tuberculosis Treatment Facility for Homeless Men

The New York City Human Resources Administration (HRA) and the Department of Health (DOH) have designated a shelter for adult homeless men with tuberculosis disease. HRA will run the facility, and DOH will provide the daily medications and monitor the therapy for 85 men. Health and Hospitals Corporation will provide all back-up medical services other than tuberculosis care.

The need for this shelter arises from the difficulty of maintaining patient compliance with tuberculosis therapy in homeless individuals. These patients are poor, have other pre-existing conditions (e.g., alcoholism or drug abuse), and cannot be relied on to continue the required uninterrupted daily therapy for six months. Since there are a large number of homeless males with tuberculosis in the City, it was decided to dedicate a shelter exclusively to these clients. Because there are many fewer homeless women with tuberculosis, it was not deemed necessary to establish a similar facility for women.

This specialized shelter is designed to serve tuberculosis clients who are in the shelters. This approach is expected to be more successful with these patients because the new tuberculosis shelter is more attractive than other facilities and includes enhanced services. The shelter was opened in November 1988, and it should be fully occupied by early 1989.

I. Field follow-up on High Risk Preventive Patients

The Bureau of Tuberculosis identifies infected persons and recommends that those at high risk of breaking down with disease be placed on INH prophylaxis; field follow-up of preventive patients has not been provided routinely due to resource constraints. The Department of Health has instituted an aggresive program of identification of persons at risk for disease and provides field follow-up of these individuals. The target groups for the field follow-up on preventive treatment are: 1) infected contacts of active cases and 2) tuberculosis infected individuals found to be seropositive for HIV.

Close contacts to tuberculosis cases are at highest risk for breaking down with disease in the first two years after infection. Those dually infected with HIV and tuberculosis are also assumed to be at high risk. Treating these individuals prophylactically with INH and monitoring the treatment will help break the chain of infection and prevent future tuberculosis disease.

Individuals in the target groups are being identified on an ongoing basis, and field investigations are being conducted by Bureau of Tuberculosis Public Health Advisors to ensure compliance with treatment.

J. Computer Technology

An integral part of delivering and monitoring tuberculosis care is the computer-assisted gathering of information regarding both current and suspected tuberculosis patients. This information is then used to promote the delivery of health care with maximum effectiveness.

The Bureau's seven year old computer system is being updated, and district field offices are being furnished with direct online access to the central computer to allow them to immediately update and/or retrieve patient information to enhance their ability to monitor patient activity.

Table 1

Tuberculosis Incidence

New York City, 1960-1987

Year	Number[1]	Rate[2]
		Per 100.000
1960	4,699	60.4
1961	4,360	56.0
1962	4,437	57.0
1963	4,891	62.9
1964	4,207	53.7
1965	4,242	53.3
1966	3,663	45.6
1967	3,542	43.6
1968	3,224	39.7
1969	2,951	36.4
1970	2,590	32.8
1971	2,572	32.6
1972	2,275	28.8
1973	2,101	26.6
1974	2,022	25.6
1975	2,151	27.2
1976	2,151	27.3
1977	1,605	21.1
1978	1,307	17.2
1979	1,530	20.1
1980	1,514	19.9
1981	1,582	22.4
1982	1,594	22.5
1983	1,651	23.4
1984	1,629	23.0
1985	1,843	26.0
1986	2,223	31.4
1987	2,197	31.1

1. Case definition revised in 1978 to reflect the inclusion of persons who had verified disease in the past and were discharged or lost to supervision for more than 12 months and have verified disease again.

2. Population based on 1960, 1970, and 1980 census.

Table 2

Tuberculosis Incidence Rates (per 100,000)
By Race/Ethnicity and Age, Sexes Combined
New York City, 1987

Race	N (Rate)	Age Group									
	0-4	5-9	10-14	15-19	20-24	25-34	35-44	45-54	55-64	65+	Total
White	2	2	-	2	18	47	50	46	36	79	282
	(1.3)	(1.3)	-	(1.9)	(6.2)	(7.6)	(12.9)	(11.0)	(7.3)	(10.6)	(7.7)
Black	13	4	3	19	89	384	369	175	87	91	1234
	(9.2)	(2.9)	(1.9)	(10.7)	(59.2)	(141.1)	(167.3)	(101.9)	(62.6)	(74.3)	(72.9)
Hispanic	15	3	3	12	43	193	143	67	49	29	557
	(10.4)	(2.3)	(2.2)	(8.3)	(36.7)	(77.7)	(79.6)	(50.3)	(58.2)	(44.1)	(39.6)
Asian	-	-	3	3	9	39	24	11	12	23	124
	-	-	(18.3)	(17.9)	(49.0)	(74.6)	(67.2)	(47.4)	(75.6)	(148.4)	(53.6)
Total	30	9	9	36	159	663	586	299	184	222	2197
	(6.4)	(2.0)	(2.8)	(6.4)	(26.4)	(55.2)	(70.4)	(39.5)	(24.9)	(23.3)	(31.1)

Table 3

Tuberculosis Incidence Rates(per 100,000) in Males,
by Race/Ethnicity and Age
New York City, 1987

Race	N (Rate)	Age Group									
	0-4	5-9	10-14	15-19	20-24	25-34	35-44	45-54	55-64	65+	Total
White	1	2	-	2	12	35	42	37	27	46	204
	(1.2)	(2.5)	-	(1.8)	(8.4)	(11.4)	(22.0)	(18.7)	(12.2)	(16.2)	(11.9)
Black	4	3	-	8	50	267	281	139	68	46	866
	(5.6)	(4.4)	-	(9.3)	(76.0)	(227.0)	(299.0)	(191.3)	(118.5)	(104.2)	(114.4)
Hispanic	10	1	3	4	23	135	121	53	35	19	404
	(13.5)	(1.5)	(4.3)	(5.7)	(37.5)	(120.6)	(148.4)	(90.4)	(97.6)	(76.6)	(61.6)
Asian	-	-	1	-	6	22	17	11	9	13	79
	-	-	(11.8)	-	(68.9)	87.7	(92.4)	(92.8)	(113.3)	(170.4)	(68.3)
TOTAL	15	6	4	14	91	459	461	240	139	124	1553
	(6.3)	(2.6)	(1.6)	(5.0)	(32.4)	(80.6)	(118.5)	(69.8)	(42.8)	(34.2)	(47.5)

Table 4

Tuberculosis Incidence Rates (per 100,000) in Females,
By Race/Ethnicity and Age
New York City, 1987

Race	N (Rate) 0-4	5-9	10-14	15-19	20-24	25-34	35-44	45-54	55-64	65+	Total
	Age Group										
White	1	-	-	-	6	12	8	9	9	33	78
	(1.3)	-	-	-	(4.0)	(3.9)	(4.1)	(4.1)	(3.3)	(7.2)	(4.0)
Black	9	1	3	11	39	117	88	36	19	45	368
	(12.7)	(1.5)	(3.7)	(12.1)	(46.2)	(75.7)	(69.5)	(36.3)	(23.3)	(57.5)	(39.4)
Hispanic	5	2	-	8	20	58	22	14	14	10	153
	(7.0)	(3.1)	-	(11.0)	(26.9)	(42.5)	(22.4)	(18.8)	(29.0)	(24.4)	(20.4)
Asian	-	-	2	3	3	17	7	-	3	10	45
	-	-	(25.2)	(36.8)	(31.7)	(62.6)	(40.4)	-	(37.8)	(127.1)	(38.9)
TOTAL	15	3	5	22	68	204	125	59	45	98	644
	(6.56)	(1.3)	(2.0)	(7.7)	(21.1)	(32.3)	(28.2)	(14.4)	(10.9)	(16.6)	(17.0)

Table 5

Incident Tuberculosis Cases by Race and Age
in Children Under 5 Years
New York City, 1987

Age in months

	0-11	12-23	24-35	36-47	48-59	Total
White	1	0	1	0	0	2
Black	5	5	1	2	0	13
Hispanic	5	4	4	0	2	15
TOTAL	11	9	6	2	2	30

Table 6

Age-adjusted* Tuberculosis Rates
New York City, 1980, 1986, and 1987

Borough	Health District	Cases	Rate per 100,000 Pop.		
		1987	1987	1986	1980
Manhattan	Central Harlem	157	134.9	130.4	78.6
	East Harlem	59	49.8	60.4	27.5
	Kips Bay-Yorkville	24	8.3	9.1	9.9
	Lower East Side	198	79.1	83.5	68.3
	Lower West Side	97	29.2	42.2	34.6
	Riverside	71	29.7	38.2	27.9
	Washington Heights	160	66.5	39.8	26.5
Bronx	Fordham-Riverdale	51	22.3	16.9	16.5
	Morrisania	78	68.5	68.7	31.4
	Mott Haven	84	90.2	48.8	28.8
	Pelham Bay	28	12.0	15.5	9.8
	Tremont	80	53.0	55.7	33.3
	Westchester	45	16.2	16.3	9.3
Brooklyn	Bay Ridge	21	8.4	7.5	8.8
	Bedford	164	84.0	73.8	46.7
	Brownsville	106	43.4	34.5	21.4
	Bushwick	56	39.5	48.7	37.0
	Flatbush	142	30.1	31.1	18.2
	Fort Greene	91	65.6	71.4	55.2
	Gravesend	34	12.4	12.1	13.2
	Red Hook-Gowanus	22	18.5	18.7	24.2
	Sunset Park	34	22.6	19.3	15.8
	W'burg-Gnspt.	70	55.3	38.9	27.0
Queens	Astoria-L.I.C.	60	25.0	32.5	17.7
	Corona	58	21.2	27.1	13.5
	Flushing	34	7.8	9.5	10.3
	Jamaica East	96	33.3	24.7	17.8
	Jamaica West	41	12.0	18.5	8.6
	Maspeth-Forest Hills	14	4.3	7.1	5.7
Staten Island	Richmond	20	6.1	7.4	7.3

*By the direct method, according to the population distribution of New York City in 1980.

Table 7

Numbers of Tuberculosis Cases
By Age and Area of Birth, New York City, 1987

AREA OF BIRTH	AGE GROUPS 0-9	10-14	15-19	20-24	25-34	35-44	45-54	55-64	65+	Total
AFRICA	-	-	1	4	10	5	1	-	-	21
EUROPE	-	-	-	3	1	9	10	7	15	45
CENTRAL/SOUTH AMERICA	-	1	6	9	33	17	8	13	4	91
CARIBBEAN*	5	4	7	43	121	91	39	26	23	359
SOUTHEAST ASIA	-	1	1	-	2	4	-	-	1	9
INDO/PAKISTAN	-	1	1	2	14	2	1	1	4	26
ASIA	-	-	-	4	17	15	8	7	16	67
OTHER	-	1	-	1	5	1	1	-	-	9
TOTAL NON CONTINENTIAL U.S.A.*	5	8	16	66	203	144	68	54	63	627
CONTINENTAL USA	34	1	20	93	460	442	231	130	159	1570

*Includes Puerto Rico

Table 8

Tuberculosis Screening and Cases Identified among Immigrants*
1977-1987

	CLASS A		CLASS B		
Tuberculosis Year	Number Screened	Tuberculosis A & B Cases	Number Screened	Tuberculosis Cases	Class Total
1977	129	3	1,129	0	1,258
1978	184	2	998	0	1,182
1979	129	4	786	0	915
1980	86	6	788	0	874
1981	124	2	700	1	824
1982	113	4	883	0	996
1983	52	5	774	0	826
1984	71	1	756	0	827
1985	147	4	1,050	0	1,197
1986	187	0	1,156	0	1,343
1987	362	6	1,450	3	1,812

*Within two weeks of arrival in U.S.

Table 9

LOCATION OF DISEASE

	1987		1986	
Pulmonary	1,815	82.0%	1,766	79.4%
Lymphatic	108	4.9	166	7.5
Pleural	98	4.5	89	4.0
Bone/Joint	43	2.0	46	2.1
Meningeal	21	1.0	36	1.6
Miliary	19	.9	15	.7
Genitourinary	38	1.7	36	1.6
Peritoneal	13	.6	18	.8
Other	42	1.9	51	2.3
Pulmonary and Extrapulmonary	183	8.3	131	5.9

Table 10

Newly Reported Tuberculosis Cases with
Disease Again (Reactivation) By Sex and Age*
New York City, 1987

Sex	Age Group 25-34	35-44	45-54	55-64	65+	TOTAL
Male	6	7	11	6	3	33
Female	6	2	1	0	2	11
TOTAL	12	9	12	6	5	44

Table 11

Newly Reported Tuberculosis Cases With
Disease Again (Reactivation) By Borough of Residence* and Age
New York City, 1987

Borough**	Age Group 25-34	35-44	45-54	55-64	65+	TOTAL
Manhattan	2	6	5	4	1	18
Bronx	-	-	1	-	1	2
Brooklyn	8	2	5	1	-	16
Queens	2	1	1	1	3	8

*No reactivated cases reported from Staten Island.

Table 12

Tuberculosis Deaths and Rates (per 100,000)
New York City, 1978 - 1987

Year	Number of T.B. Deaths	Rate
1978	181	2.3
1979	121	1.5
1980	143	2.0
1981	155	2.2
1982	168	2.4
1983	151	2.1
1984	168	2.4
1985	155	2.2
1986	186	2.6
1987	219	3.1

Table 13

Summary of Close Contacts Identified and Examined (1983 - 1987)

	1983	1984	1985	1986	1987
Identified (contacts per case)	3310 (3.7)	3152 (3.5)	2805 (3.7)	4161 (4.6)	2827 (3.9)
Examined	2975 (90%)	2830 (90%)	2405 (86%)	3572 (86%)	2374 (84%)
Not Infected	2071 (70%)	1870 (71%)	1621 (67%)	2426 (68%)	1630 (69%)
On Treatment	306 (15%)	265 (14%)	228 (18%)	354 (15%)	265 (16%)
Infected without Disease	926 (28%)	818 (29%)	677 (28%)	977 (27%)	641 (27%)
On Treatment	524 (63%)	513 (63%)	513 (76%)	579 (59%)	456 (71%)
Infected with Disease	78 (2.6%)	142 (5.0%)	107 (4.4%)	75 (2.1%)	79 (3.3%)

Figure 1

Tuberculosis Morbidity and Mortality Rates (per 100,000 Pop.)

New York City, 1960–1987

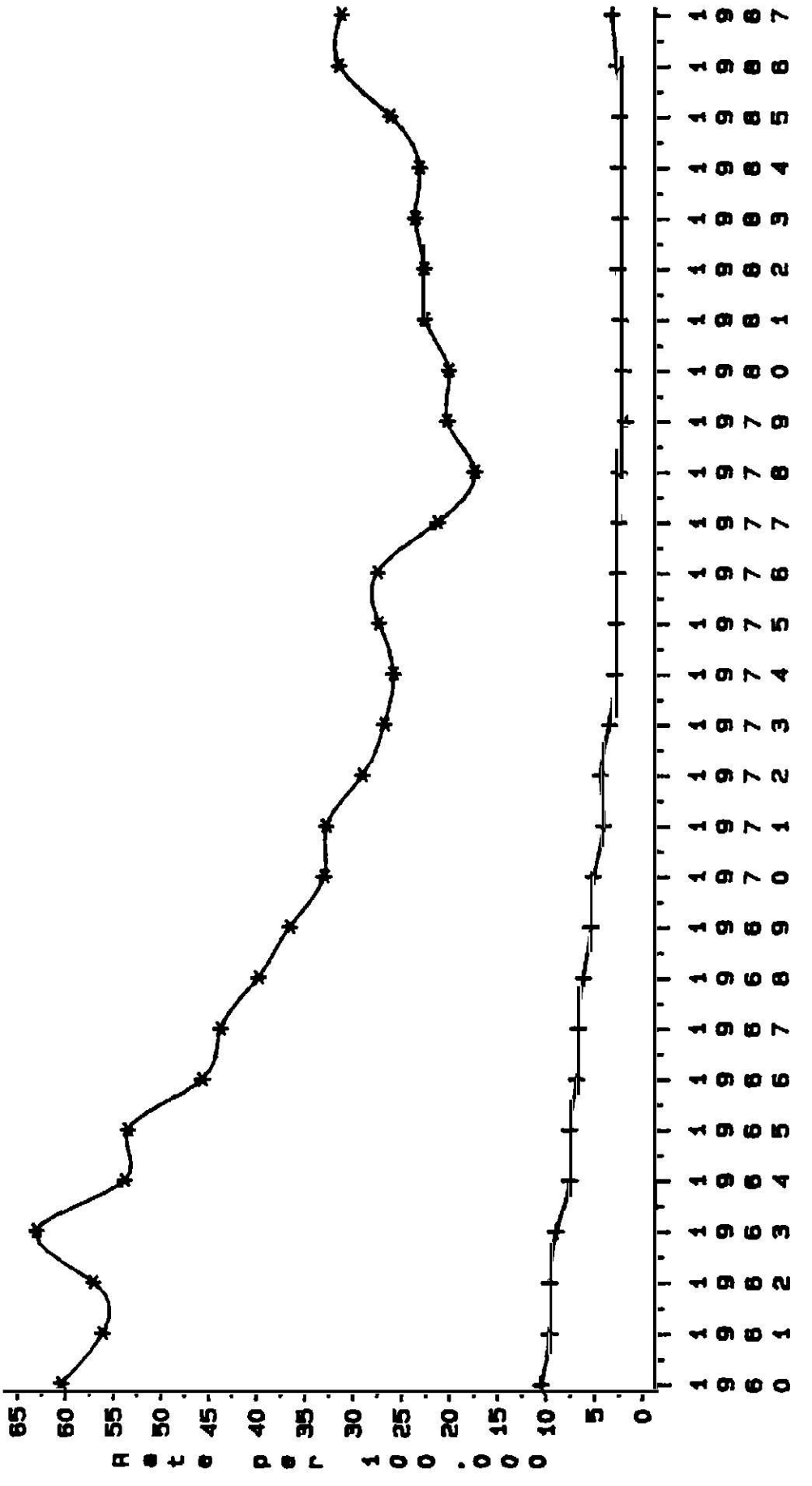


Figure 2

Tuberculosis Rates in New York City, 1987

Rates per 100,000 Population, By Sex and Age

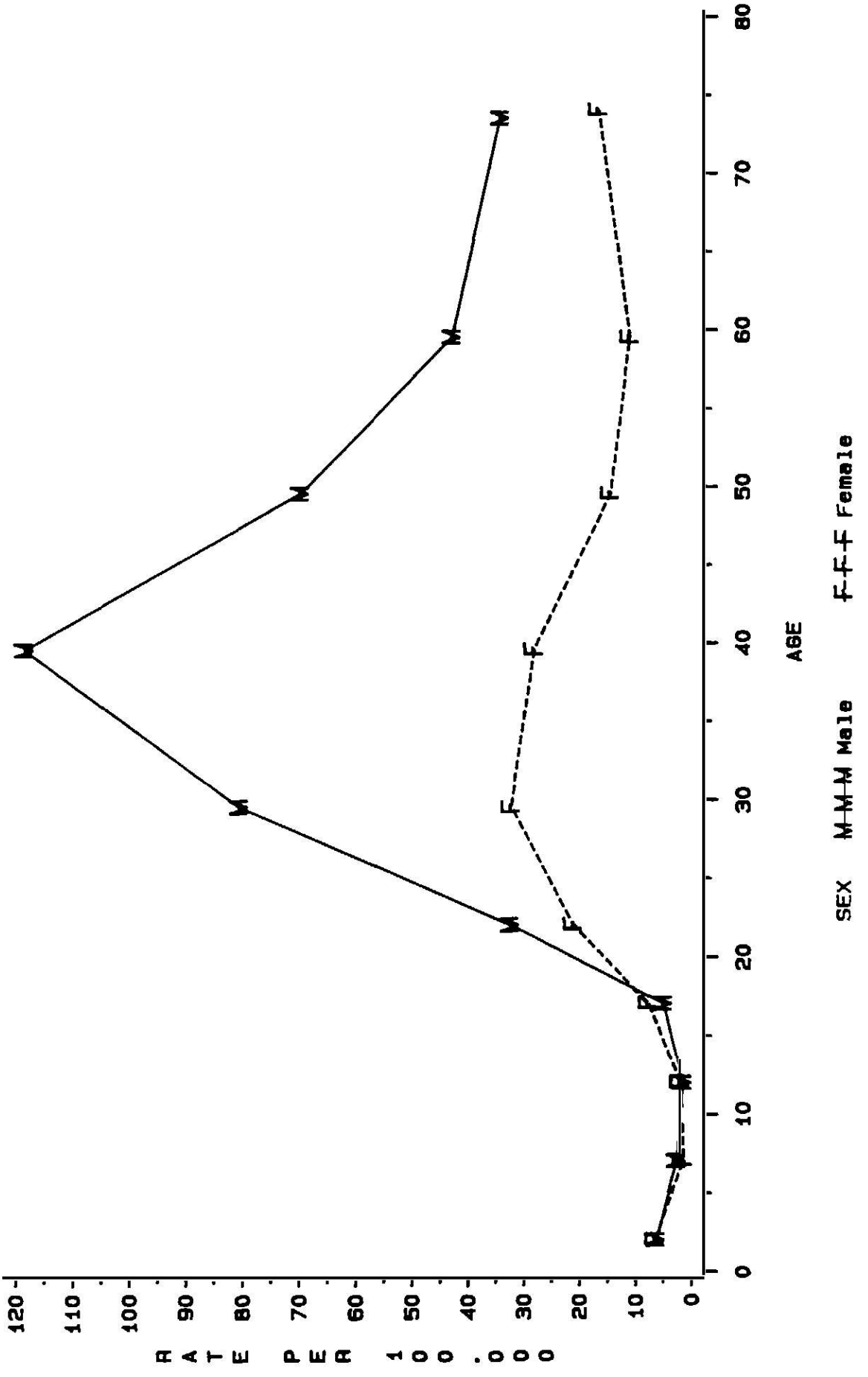


Figure 3

Tuberculosis Incidence Rates in New York City, 1987

Per 100,000 Population, by Age and Race/Ethnicity

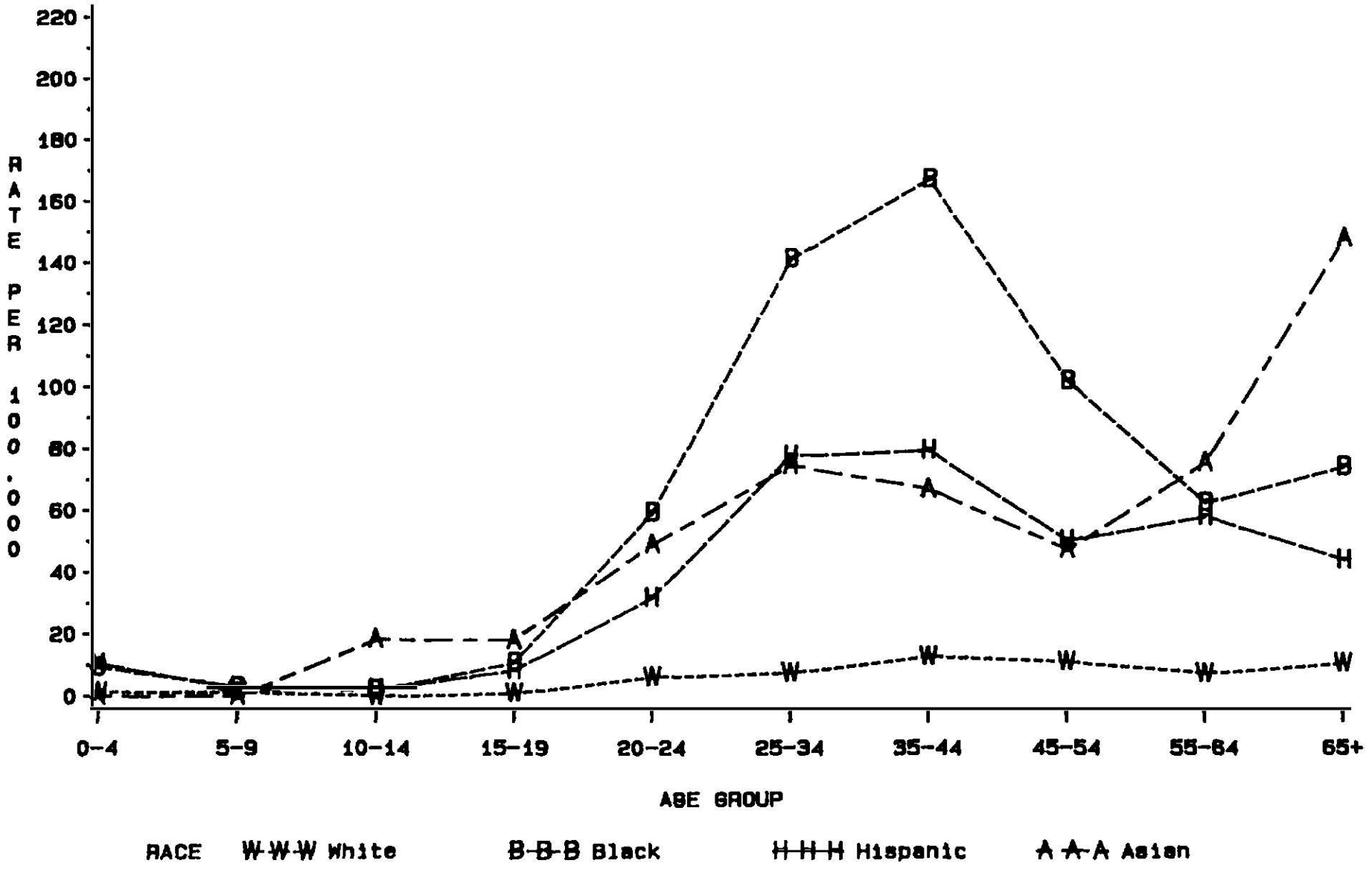


Figure 4

Tuberculosis Incidence per 100,000, New York City, 1983–1987

By Race

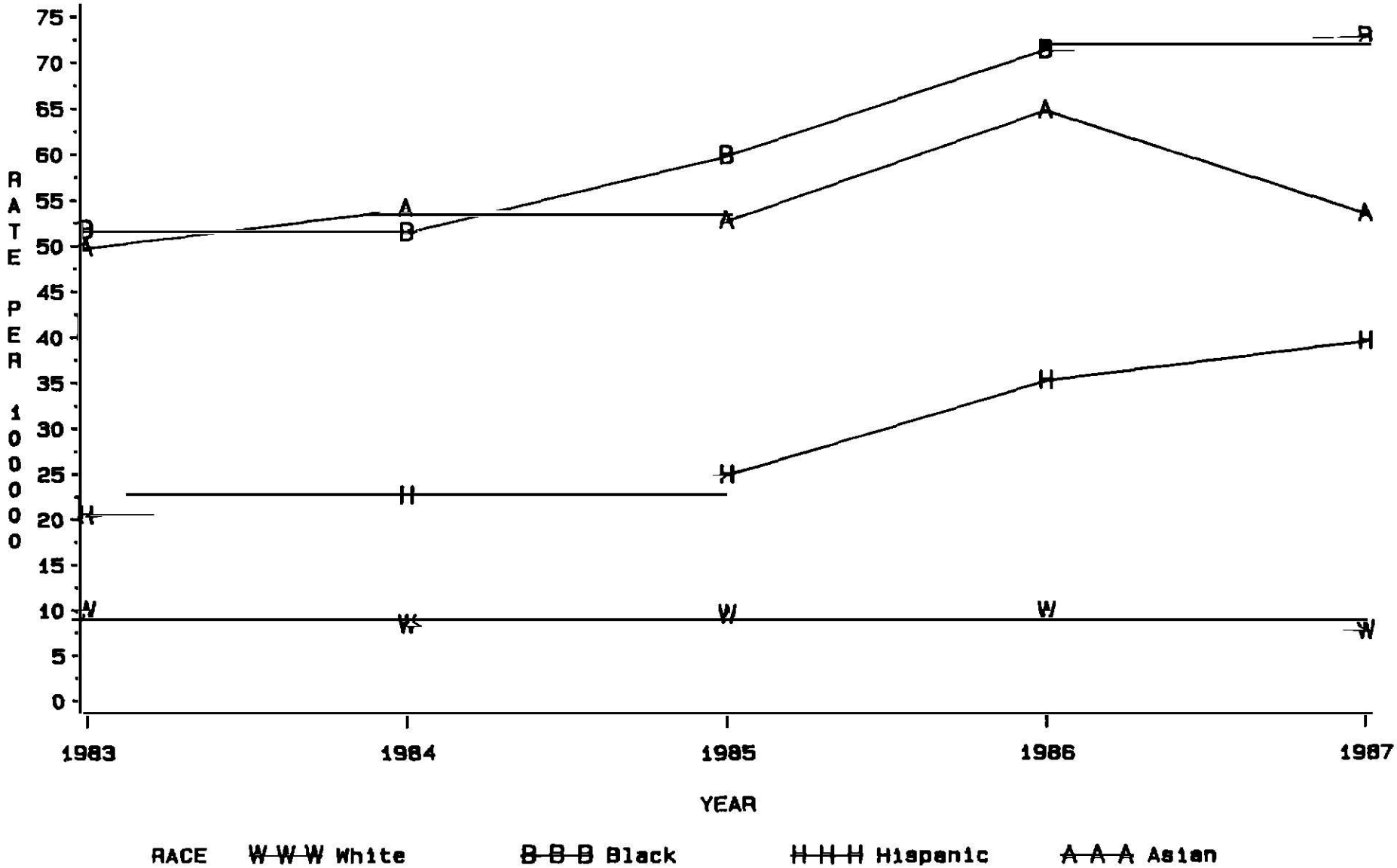


Figure 5

Tuberculosis Incidence per 100,000, New York City, 1983–1987

Males ages 25–44 only, by Race

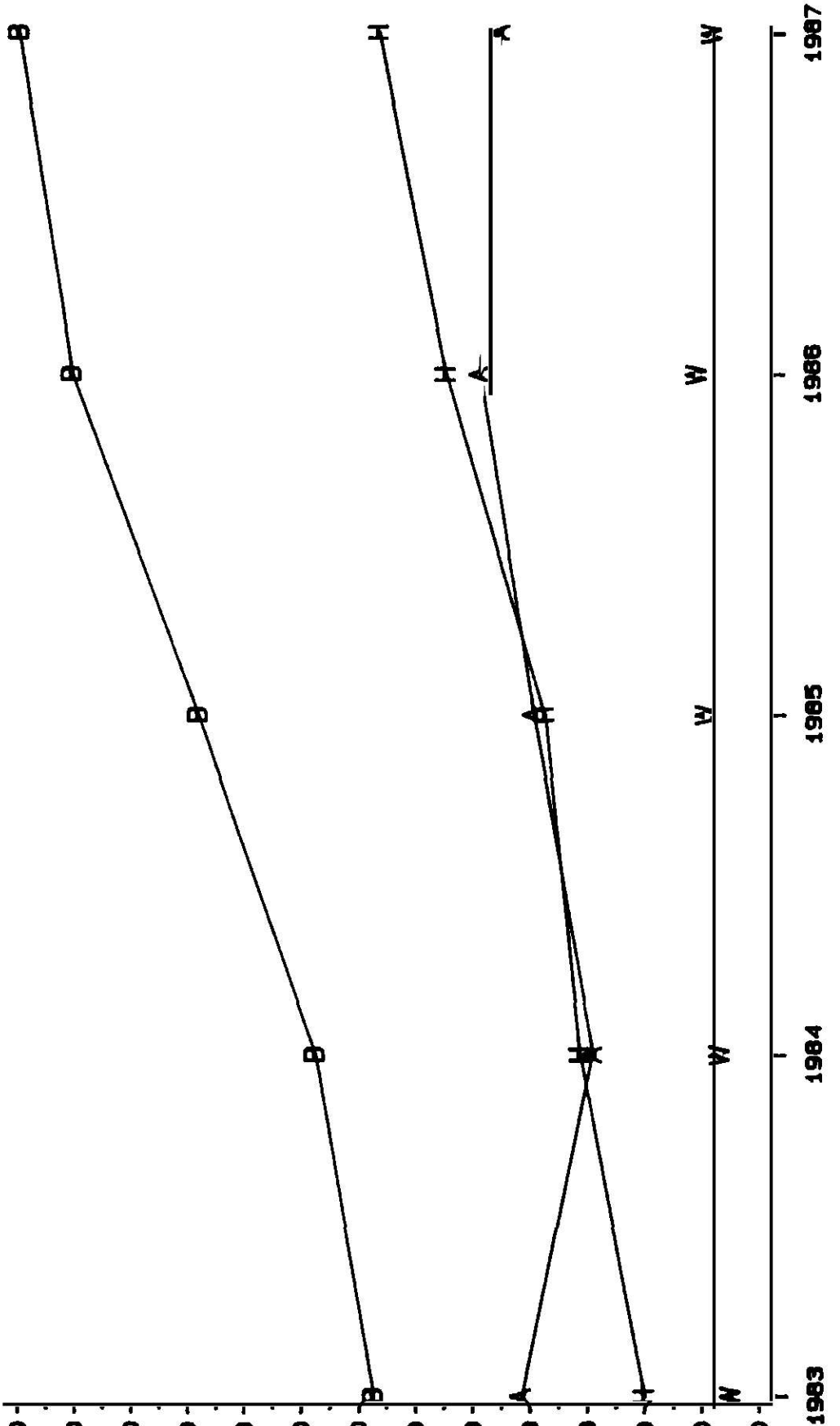


FIGURE 6

Tuberculosis Rates in New York City, 1980–1987

Rates per 100,000 Population, by Age and Year

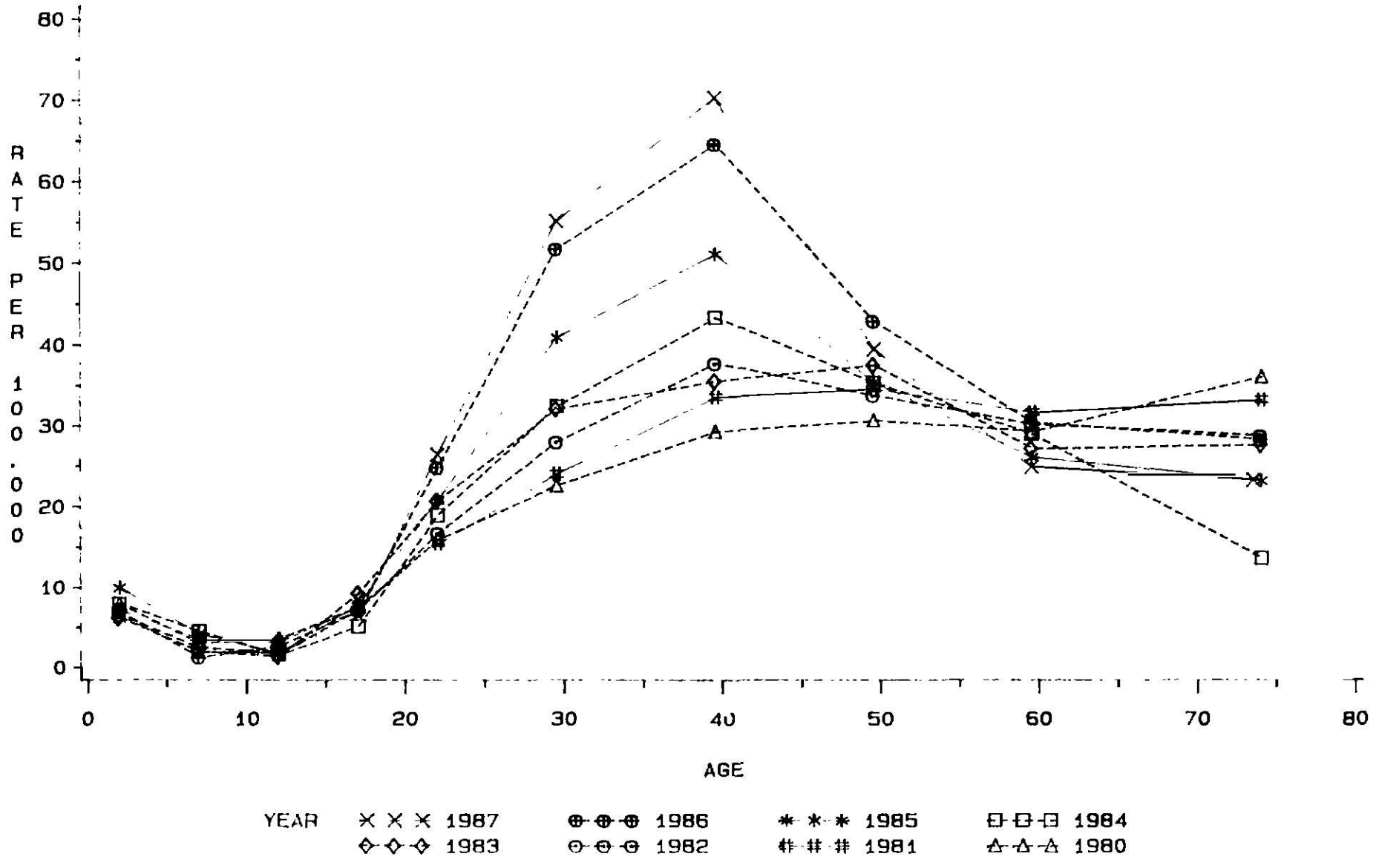


Figure 7

Tuberculosis Rates among Black Males in New York City, 1984–1987

Rates per 100,000 Population, by Age and Year

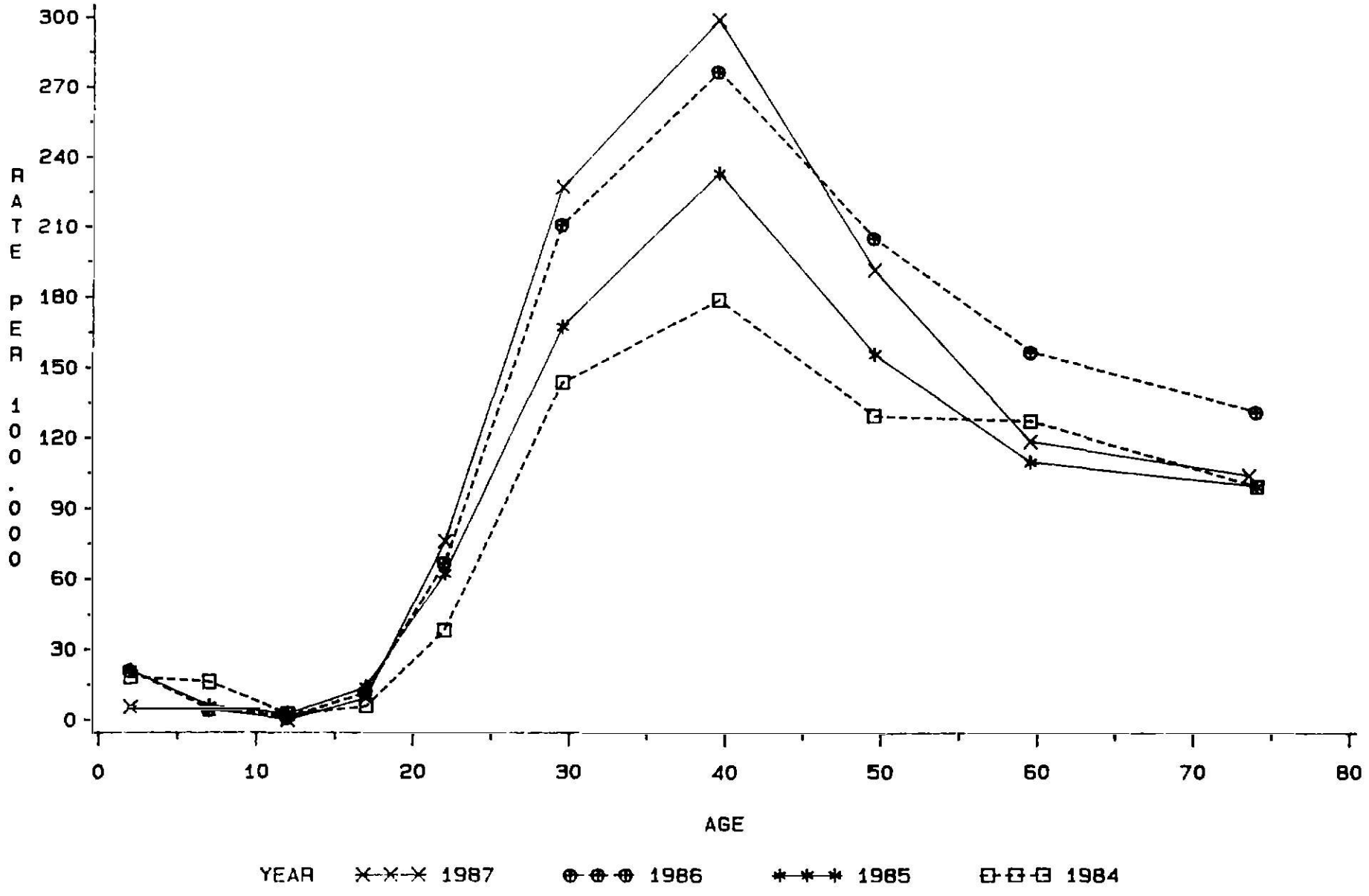


Figure 8

Tuberculosis Rates among Hispanic Males in New York City, 1984–1987

Rates per 100,000 Population, by Age and Year

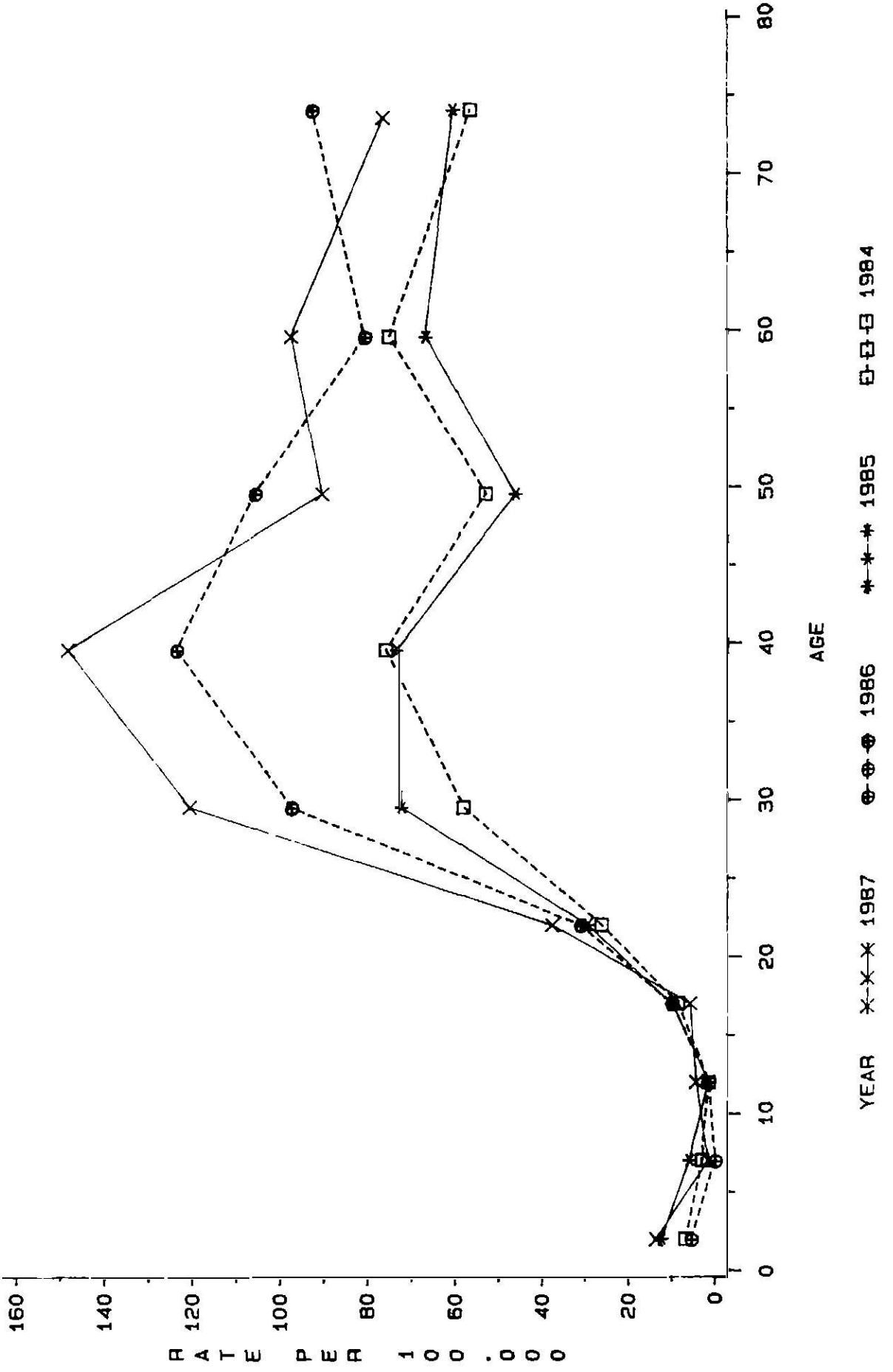


Figure 9

Tuberculosis Rates among Black Females in New York City, 1984--1987

Rates per 100,000 Population, by Age and Year

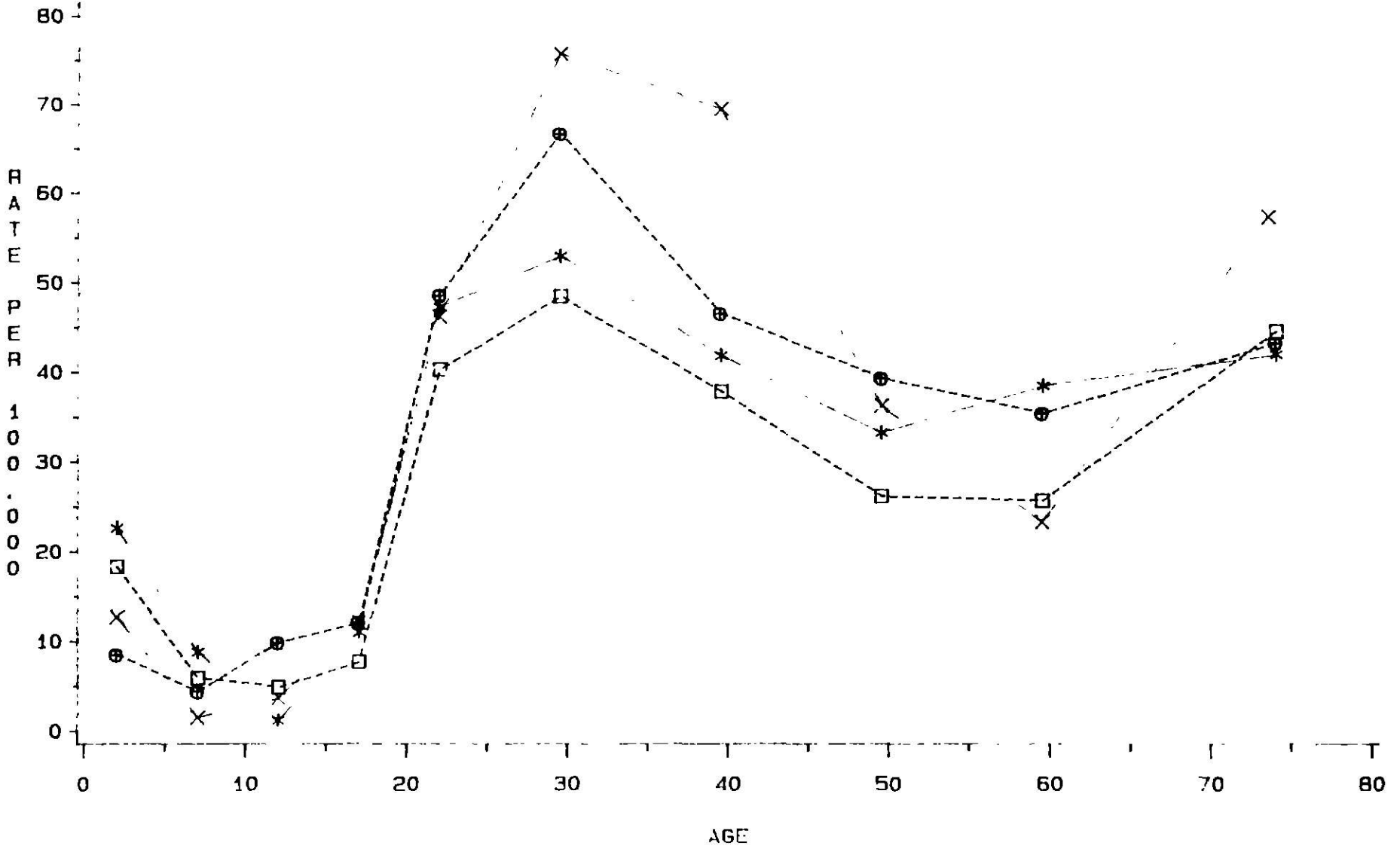


Figure 10

Tuberculosis Rates among Hispanic Females in New York City, 1984–1987

Rates per 100,000 Population, by Age and Year

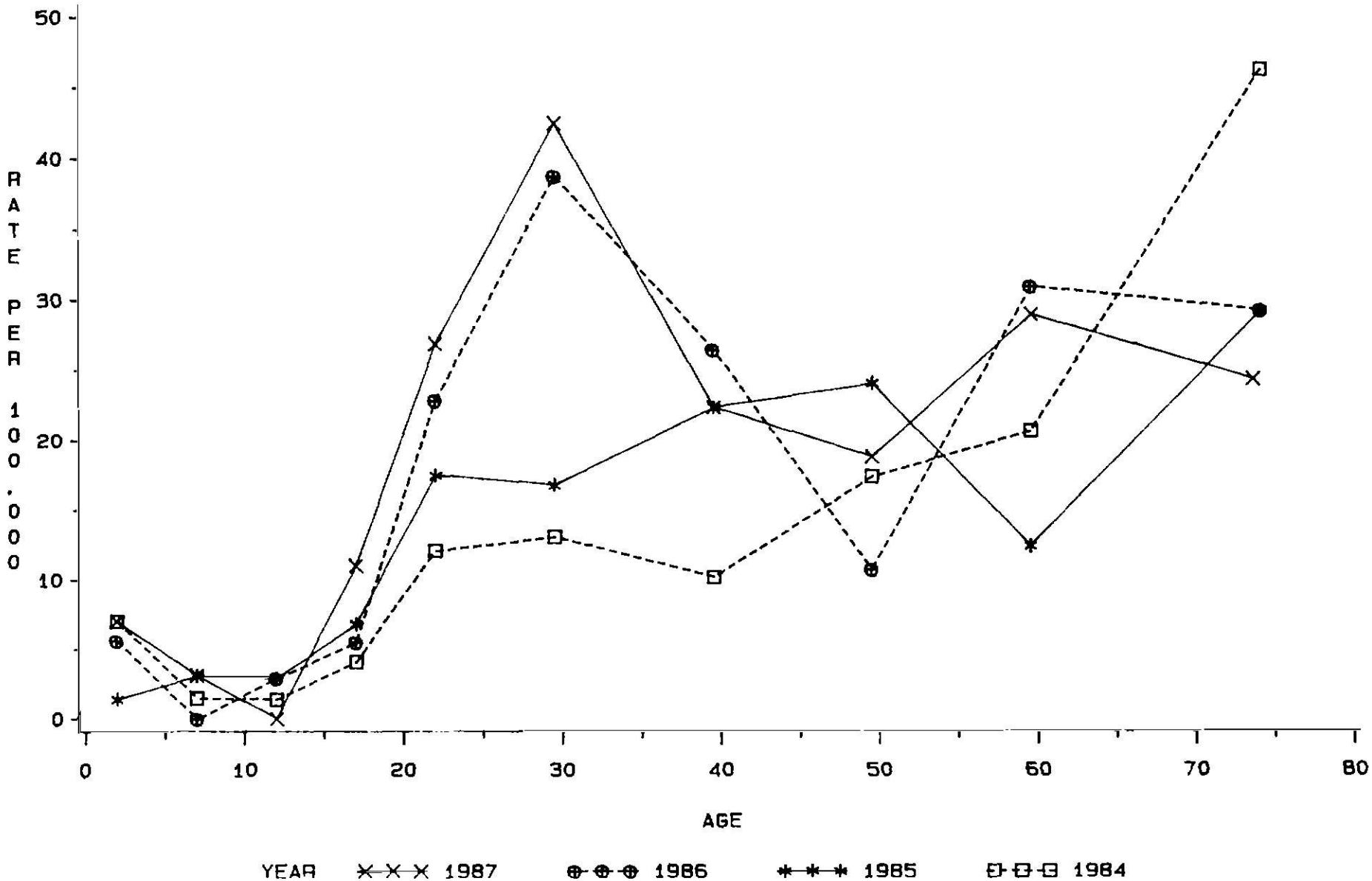
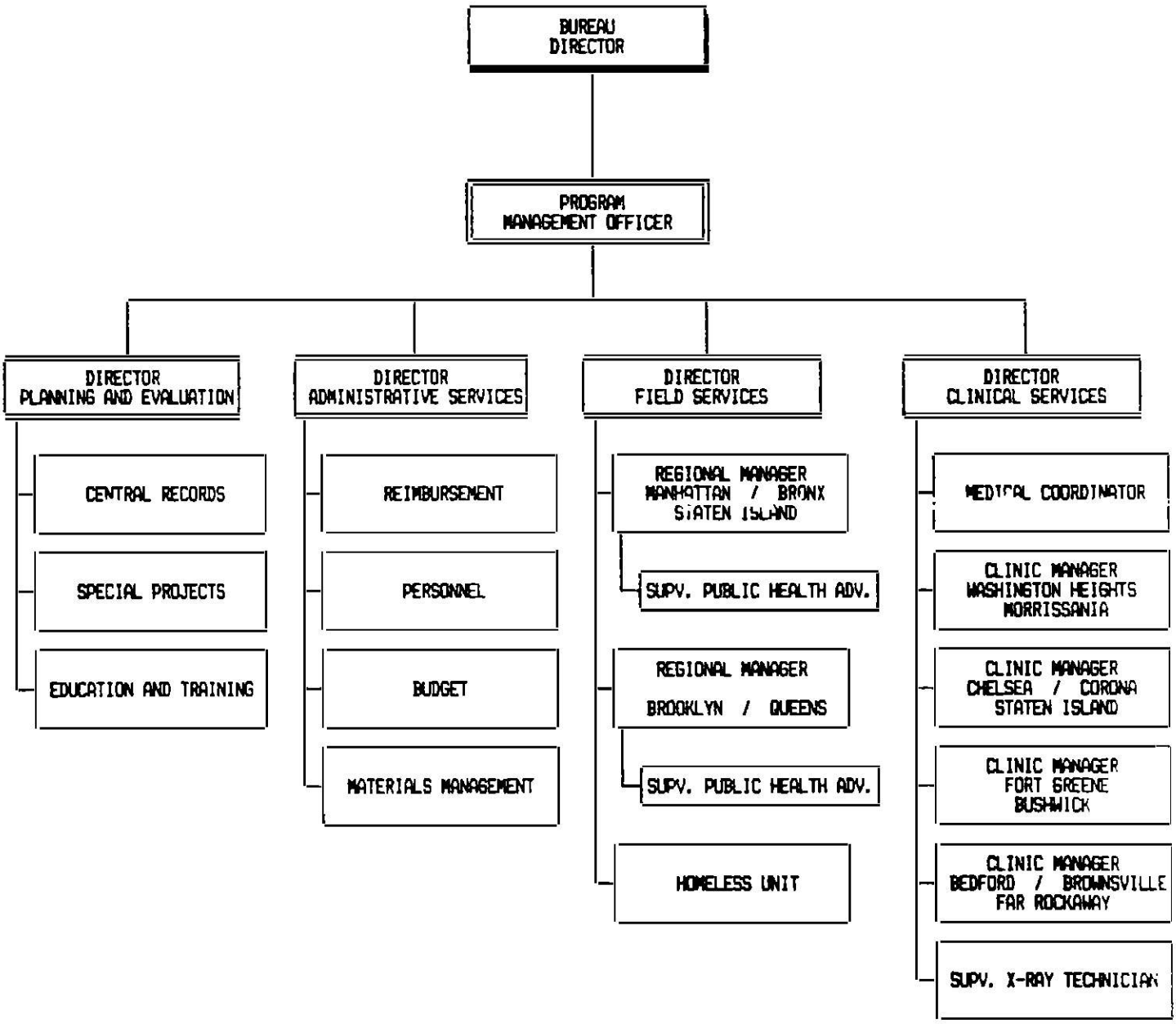


FIGURE 11

NEW YORK CITY DEPARTMENT OF HEALTH
BUREAU OF TUBERCULOSIS

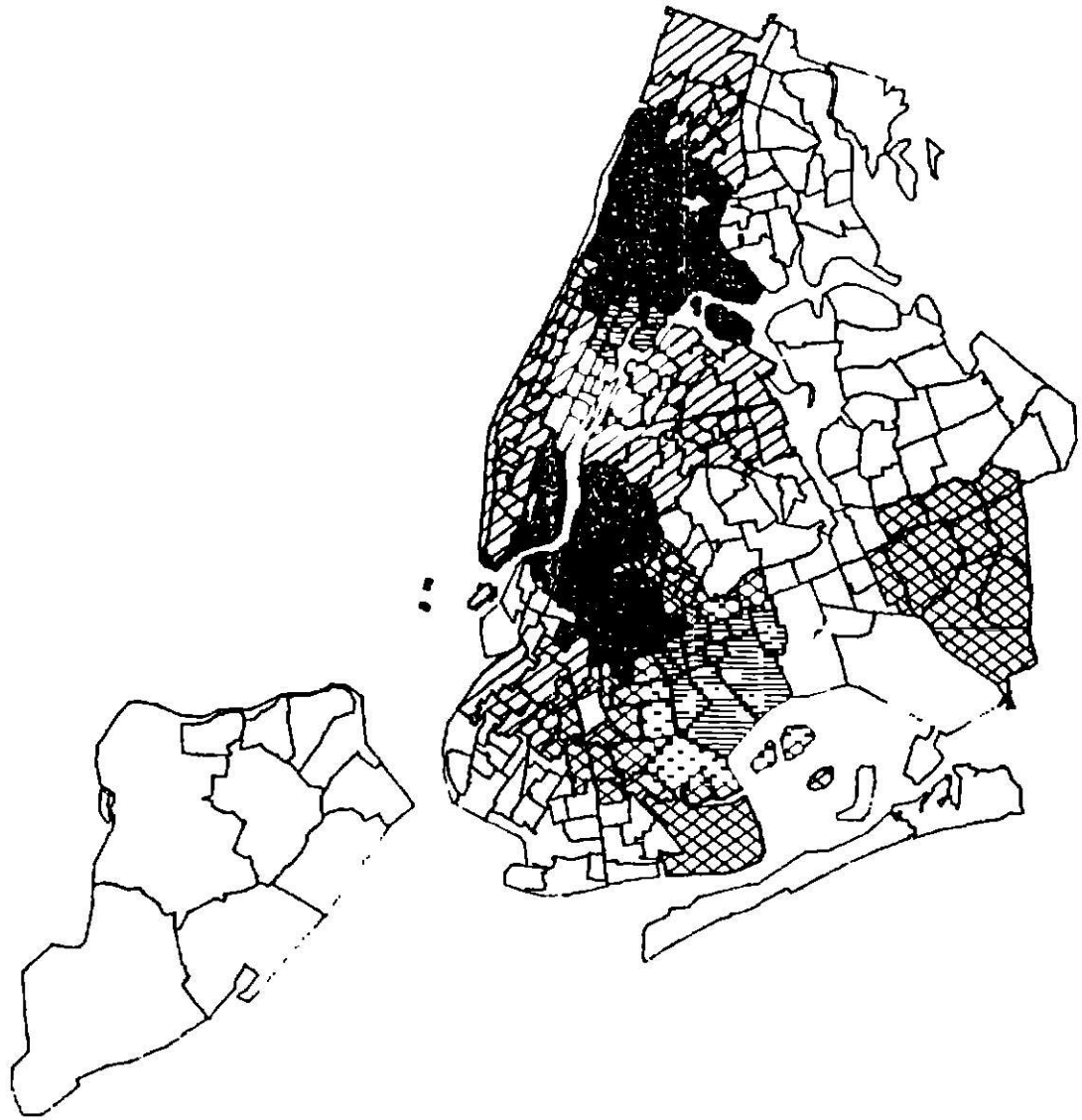


DECEMBER 19.

DISTRIBUTION OF TUBERCULOSIS, 1987

BY NEW YORK CITY HEALTH DISTRICTS

(Per 100,000 Pop.)



RATE 0-20 20-29 30-39 40-49 50+

BUREAU OF TUBERCULOSIS

ANNUAL BUDGET 1987

NYC TAX LEVIED FUNDS

Personnel Services (PS)	
Full Time Employee	$3,734,350
Part-time Employee	$ 750,000
Other than PS (OTPS)	$ 790,500
Reimbursement	$1,992,000
Subtotal	$7,266,850

Federal CDC Grant Funds

Personnel	$ 587,300
OTPS	$ 238,000
Subtotal	$ 825,300
TOTAL BUDGET	$8,092,150

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CHRISTMAS SEALS®
Fight Lung Disease
IT'S A MATTER OF LIFE AND BREATH®