AN ATLAS OF

Salmonella

IN THE UNITED STATES

SEROTYPE-SPECIFIC SURVEILLANCE

1968-1986

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INTRODUCTION

The *Salmonella* Surveillance System, begun in 1962 at the Centers for Disease Control (CDC), collects reports of isolates of *Salmonella* from human and nonhuman sources from every state in the United States and District of Columbia (1). The reports are sent regularly by State and Territorial Epidemiologists and Public Health Laboratory Directors, who provide demographic data and serotype identification for each isolate from humans; in addition, reports of nonhuman isolates are sent by the U. S. Department of Agriculture. This surveillance system is distinct from the Morbidity and Mortality Weekly Report (MMWR) system, which is a clinically based notifiable disease reporting system. The MMWR system has included typhoid and nontyphoid salmonellosis as separate categories since 1942, but it does not include laboratory confirmation or serotype (2). The *Salmonella* Surveillance System has maintained data about all reported isolates of *Salmonella* on magnetic tape since 1968. This publication is an analysis of data from this system reported during the 19-year period from 1968 through 1986.

Since its beginning, the *Salmonella* Surveillance System has remained essentially unchanged except for fluctuations in reporting interests and priorities. Previously rare serotypes have been introduced into the United States and have spread to a variety of animal reservoirs, established serotypes have changed in frequency, and some once-common serotypes have become rare. We find the richness of the trends and patterns observed for serotypes meaningful and believe they can suggest hypotheses that might be important in understanding the epidemiology of *Salmonella* transmission. Although unknown changes in the reporting system could have affected patterns in an unpredictable way, many of the observed patterns are consistent from year to year. Some patterns are unique for certain serotypes and are consistent with what would be expected as a result of changes in the distribution of known *Salmonella* vehicles associated with particular serotypes.

The nomenclature of the genus *Salmonella* has undergone considerable change in recent years. Previously, the genus was divided into three species: *S. typhi*, *S. choleraesuis*, and *S. enteritidis*. *S. typhi* and *S. choleraesuis* each consisted of a single serotype: the approximately 2000 other serotypes were all classified under *S. enteritidis*, which included the serotype *enteritidis*. Recently proposed nomenclature, reflecting DNA hybridization and other taxonomic studies, classify all *Salmonella* and *Arizona* as a single species, *S. choleraesuis*, with six subgroups (3). To avoid confusion, we have followed the common convention of referring to each serotype as though it were a separate species. Thus, *S. enteritidis* in this report, refers to the serotype *enteritidis*. We have also used the conventions *S. paratyphi* A (formerly known as *S. paratyphi*), *S. paratyphi* B (more recently renamed *S. schottmuelleri*), and *S. paratyphi* C (more recently named *S. hirschfeld*).

Salmonellosis has often been discussed in the context of clinical manifestations as a single disease entity that is usually transmitted by food or water, without regard for the fact that there are many pathogenic salmonellae, each with its own epidemiologic features. Prevention strategies, therefore, have often been couched in terms such as "*Salmonella* prevention," "*Salmonella* in foods and food establishments," and "*Salmonella* in animals or animal feeds." The graphical descriptions presented here illustrate the variety among the serotypes. Examination of the epidemiologic characteristics of individual serotypes suggests that some control recommendations should be tailored to the individual serotype, and that interventions can be directed toward specific vehicles to reduce the risk of disease from those serotypes.

This report presents an epidemiologic summary of the most commonly reported serotypes. Most previous reports based on these surveillance data have necessarily been descriptive, using percentage distributions, and have not related the number of reported isolates to the populations at risk. Part of this analysis relates the frequency of reported isolates to sex-, age-, or county-specific populations from the 1980 census in a graphical format. We hope that this atlas will serve as a useful reference for those working in public health who want to compare their experience with a particular serotype with the nationwide experience. We also hope that this epidemiologic atlas of *Salmonella* serotypes will stimulate thought, lead to testable hypotheses, and increase our understanding of the epidemiology of the *Salmonella* tribe.

METHODS

For each serotype studied, we plotted 8 graphs. Each graph should be interpreted with an understanding of its rationale and limitations as outlined below. Because of the constraints of size and space, the graphs are printed sideways on 2 facing pages and are numbered as follows:

1	2
3	4

5	6
7	8

For each serotype, the first graph (Figure 1) shows the 3-month moving average for reported isolates over the entire 19-year span. The month of report is typically 3-6 weeks after the date of isolation. Data points for each month on this graph were smoothed by taking the mean of the number of isolates from that month, the month before, and the month after. This helped remove some of the erratic fluctuations that tend to obscure real periodic changes in reporting frequency. These fluctuations represent reporting artifacts, random changes, and small outbreaks. Thus, the smoothing reveals more clearly the periodic occurrences that are useful for characterizing some serotypes.

Figure 2 shows the distribution of isolates by reporting month according to whether the isolates came from rural or urban counties. The data presented include all isolates over the 19-year span, summed for each month. These sums are plotted as the percentages of the total number of isolates reported from each type of county. An isolate was labeled "rural" or "urban" if it was reported from a county that had at least 90% of its population defined as either rural or urban in the 1980 U.S. census. The "mixed" category included all isolates that were not classified into the rural or urban categories using this definition.

Figure 3 shows the reported number of isolates by year for each of 3 age-groups. Note that the Y-axis scale varies from serotype to serotype. Because only a few isolates were reported for some serotypes, only 3 age-groups are graphed. We chose the age-groups 0-4 years, 5-29 years, and 30+ years to represent preschool children, school children and young adults, and older adults.

Figure 4 shows the distribution of isolates by reporting month for each of the 3 age-groups. These data are the sums of isolates reported each month over the 19-year span. The sums are plotted as the percentages of the total number of isolates reported for each age-group. The age-groups used are the same as in Figure 3: 0-4 years, 5-29 years, and 30+ years.

Figure 5 shows the median ages of persons from whom the isolates were reported by gender (sex), for each year in the 19-year span. This graph reflects changes in the distribution of the ages of persons at risk. However, a change in the median age must be interpreted in light of other data presented about frequencies of isolates reported. For example, a rise in the median age over time for a particular serotype may reflect either an increase in the number of older persons or a decrease in the number of younger persons from whom isolates were reported. When no isolates were reported for the gender group during a given year or when ages were not given for the gender group during a given year, no point could be computed; a skip will occur in the line representing that gender group for that year.

Figure 6 shows the distribution of reported isolates by age-group and sex of the person from whom the isolate came. These data are also summed over the entire 19-year span. The graph has 11 age-groups with various spans: <1 year, 1-4 years, 5-9 years, 10-19 years, 20-29 years, 30-39 years, 40-49 years, 50-59 years, 60-69 years, 70-79 years and ≥80 years of age. For each age-group, the data are graphed as the percentage of the total number of isolates reported for each gender. These graphs present percentages that are not adjusted for the unequal age-group intervals. This has the effect of diminishing the appearance of differences between percentages for the age-groups under age 10, relative to the older age-groups that are plotted in 10-year intervals. Adjusting the percentages would have made the percentages for 4-, 5-, and 10-year groups appear at one fourth, one fifth, and one tenth of their present heights, respectively. It also has the effect of accentuating the relative differences in the older age-groups.

Figure 7 summarizes reported data on *Salmonella* isolates from nonhuman sources. The reported numbers of isolates from a given nonhuman source can vary considerably because of special studies or intense interest on the part of health officials. This makes the quantitative assessment of these data difficult. For instance, large numbers of reported isolates may have come from a single turkey flock or cattle herd, because of a research project or outbreak investigation. We have chosen to reduce the data to a simple qualitative form: a "+" indicates that the serotype was reported at least once from a particular source in a given year. The reported sources of isolates have been combined into broad categories of related sources.

Figure 8 shows the age-standardized rates by state for each serotype. These rates were obtained by computing the age-specific rates (using the same age-groups that were presented in Figure 6) for each state based on the 1980 census estimates for each state. These were standardized by multiplying each age-specific rate by the 1980 census estimate of the U.S. population in that age-group to obtain an expected number of isolates in each age-group that would have occurred in the United States if the age-specific rates for that state had occurred in the age-specific populations of the entire United States, adding the expected numbers over all age-groups, and dividing the total number expected in the U.S. population by the 1980 census estimate of the total population of the United States. For each serotype, the highest age-standardized rate is represented by a peak of a fixed height, and the heights of the other peaks on the map vary in proportion to the relative rates in those states. The maps provide at a glance the characteristic geographic locations of relatively larger and smaller standardized rates. The relative distribution patterns can be compared from map to map, but the maximum height for each map is fixed by the graphics program. Therefore, absolute heights of peaks for one serotype should not be compared with heights of peaks for another serotype. Further, it must be noted that states are smaller in the East, particularly the Northeast, and that a greater density of peaks in the Northeast may not be related as much to geographic distributions of reported isolates as to the greater density of the smaller states.

Graphs were created on an IBM 3083 mainframe computer using SAS software. These were downloaded to a COMPAQ Deskpro 386 microcomputer using Teknigraphics Graph-tek 4105 and CGI, and Freelance Plus software packages. SAS files of standardized rates for each state were computed on the mainframe computer and downloaded to the microcomputer. These points were then used to create the maps using SAS PC. These were printed using a Hewlett-Packard LaserJet Series II Laser Printer.

Limitations of the data: Surveillance data represent only a small fraction of the actual number of *Salmonella* infections in the United States. In determining the proportion of cases that occurred in well-studied outbreaks that were actually reported in the surveillance system, previous reports state that only 1% of cases of salmonellosis are reported (1). An analytic approach using several different methods to estimate the actual number of cases that have occurred similarly suggested that only 1%-5% of infections are reported (4). The national surveillance data base has several other limitations that should be kept in mind. Cases and carriers are not distinguished, except for persons from whom *S. typhi* was isolated. There is considerable variation among physicians, laboratories, and local and state health departments in obtaining cultures and reporting isolates. This makes state-to-state comparisons problematic. Reported isolates represent a mix of outbreak-associated and sporadic cases, and the process of detecting outbreaks is not systematic. Similarly, family clusters of *Salmonella* isolates cannot be accurately identified.

Three-Month Moving Average

The history of reporting patterns is presented on the 3-month moving average graphs. Reports of some new serotypes that have emerged in the surveillance system have increased to a steady and characteristic pattern (*S. agona, S. haardt,* and *S. mbandaka*) while *S. hadar* has continued to increase since its emergence in this country in 1976. The future frequency of reporting of *S. hadar* after 1986 may 1) increase, signaling that the pathogen is becoming more common in 1 or more vehicles, that a vehicle for which this organism has a propensity is becoming more widely distributed, that a problem is occurring in the processing, storage, distribution, or other step leading to consumption of the vehicle, or that a new risk group is being increasingly exposed to the vehicle; 2) remain at its present level, indicating that the serotype has established itself in the vehicle(s) that transmit it; or 3) decrease, indicating that transmission from the current reservoirs is not being sustained.

All serotypes exhibit seasonal changes in reporting frequency, with cyclical variation of both yearly and longer periods. The usual pattern includes a peak in reporting during September and October and a low point in frequency in March and April. Many serotypes have consistent 1-year cyclical patterns (e.g., *S. anatum, S. cerro, S. enteritidis, S. heidelberg, S. infantis, S. javiana, S. miami, S. mississippi, S. montevideo, S. muenchen, S. newport, S. norwich, S. oranienburg,* and *S. typhimurium*). Some graphs suggest longer cycles: e.g., *S. schwarzengrund,* with a 2-year cycle; *S. adelaide* with a 4-year cycle; and *S. anatum, S. blockley, S. infantis,* and *S. reading* with possibly longer periodic cycles in addition to the seasonal cycle. It is difficult to distinguish some baseline or "characteristic" patterns from shifts away from baseline caused by long-lasting outbreaks. For example, the reporting patterns for *S. johannesburg, S. london, S. manhattan, S. schwarzengrund,* and *S. siegburg* may reveal problems that lasted several years and subsided without intervention. On the other hand, the reporting frequencies of some serotypes are so low that patterns are less obvious, although the same factors that influence the patterns of more commonly reported serotypes could affect the patterns of these less commonly reported serotypes (e.g., *S. bareilly, S. bovismorbificans, S. drypool, S. gaminara, S. meleagridis, S. miami,* and *S. saphra*).

Serious attention should be given to those serotypes whose patterns lead us to suspect problems are beginning as a result of gradual increases in reporting frequency or of more abrupt changes that may eventually require intervention. *S. paratyphi* A, *S. stanley,* and *S. typhimurium* all have patterns with upward trends for most of the period of observation. *S. alachua, S. berta, S. braenderup, S. brandenburg,* and *S. enteritidis* all have pattern changes suggesting a recent and continued increase from a previously level baseline.

A separate feature of the seasonal cycle is the amplitude of seasonal variation. Although most serotypes tend to have greater numbers of isolates reported in the warmer months, some show striking seasonal increases (e.g., *S. javiana* and *S. newport*). The general warm season increase in reported isolates could reflect many things, including heat stress on the animal reservoir; higher ambient temperatures permitting greater bacterial growth in the abattoir, transport truck, storage container, or kitchen; and summertime eating settings that may have deficient refrigeration, such as picnics and other outdoor festivities. In addition, some of the seasonal variation of a given serotype may depend on the age spectrum of the persons from whom it is isolated, or on the rural/urban distribution it exhibits (see discussion under Seasonal Distribution by Rural/Urban Category). What remains to be explained, however, is why some serotypes should have such prominent seasonal variation and others less prominent.

Single large peaks mark specific outbreaks. The most dramatic example is the enormous outbreak of milk-associated *S. typhimurium* infections in May 1985 in the Midwest (5). This single large outbreak, with over 17,000 culture-confirmed cases, is visible in many of the analyses of data for this serotype. The outbreak of *S. cubana* infections related to carmine dye in the early 1970s is also very prominent (6). An outbreak of *S. eastbourne* infections in 1974 was related to contaminated holiday chocolate candy (7).

Other known outbreaks about which limited data have been reported through other channels (e.g., through the foodborne outbreak surveillance system and in annual summaries of the *Salmonella* surveillance system [8]) appear in the surveillance data. Some of the most prominent of these peaks represent an outbreak of *S. newbrunswick* infections associated with ham in 1979; 4 outbreaks of *S. thompson* infections reported in 1982, 1 of which was associated with ice cream, 1 with gravy served at a fast-food outlet, and 2 for which no vehicles were identified; 2 outbreaks of *S. poona* infections associated with a supermarket in 1979 and a nursery in 1985; an outbreak of *S. senftenberg* infections in a prison in 1981; 3 outbreaks of *S. sandiego* infections in 1970 and 1972, 1 of which was associated with turkey, while the vehicles were undetermined for 2 others; outbreaks of *S. drypool* infections in 1981 and 1982 with unknown vehicles; an outbreak of *S. manhattan* infections in 1974 associated with chicken salad; an outbreak of *S. stanley* infections in 1977 associated with ice cream; 3 outbreaks of *S. typhimurium* var. copenhagen infections associated with beef in 1982, milk in 1978, and an unknown vehicle in 1979; an outbreak of *S. virchow* infections associated with beef in 1973; 2 outbreaks of *S. chester* in 1973 and 1981 associated with beef; and 3 outbreaks of *S. meleagridis* infections reported in 1982 with unknown vehicles.

Seasonal Distribution by Rural/Urban Category

Since most isolates are reported from counties that are in metropolitan areas, the number of isolates from rural counties is relatively small. However, the seasonal distributions suggest the possibility of a mode of transmission or exposure group for isolates reported from rural counties that is different from urban counties for some serotypes. For example, *S. anatum, S. braenderup, S. bredeney, S. drypool, S. haardt, S. havana, S. mbandaka, S. montevideo, S. muenchen, S. newport, S. reading, S. saintpaul, S. sandiego, S. tennessee,* and *S. virchow* are among serotypes having peaks of reported isolates in the spring in rural counties.

Although some serotypes have the typical fall peak in reported isolates in both urban and rural counties, the peak for rural counties often occurs about 1 or 2 months before the peak for urban counties. This is true for *S. blockley, S. miami,* and *S. thompson*. However, the peak for urban counties precedes the peak for rural counties in the distribution of reported isolates of *S. saintpaul*.

The rural county distributions may actually be tri-modal for some serotypes, with a third peak occurring in May/June in addition to the March/April and September/October peaks. *S. anatum, S. braenderup, S. derby, S. london,* and *S. saintpaul* have such distributions. Others such as *S. adelaide, S. brandenburg, S. cerro,* and *S. drypool* have the May/June peak along with either a spring or a fall peak.

It is unclear what the relationship is between these earlier peaks and the epizootology of salmonellae in rural counties, and their relationship to specific seasonal exposures, such as calving.

Frequencies by Age-Group and Year

There has been a general increase in the number of *Salmonella* isolates reported to CDC each year, from 19,740 in 1968 to 42,028 in 1986. Many individual serotypes have been increasing in frequency of reporting since the 1970s; these increases are largely unexplained. Many other serotypes are represented by a somewhat constant number of isolates each year, and a few are becoming less common (Table 1).

Table 1. Mean number of isolates reported annually during 1968-1976 and 1977-1986 of serotypes with changing isolation rates.

INCREASING Serotype	1968-1976	1977-1986	DECREASING Serotype	1968-1976	1977-1986
S. adelaide	5	59	*S. california*	17	15
S. alachua	19	51	*S. cubana*	88	26
S. berta	42	79	*S. derby*	474	368
S. braenderup	103	292	*S. eimsbuettel*	17	4
S. brandenburg	8	58	*S. java*	305	180
S. cerro	22	114	*S. manhattan*	285	132
S. dublin	27	119	*S. miami*	73	40
S. enteritidis	1752	3234	*S. saintpaul*	971	684
S. haardt	2	80	*S. siegburg*	50	27
S. hadar	<l	369	*S. thompson*	633	384
S. heidelberg	1472	3108	*S. urbana*	30	11
S. mbandaka	0	114			
S. montevideo	350	684			
S. muenster	30	89			
S. ohio	22	191			
S. paratyphi A	18	55			
S. schwarzengrund	80	199			
S. virchow	17	56			

Increases in reporting frequencies of a few serotypes can be explained. The dramatic increase in reports of *S. agona* isolates followed its introduction in 1969 in Peruvian fish meal used as an ingredient in poultry feeds (9). It has become widely distributed in many food animals and is presumably maintained by recycling through rendered animal byproducts used in animal feeds.

The increase in reports of *S. dublin* isolates appears to be related to the consumption of raw milk, particularly on the Pacific Coast (10). The organism is found on dairy farms and can cause mastitis. It appears to be adapted particularly to the bovine host, but the cycles of transmission by which it persists there are unclear.

S. enteritidis isolates have increased dramatically in recent years in the Northeastern United States (11). Although this serotype is widespread throughout food-animal reservoirs, the recent increase is strongly associated with shell eggs and appears to be related to a new capacity for transovarian transmission, which permits the intact egg to be contaminated before the shell is formed.

S. hadar was recently introduced into commercial turkey flocks, possibly from a European source; it has been epidemic in the United Kingdom for several years (12). It has appeared in feed products and in chicken flocks in the United States, and reporting of this serotype is rapidly increasing.

An outbreak of *S. newbrunswick* infections in a nursing home in 1972 appears as a peak restricted to the 30+ age group. Other unusual peaks are not easy to explain, but they probably reflect common-source outbreaks. Examples of these include *S. berta* in 1971 and 1981, *S. inverness* in the 0-4 age-group in 1973 and 1983, *S. kottbus* in the 5-29 and 30+ age-groups in 1985, *S. paratyphi* B in the 0-4 and 5-29 age-groups in 1971, and *S. senftenberg* in the 0-4 age-group in 1975.

Important decreases in reports of some serotypes are also understood; they followed the epidemiologic detection of specific vehicles and their successful control. For example, the formerly high isolation rate of *S. cubana* was associated with the use of carmine dye to study gastrointestinal motility (6). This dye, made of pulverized insects, is no longer used for that purpose. The number of reported isolates of 3 serotypes associated with turtles, *S. java, S. urbana,* and, to a lesser extent, *S. litchfield,* decreased following the successful efforts to reduce and ultimately to ban the distribution of small pet turtles in the early 1970s (13). The reduction was most prominent in the 0- to 4-year age-group, the group most likely to have been exposed to the pet turtles.

Seasonal Distribution by Age-Group

Examination of the seasonal distribution of isolates within specific age-groups reveals several interesting patterns. If a particular serotype is transmitted via a common source, such as a food item consumed by all age-groups, then the seasonal distribution should be similar for the age-groups. However, if persons of different ages aquire their infections from different vehicles or as a result of transmission from older or younger persons, then the peaks in reporting incidence may occur at different times for different ages. Some serotypes showing simultaneous seasonal peaks in all age-groups are *S. bareilly, S. hadar, S. havana, S. heidelberg, S. mississippi, S. montevideo, S. norwich,* and *S. weltevreden.* Other serotypes show nonsimultaneous peaks among different age-groups. For example, the peak in isolates from younger persons follows that of older persons for *S. newport, S. anatum, S. javiana,* and *S. thompson.*

Median Age by Sex and Year

The graphs of median age should be interpreted along with the graphs of frequency of reported isolates by age in order to better understand the meaning of changes in the medians. Some apparently large changes are a result of the small numbers of reported isolates. For example, the graph for *S. adelaide* presents high median ages before 1974 and low medians for the years after 1973. However, the graph of frequencies of reported isolates shows that during 1968-1973 very few isolates were reported for this serotype.

Many changes in median age occurred during the 19-year period analyzed. In 1982 the median age of persons from whom isolates of *S. agona* were reported began to rise. This rise in median age can be attributed to a decrease in the frequency of reported isolates from the 0- to 4-year age-group and a slight increase in isolates from the older age-group. Similarly, the frequencies of reported isolates for each age-group should be examined to explain changes in the median ages for other serotypes, such as *S. blockley, S. enteritidis, S. infantis, S. java, S. manhattan, S. montevideo, S. muenchen, S. newport, S. oranienburg, S. panama, S. saintpaul,* and *S. thompson*. However, the change in median ages of males differs from that of females for certain serotypes, such as *S. reading* and *S.schwarzengrund*. These changes in reporting frequencies need explanation. Possible reasons include 1) an increase in the population in the age-group for which an increase occurred; 2) introduction of a new subpopulation into the country (e.g., refugees); 3) introduction of new food items popular among a particular age or sex group; and 4) new contamination of an existing food item popular among a particular age or sex group.

Distribution of Isolates by Age-Group and Sex

Three common features pertain to most serotypes. First, the largest percentage of isolates is reported for the <1- and 1- to 4-year age-groups. Second, a rise occurs in the percentages of reported isolates from the 10-19, 20-29, and 30-39 age-groups, and among these, a peak occurs in the 20-29 age-group (e.g., *S. chester, S. montevideo, S. muenchen, S. muenster, S. paratyphi* A, *S. sandiego, S. typhi,* and *S. virchow*). Generally, the percentages decline successively after the 30- to 39-year age-group, although a slight rise in precentage appears in the 60- to 69-year or 70- to 79-year age-groups for many serotypes. Three serotypes are notable exceptions to this: *S. choleraesuis, S. choleraesuis* var. kunzendorf and *S. dublin,* for which there is a general increase in percentage after the 10- to 19-year age-group. Third, the distributions for males and females differ slightly. Usually the percentage is higher for males in the <1- and 1- to 4-year age-groups and higher for females 20-29 (and, although less often, 30-39 and 40-49). Among the older age-groups the percentages for males and females are somewhat more similar with inconsistent fluctuations.

There is a possible link between infections in infants and young children and infections in parents and grandparents. This link could be common exposure, but the observation of age-related lags between the seasonal peaks suggests that the link could also be transmission from 1 age-group to another for some serotypes. For example, the seasonal distributions (previously described in Seasonal Distribution by Age-Group section) for *S. javiana* and *S. newport* suggest that the isolates for adults in the 30+ age-group precede those for the 5-29 age-group, which possibly precede those for the 0-4 age-group. This, along with the percent distributions for these serotypes, showing the characteristic rise in the 10-19, 20-29, and 30-39 age-groups and a preponderence of isolates from females in all age-groups beginning with the 20-29 year age-group, suggests the possibility of transmission from parents and grandparents (especially mothers and grandmothers) to children.

Geographic Distribution

The geographic distribution of the serotypes can be informative, since the occurrence of *Salmonella* in specific regions of the country may signal regional contamination of a food item, contamination of a food that is consumed primarily in those regions, or the presence of a regional subpopulation that is highly susceptible to *Salmonella*. Serotype-specific differences in the regional distribution of isolation rates are apparent for several serotypes. The high and increasing rate of *S. enteritidis* in the northeastern part of the United States, noted above, is related at least in part to a regional contamination of shell eggs (11). The concentration of *S. dublin* on the West Coast is presumably related to the popularity and availability of raw milk there. Other serotypes exhibit geographic concentrations that are harder to explain: *S. choleraesuis* has the highest rates in the eastern third of the country; *S. hartford* has the highest rates in the southeastern quarter of the country and along the Atlantic coast; *S. javiana* rates are highest in the South, particularly among the Gulf states; *S. mississippi* rates are highest in the Southeast; *S. norwich* rates are highest in the southcentral states; *S. saphra* rates are highest in Texas and Louisiana; and *S. weltevreden* is confined almost exclusively to Hawaii. Explanation of these distributions would require data on local reservoirs and on local exposures to potential food vehicles or other sources.

CONCLUSION

Specific epidemiologic characteristics distinguish categories of serotypes and are unique for some serotypes. The distinctive features of some serotypes probably reflect underlying cycles of transmission. Interpretation of much of the richness of these patterns remains elusive. We do not know the predominant vehicles of transmission for most serotypes, and we can only guess at the underlying complexity of the epidemiology. Devising successful control measures depends on understanding the routes of transmission well enough to interrupt them. The variety of epidemiologic observations presented here makes it clear that it is difficult to consider the "control of salmonellosis" as a single subject. Serotype-specific understanding has been the key to successful control efforts, and the laboratory-based surveillance system has made this possible. The regular appearance of new serotypes and the changes in the epidemiologic patterns of established ones point up the continued need for vigilance.

We presume that most salmonellosis is foodborne in origin and that specific serotypes tend to have specific vehicles, which are usually of animal origin. It would be instructive to compare these data with estimates of the amount of beef, pork, dairy products, and poultry consumed by state of residence, age, and time of year. These data are not currently available and would require carefully designed studies of human food consumption. Introduction of new food items, changes in marketing strategies, changes in the availability of foods to new subgroups of the population, such as fast-food availability to children and teenagers or diet foods to dieters, that could account for sudden increases or decreases in several serotypes may also be fruitful areas of inquiry. It would be interesting to know which serotypes are perpetuated through the use of inadequately treated rendered animal byproduct, which may have its characteristic epidemiologic pattern. Finally, these data could be compared with systematic data on the occurrence of specific *Salmonella* serotypes in animals in the food chain.

We hope that this graphic presentation of the epidemiology of *Salmonella* serotypes in the United States will stimulate further research into the persistence and transmission of these organisms, which will lead to a better understanding and control of the *Salmonella* tribe.

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Figure 1. Reported isolates, 3-month moving average, by month and year.

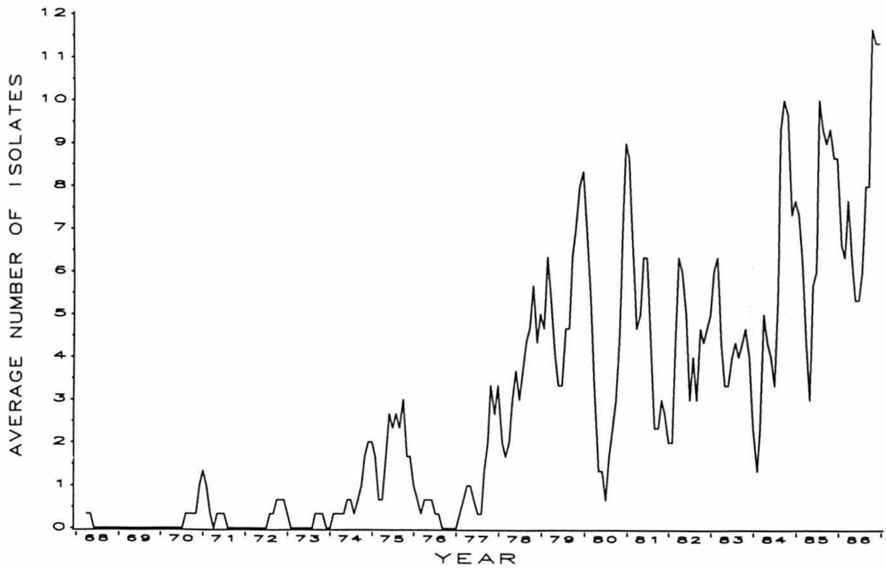


Figure 3. Number of reported isolates, by age-group and year.

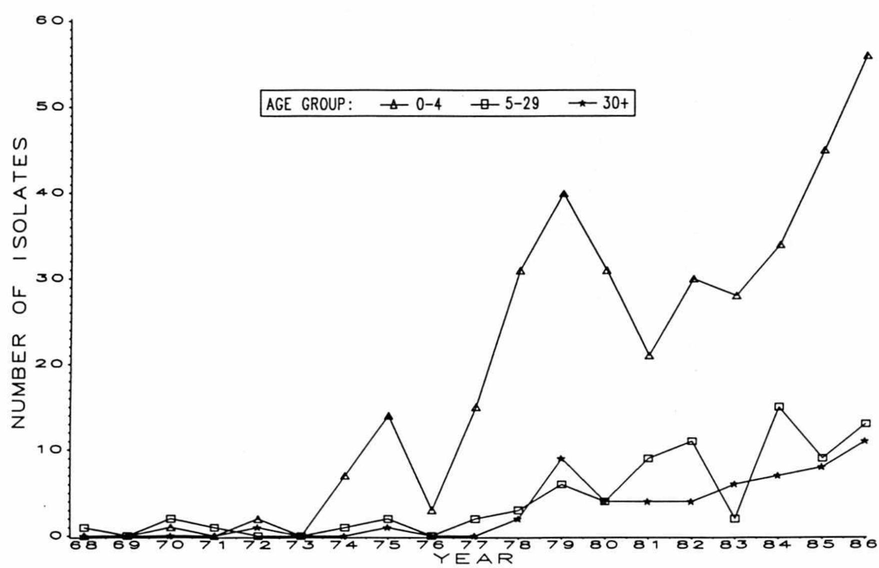


Figure 2. Percent of reported isolates from urban and rural counties, by month.

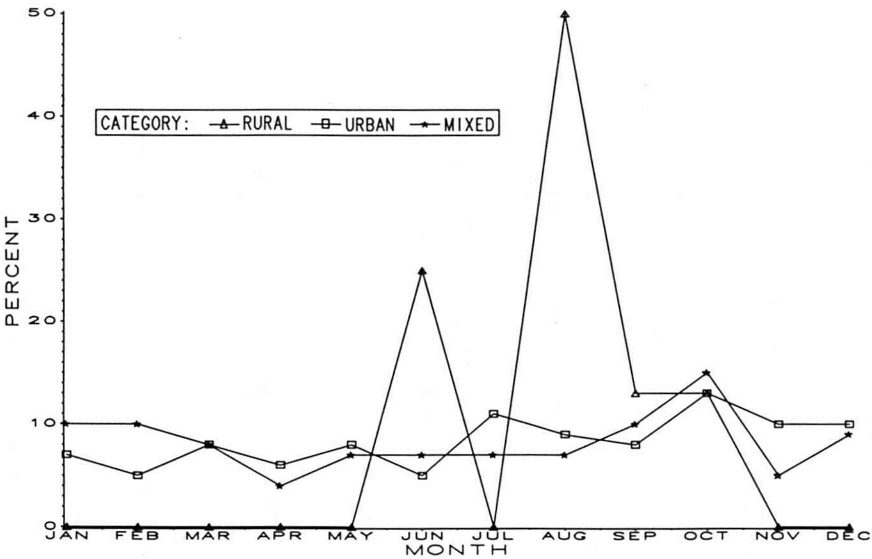
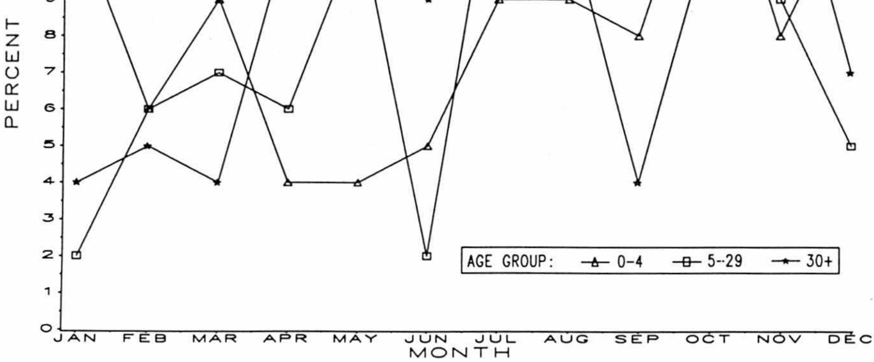


Figure 4. Percent of reported isolates, by age-group and month.



S. adelaide

Figure 5. Median age of persons from whom isolates were reported, by year.

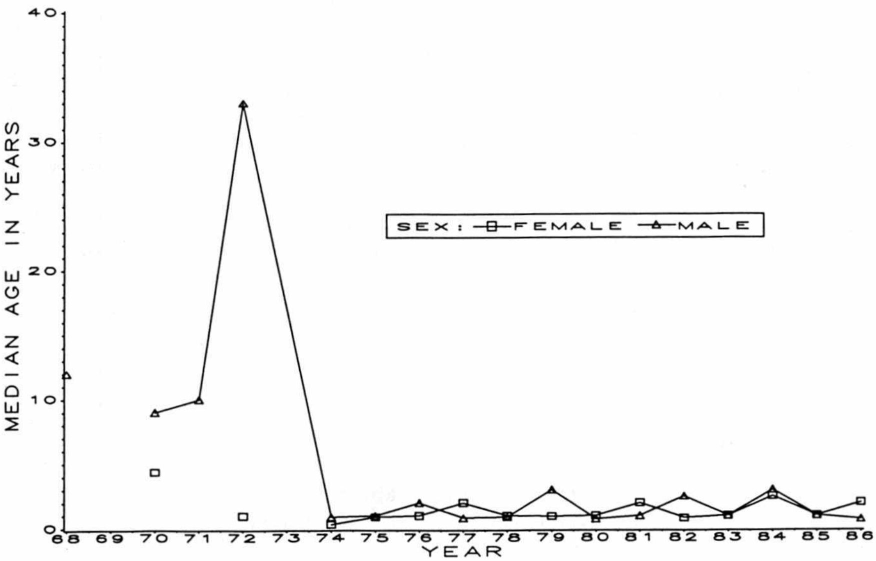


Figure 7. Reported nonhuman sources, by year.

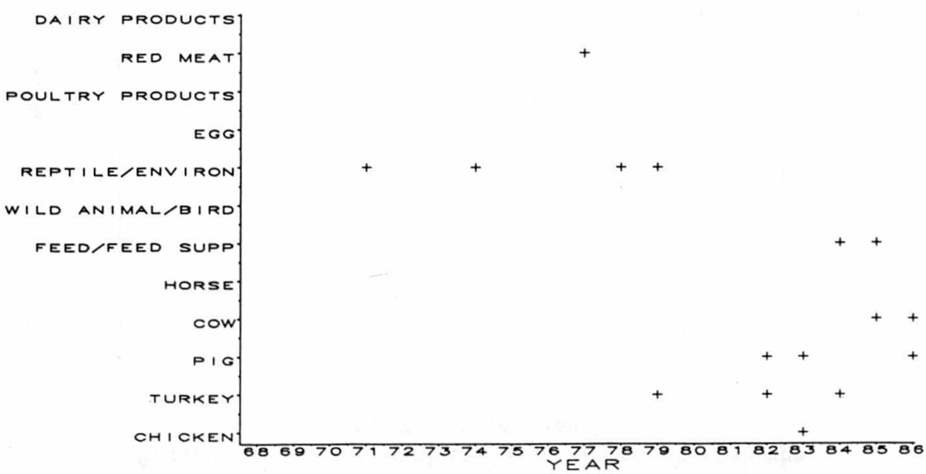
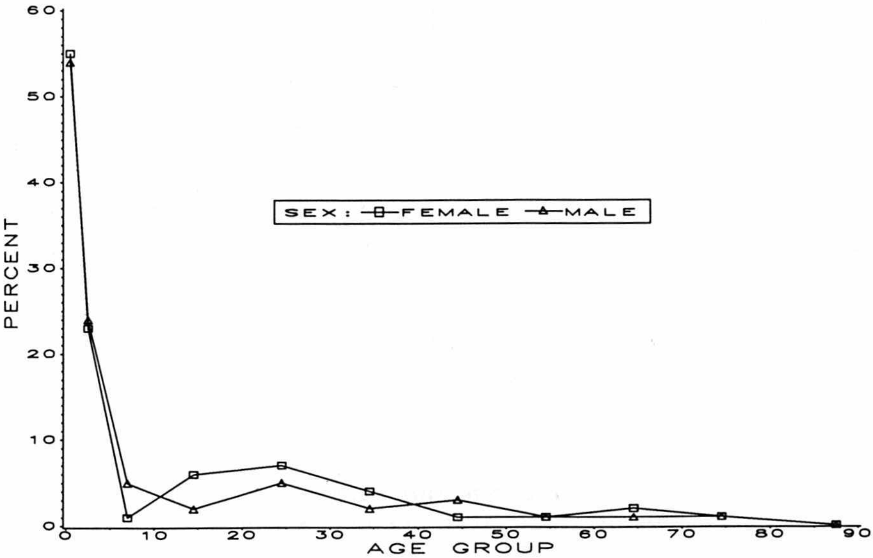


Figure 6. Percent of reported isolates, by age-group and sex.



S. adelaide

Figure 8. Age-standardized rates of reported isolates, by state.

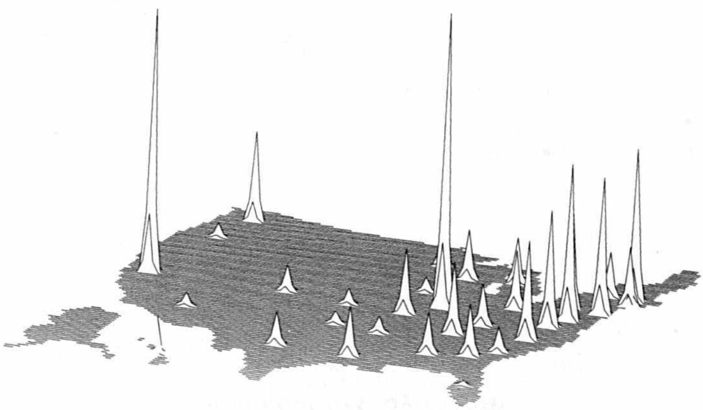


Figure 1. Reported isolates, 3-month moving average, by month and year.

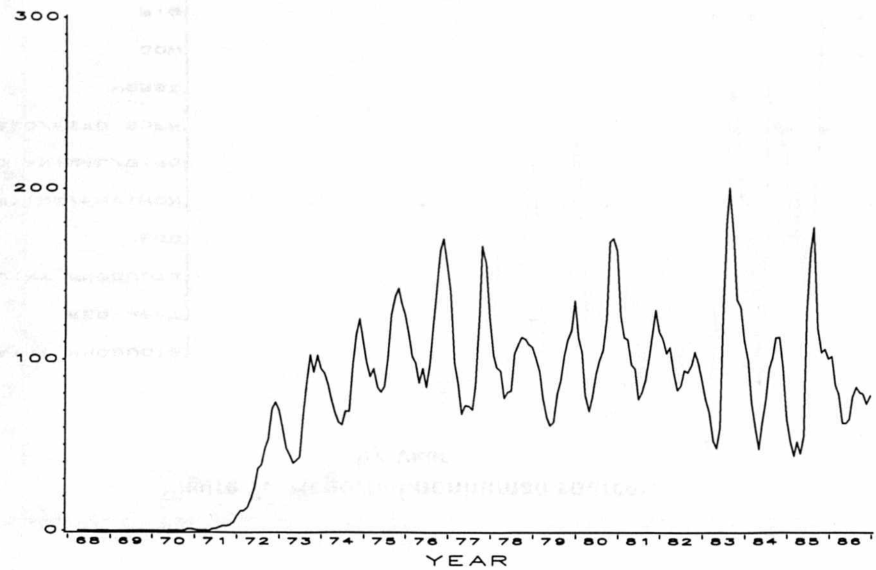


Figure 3. Number of reported isolates, by age-group and year.

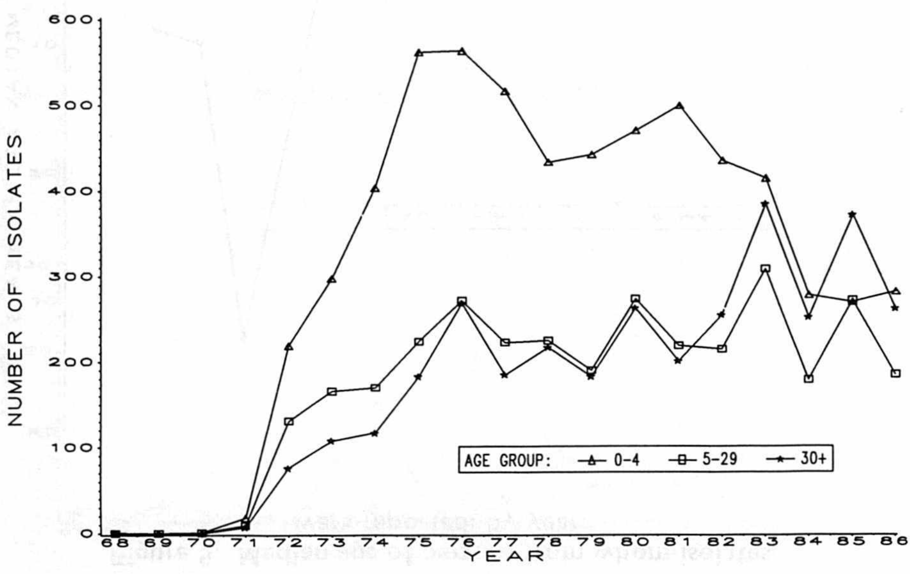
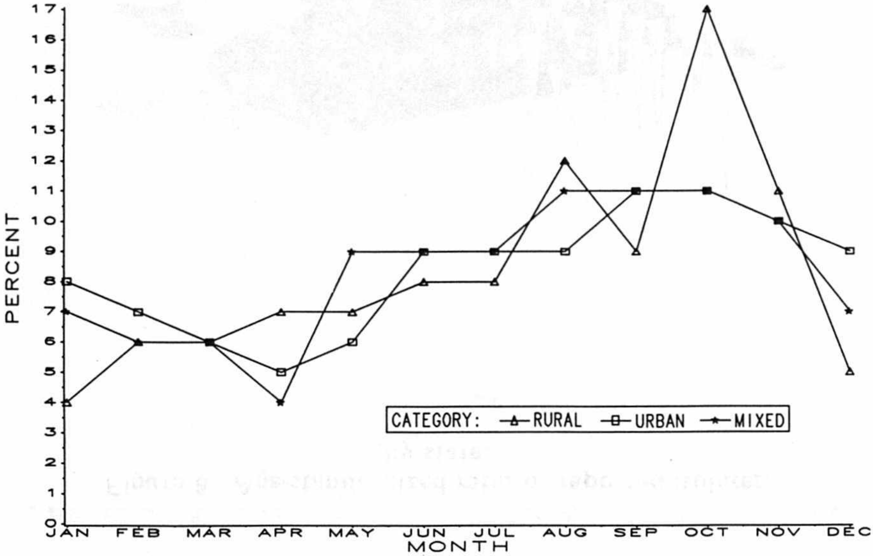


Figure 2. Percent of reported isolates from urban and rural counties, by month.



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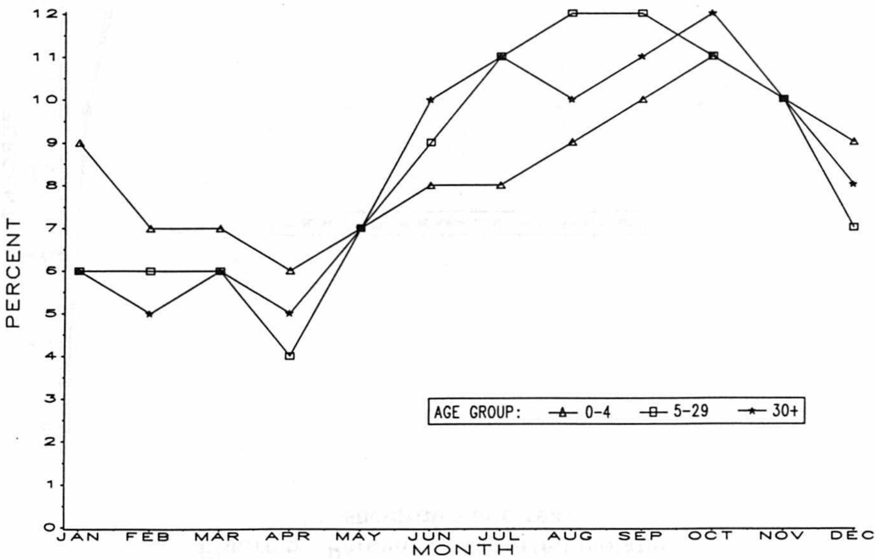


S. agona

Figure 5. Median age of persons from whom isolates were reported, by year.

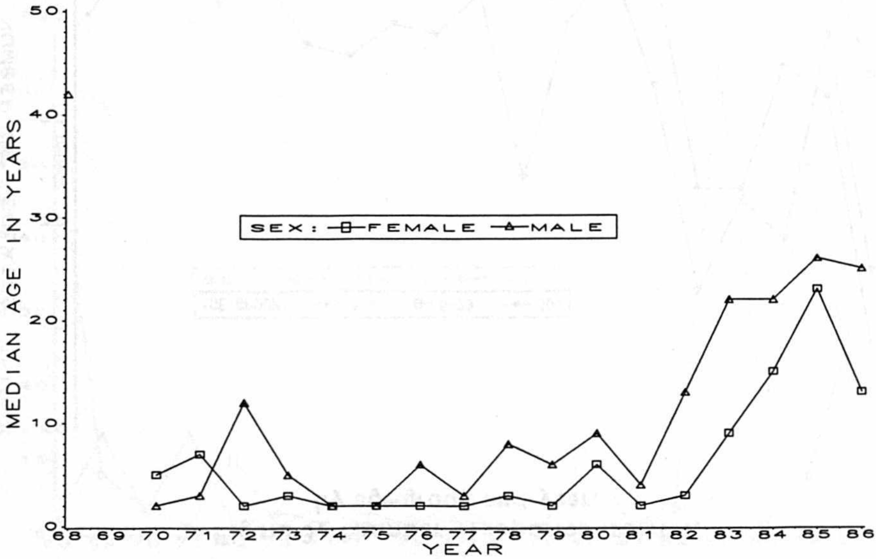


Figure 7. Reported nonhuman sources, by year.

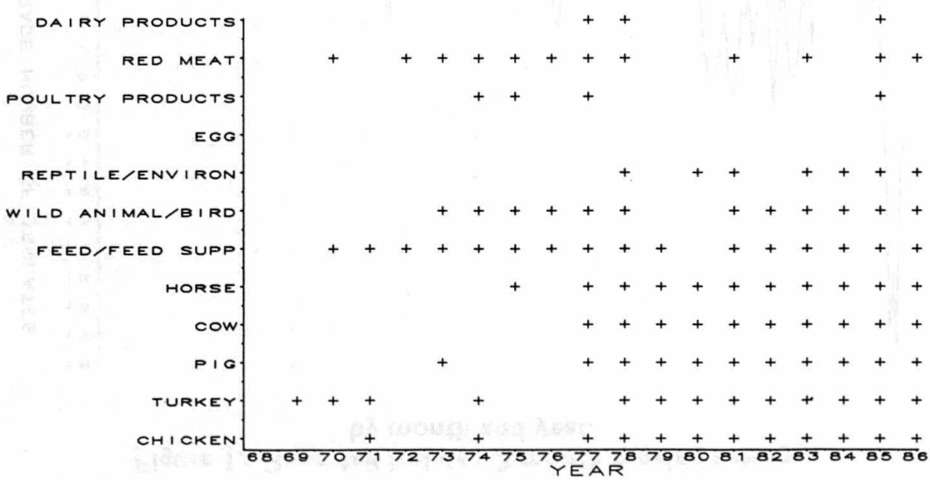


Figure 6. Percent of reported isolates, by age-group and sex.

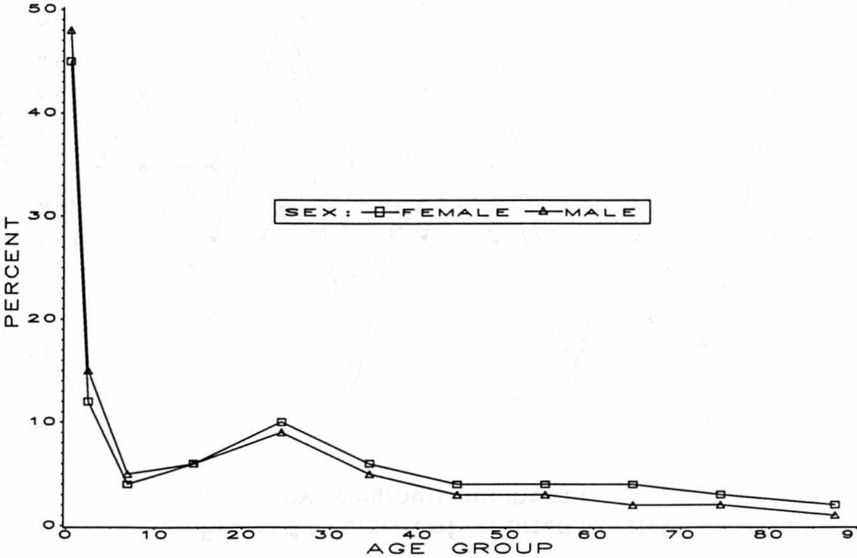
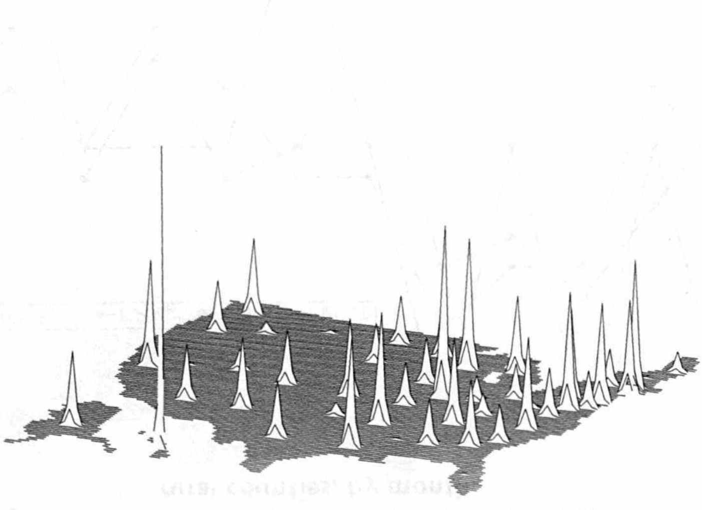


Figure 8. Age-standardized rates of reported isolates, by state.



S. agona

Figure 1. Reported isolates, 3-month moving average, by month and year.

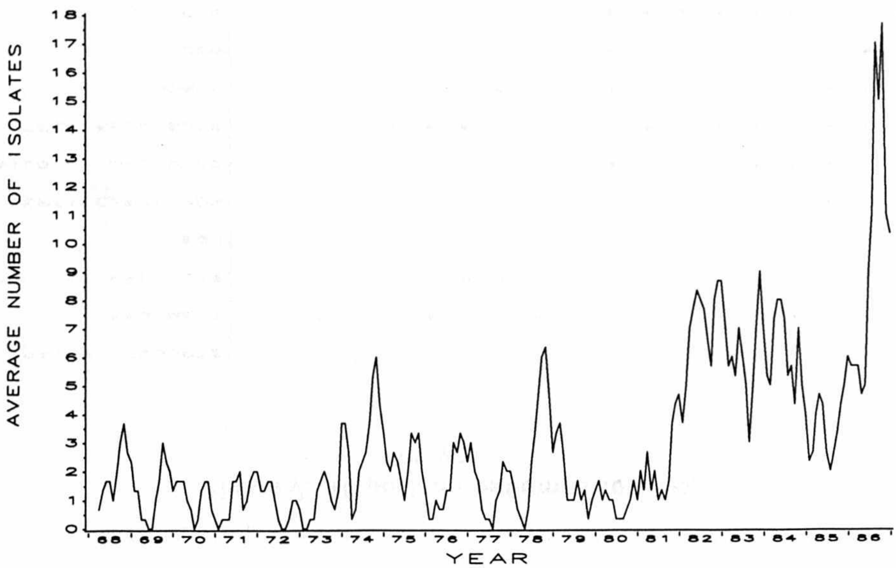


Figure 3. Number of reported isolates, by age-group and year.

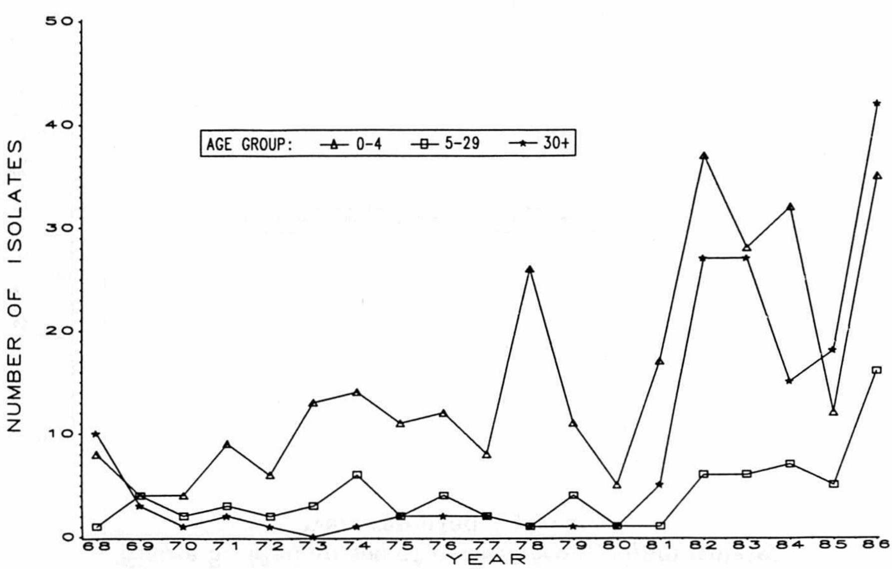


Figure 2. Percent of reported isolates from urban and rural counties, by month.

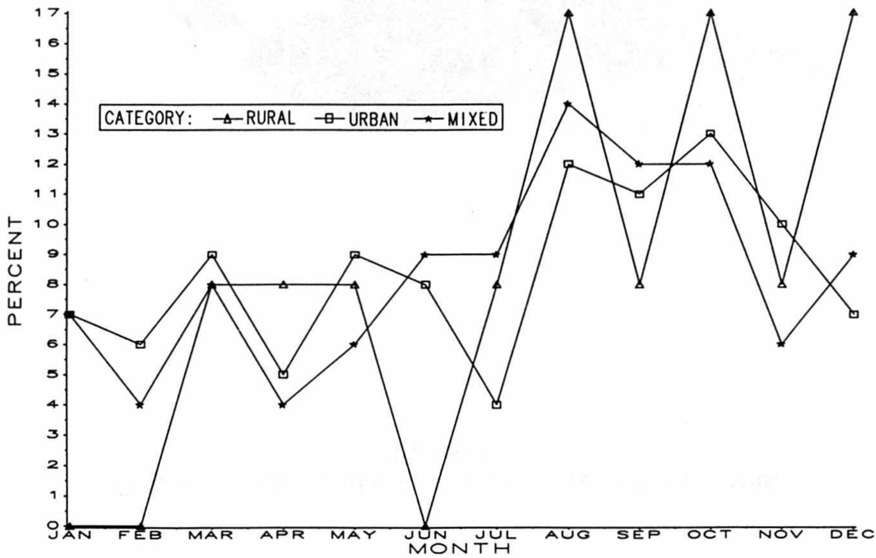
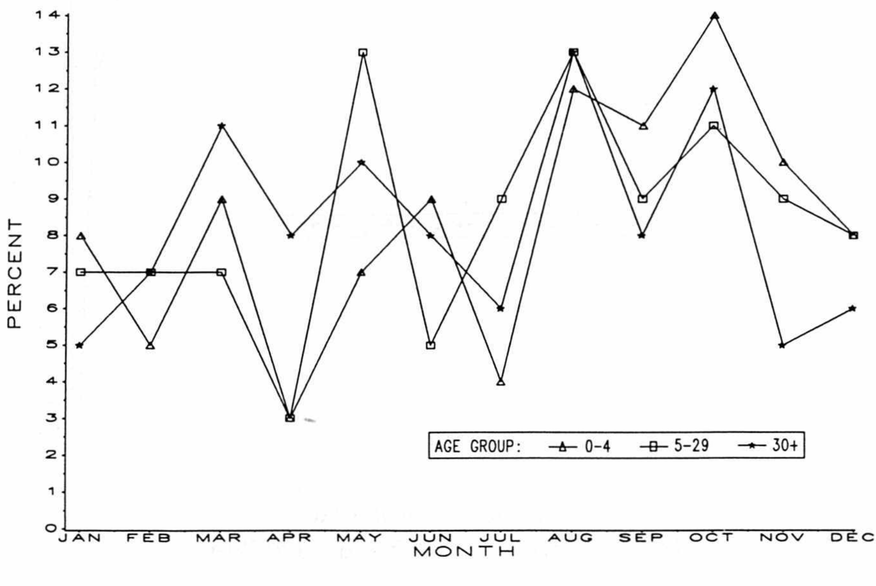


Figure 4. Percent of reported isolates, by age-group and month.



S. alachua

Figure 5. Median age of persons from whom isolates were reported, by year.

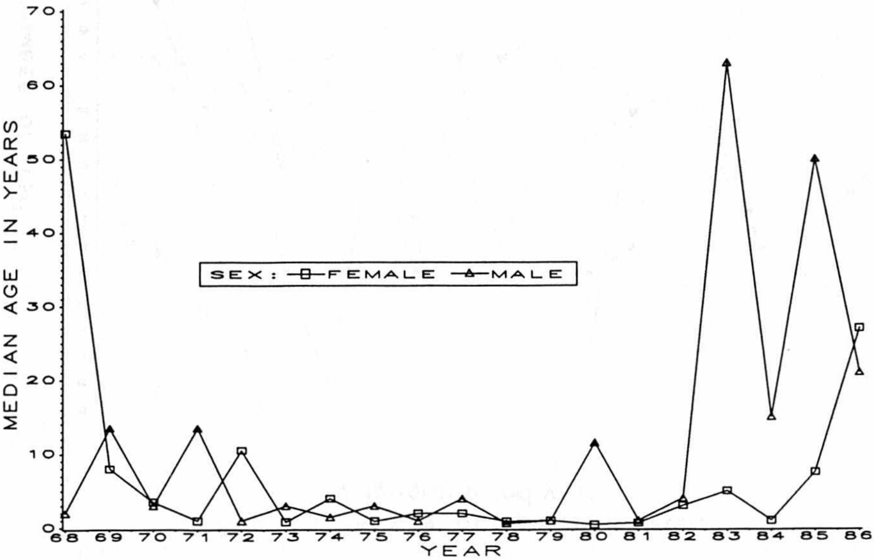


Figure 7. Reported nonhuman sources, by year.

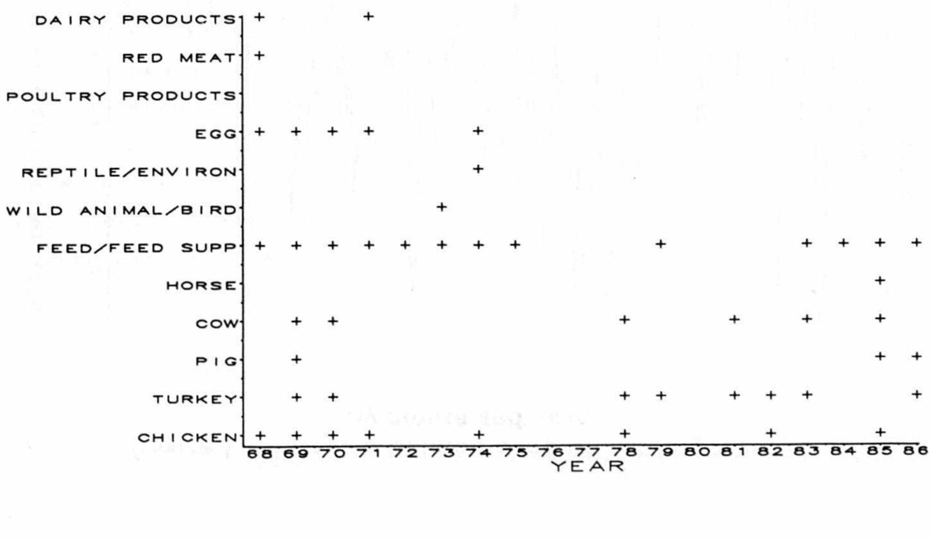


Figure 6. Percent of reported isolates, by age-group and sex.

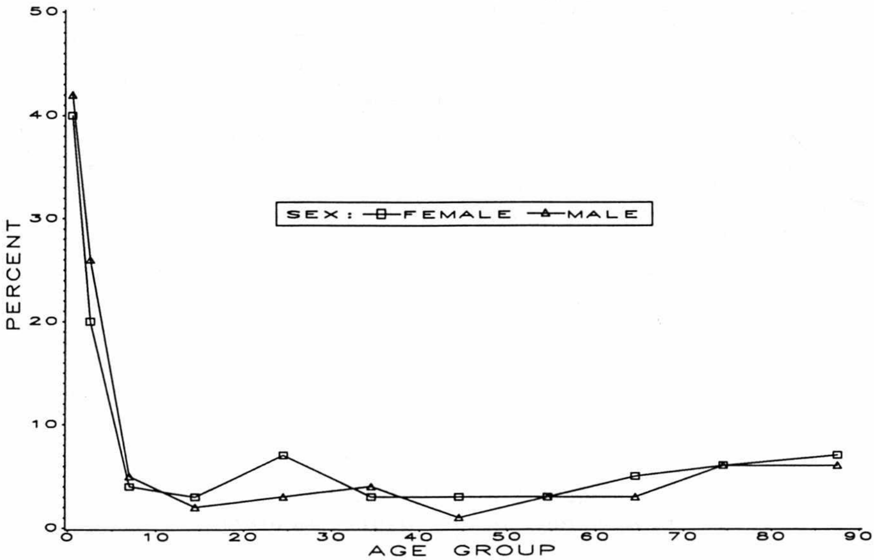


Figure 8. Age-standardized rates of reported isolates, by state.

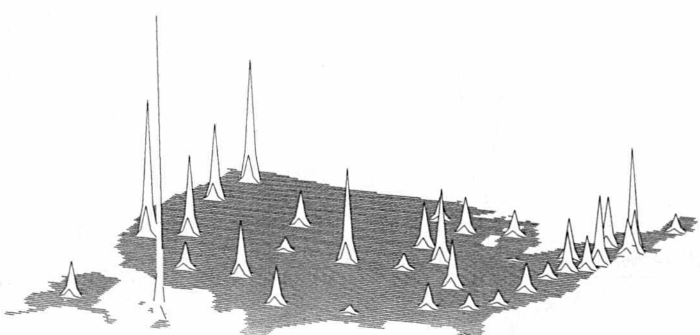


Figure 1. Reported isolates, 3-month moving average, by month and year.

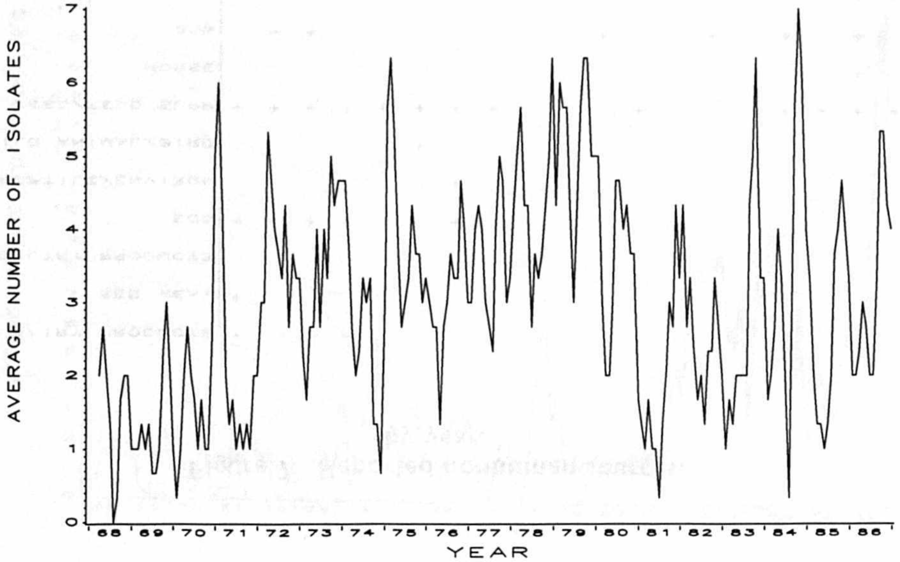


Figure 3. Number of reported isolates, by age-group and year.

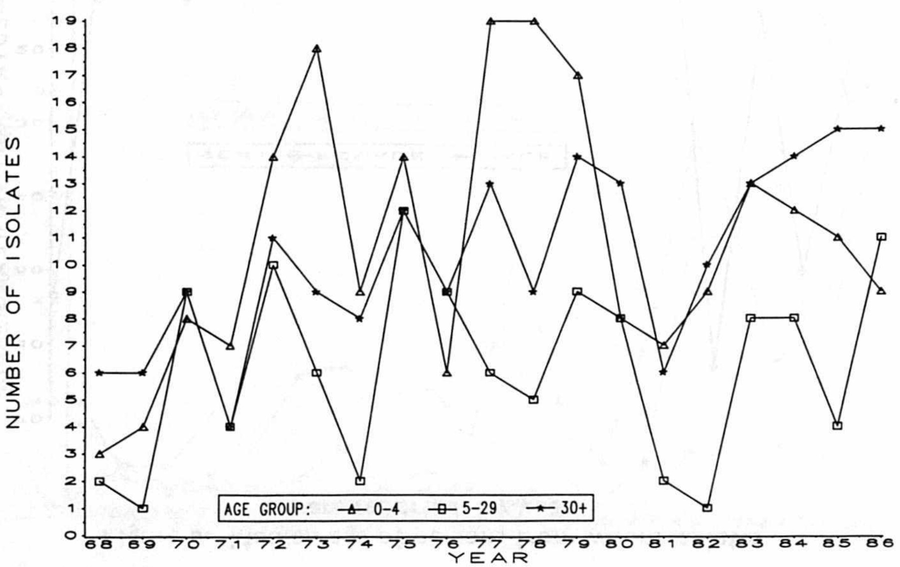
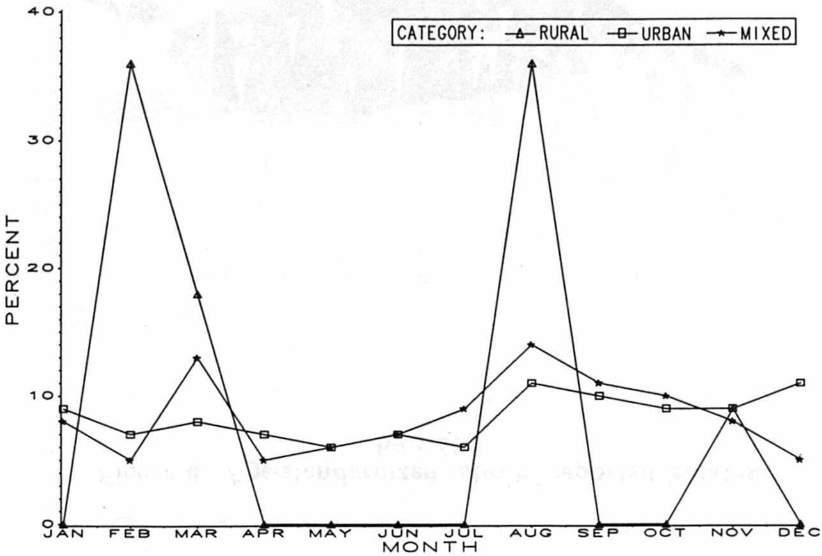


Figure 2. Percent of reported isolates from urban and rural counties, by month.



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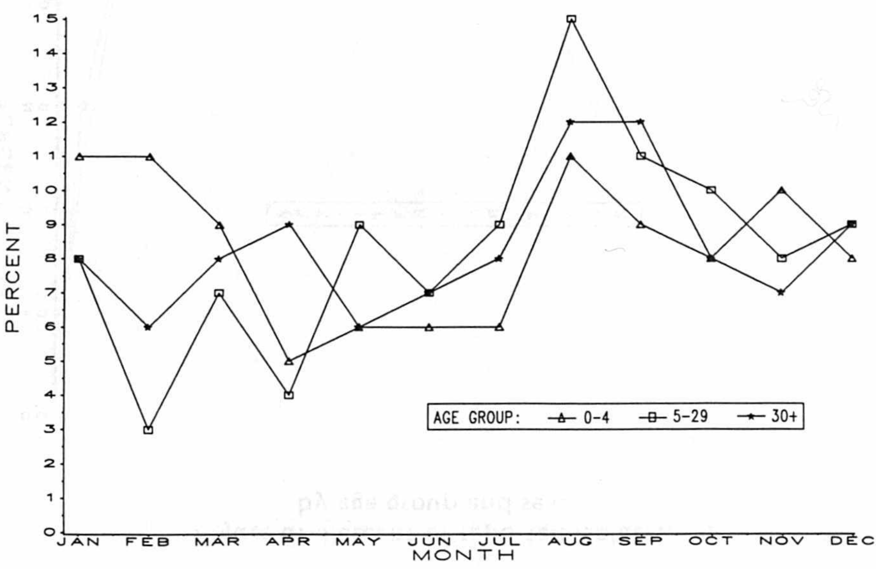


S. albany

Figure 5. Median age of persons from whom isolates were reported, by year.

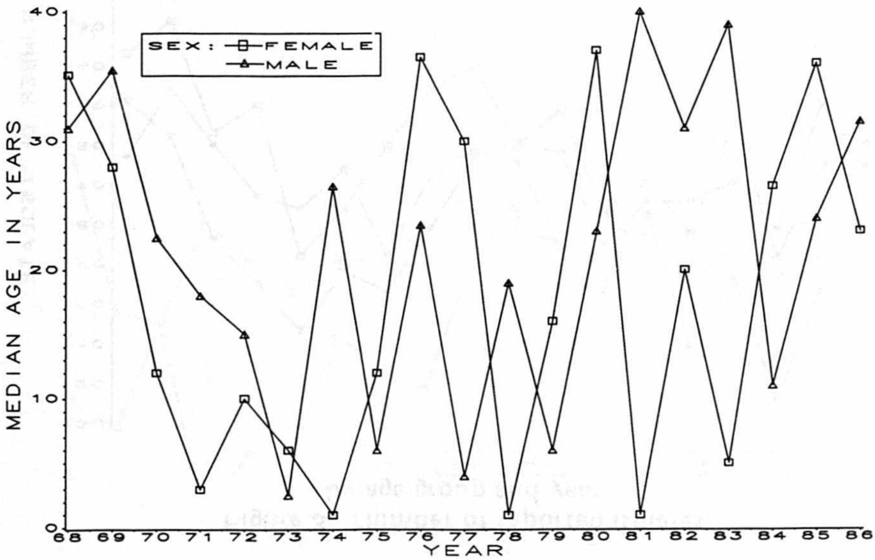


Figure 7. Reported nonhuman sources, by year.

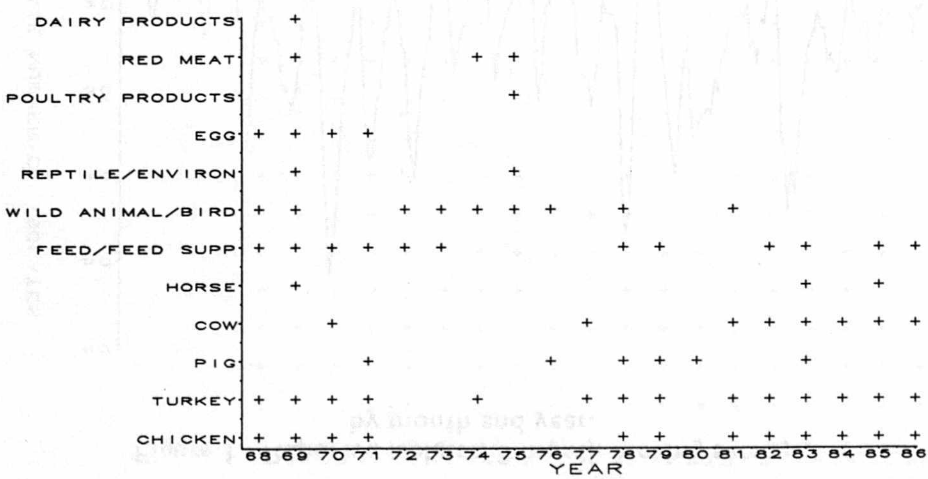


Figure 6. Percent of reported isolates, by age-group and sex.

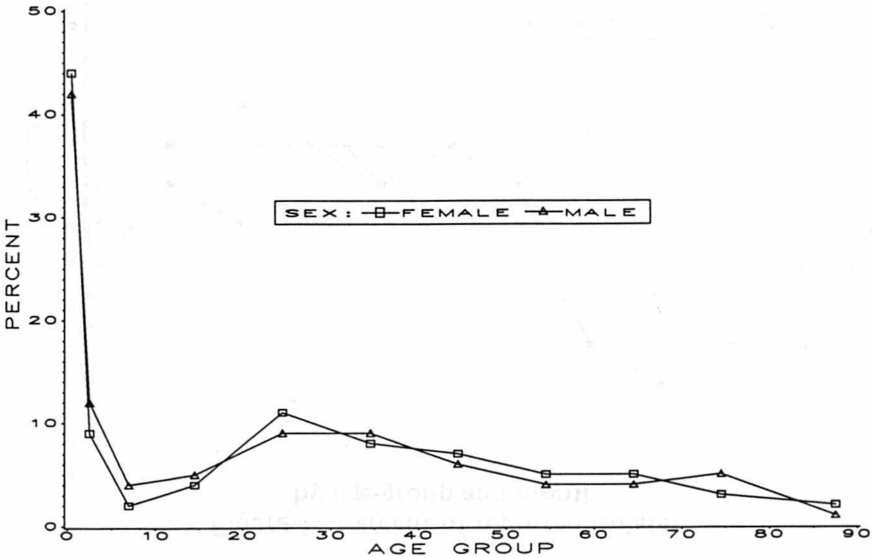
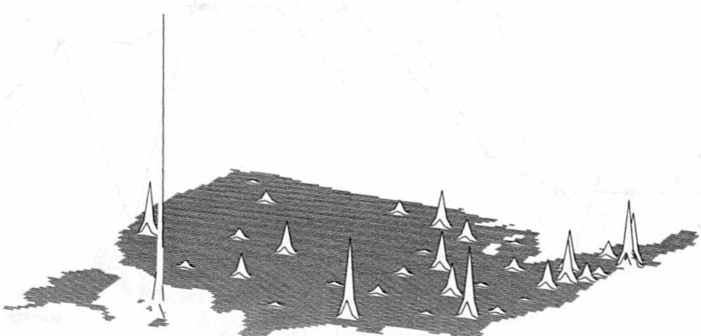


Figure 8. Age-standardized rates of reported isolates, by state.



S. albany

Figure 1. Reported isolates, 3-month moving average, by month and year.

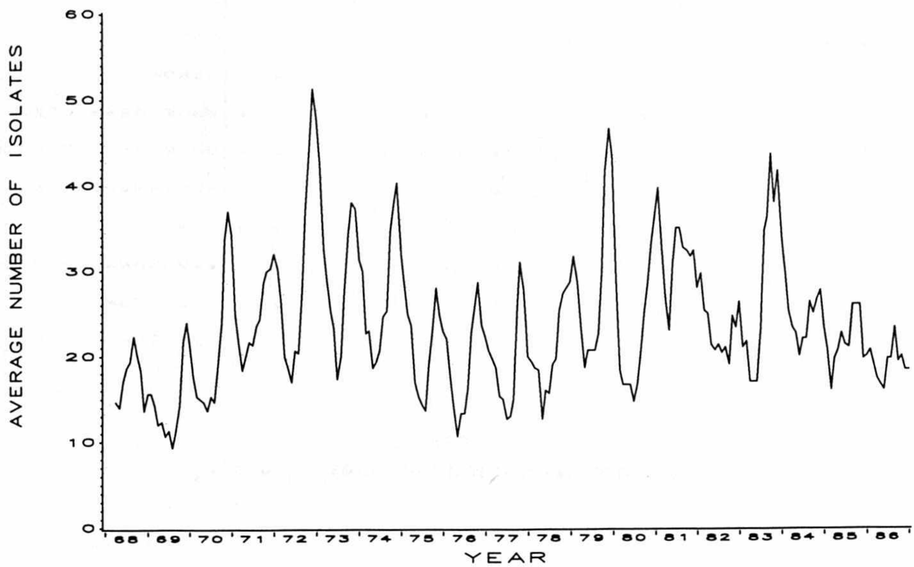


Figure 3. Number of reported isolates, by age-group and year.

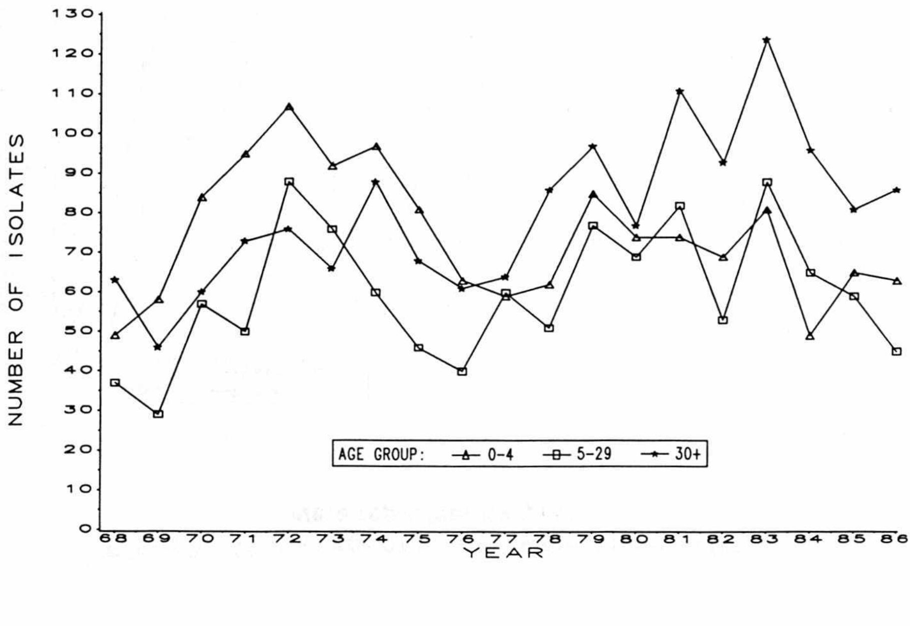
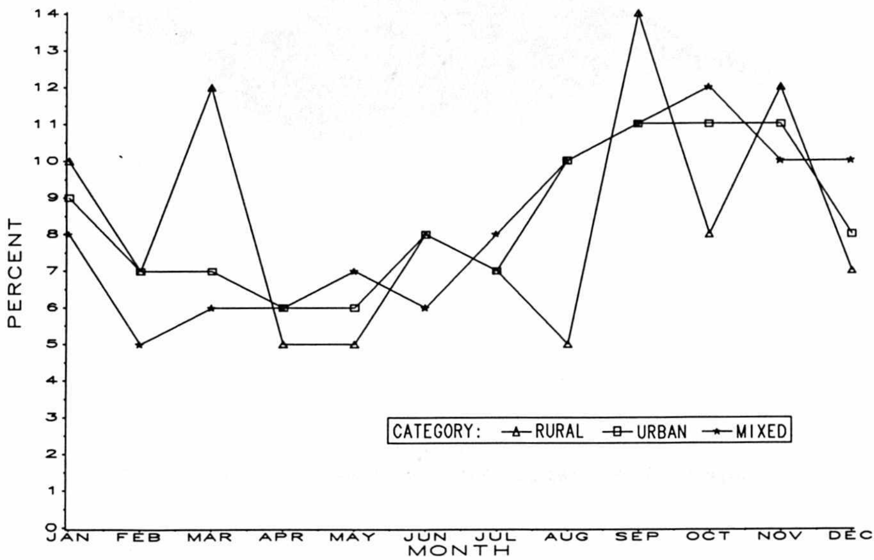


Figure 2. Percent of reported isolates from urban and rural counties, by month.



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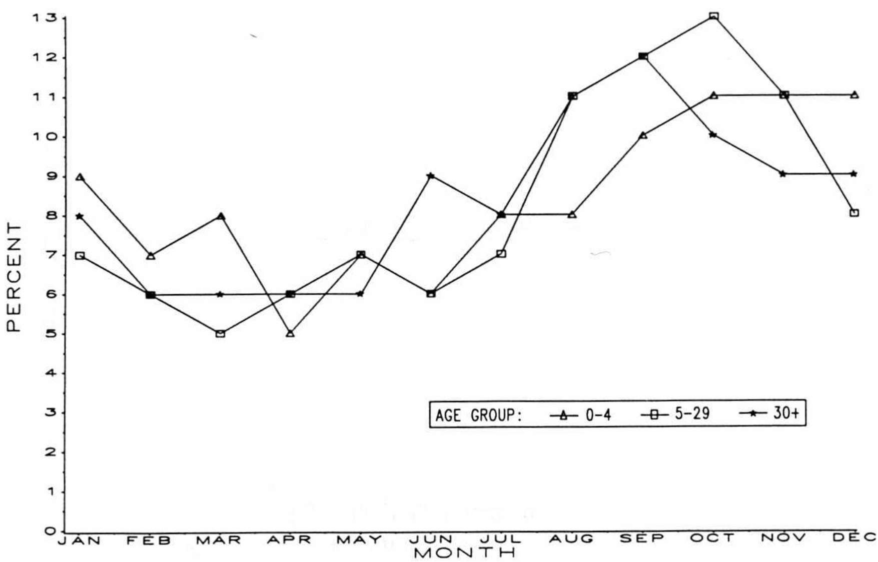

S. anatum

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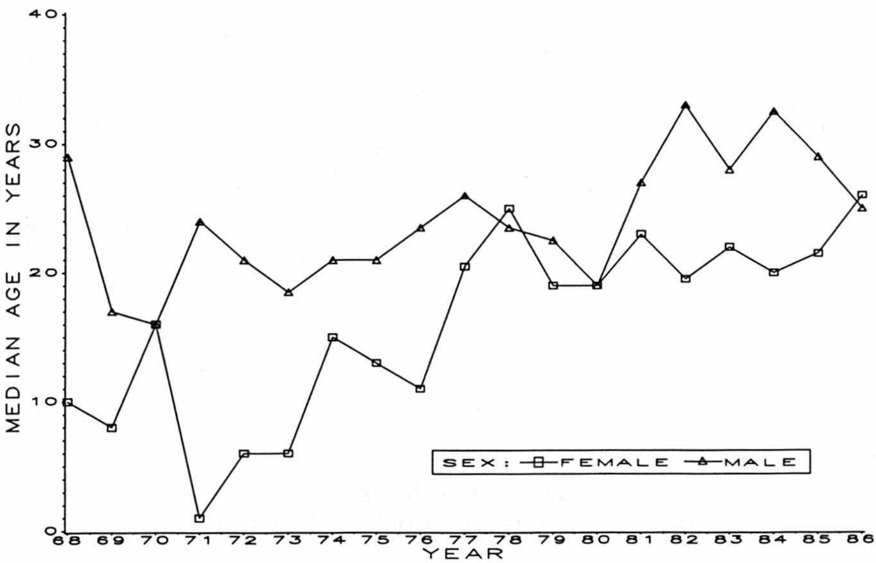


Figure 7. Reported nonhuman sources, by year.

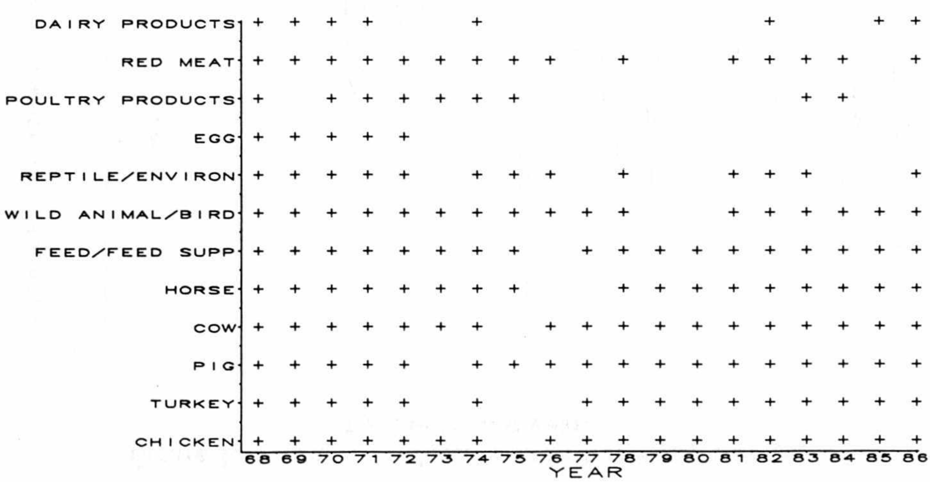


Figure 6. Percent of reported isolates, by age-group and sex.

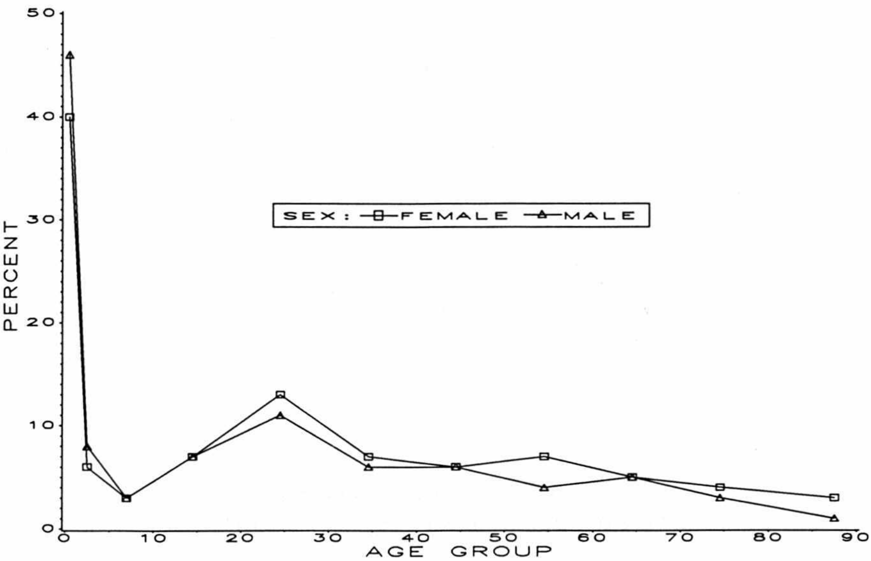
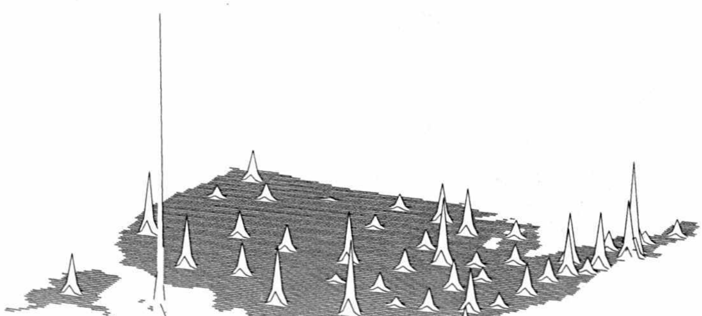


Figure 8. Age-standardized rates of reported isolates, by state.



S. anatum

Figure 1. Reported isolates, 3-month moving average, by month and year.

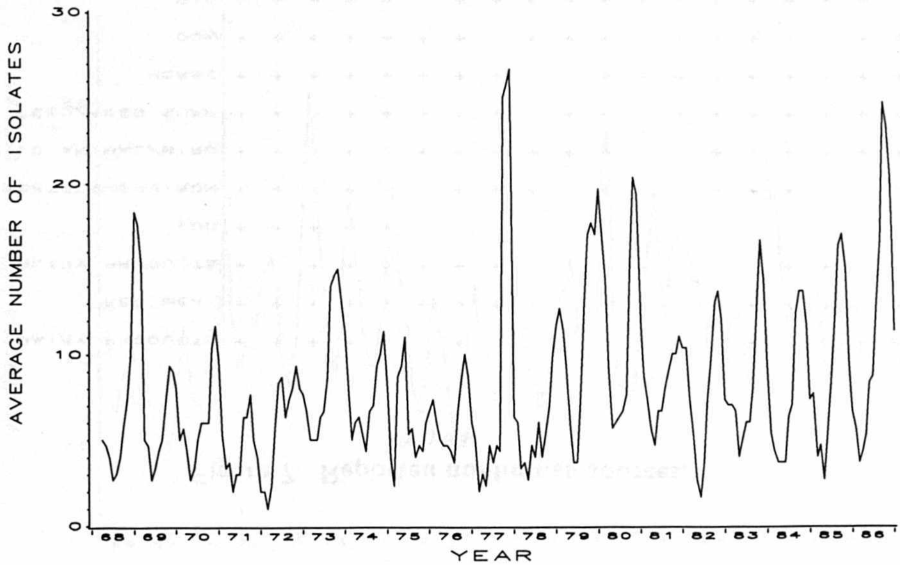


Figure 3. Number of reported isolates, by age-group and year.

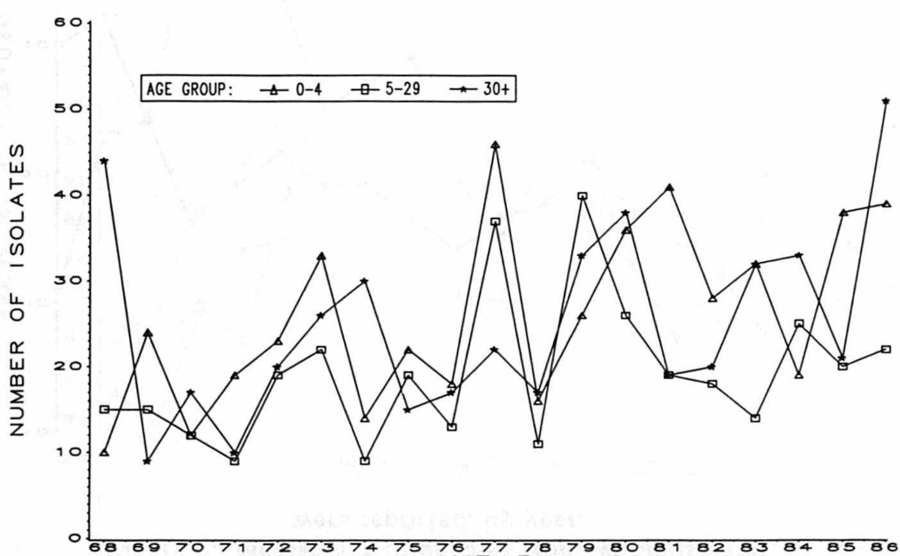
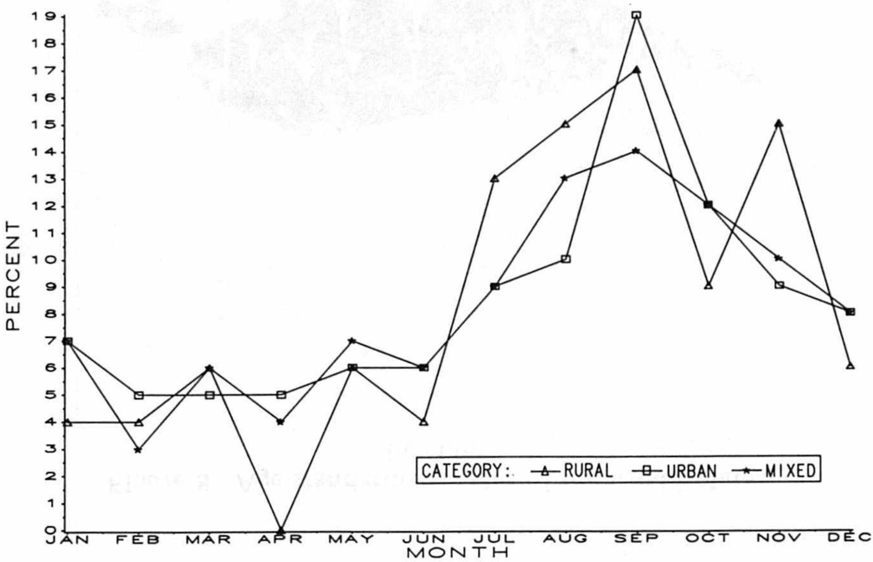


Figure 2. Percent of reported isolates from urban and rural counties, by month.



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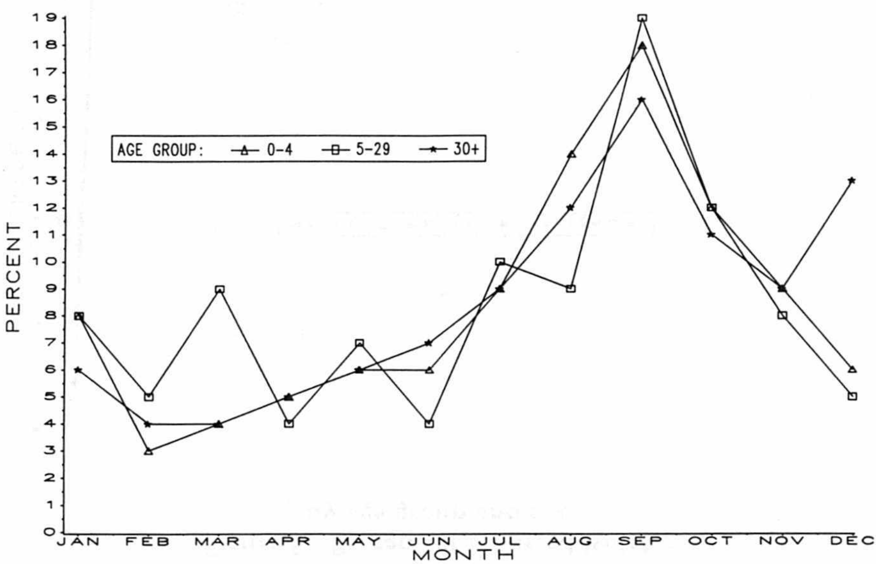


S. bareilly

Figure 5. Median age of persons from whom isolates were reported, by year.

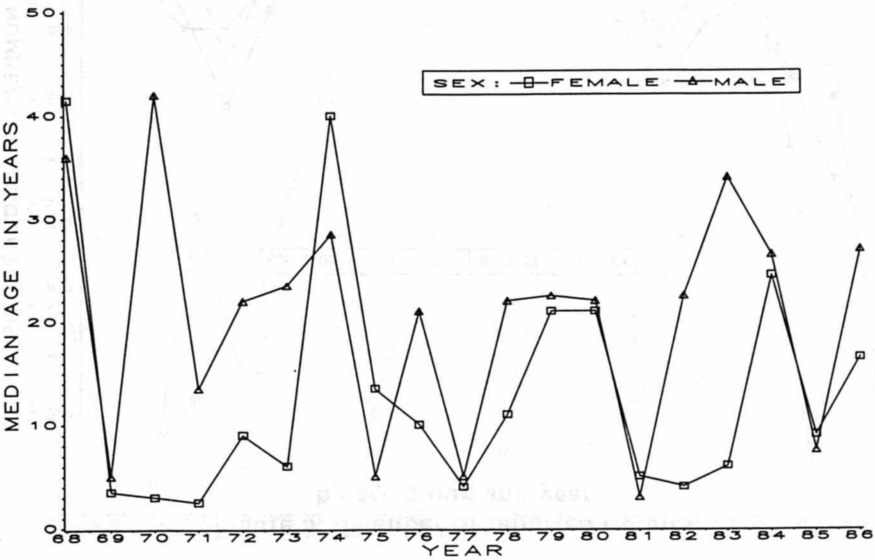


Figure 7. Reported nonhuman sources, by year.

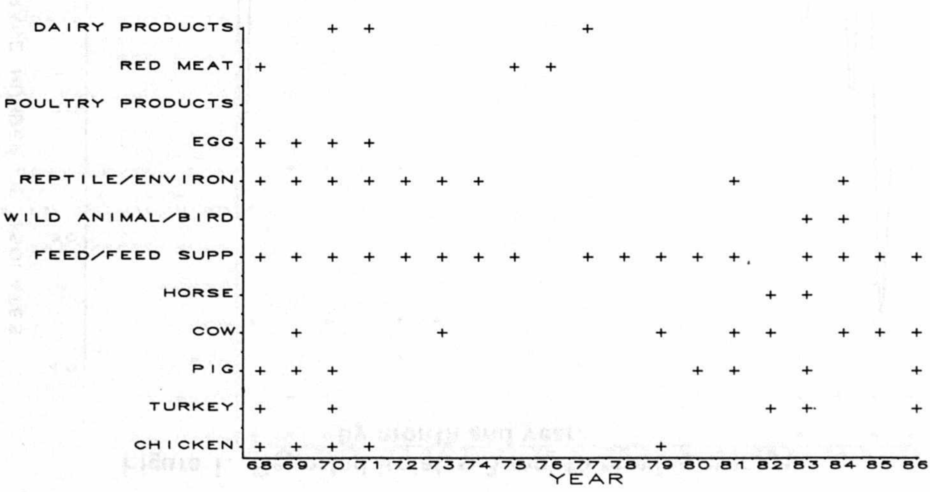


Figure 6. Percent of reported isolates, by age-group and sex.

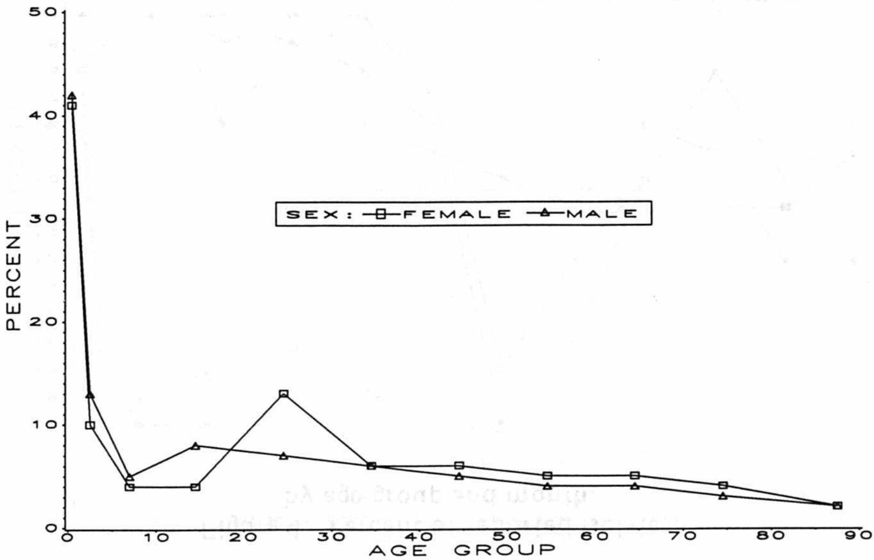
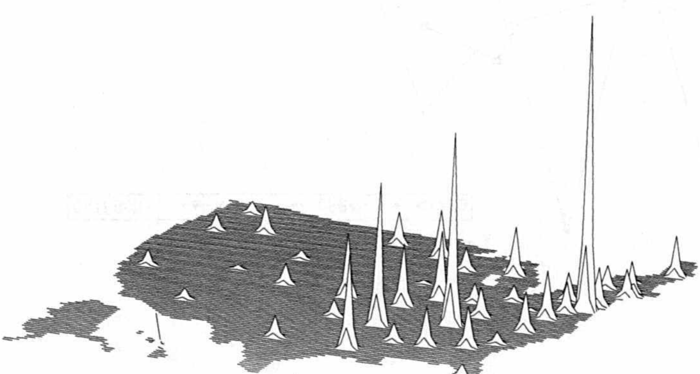


Figure 8. Age-standardized rates of reported isolates, by state.



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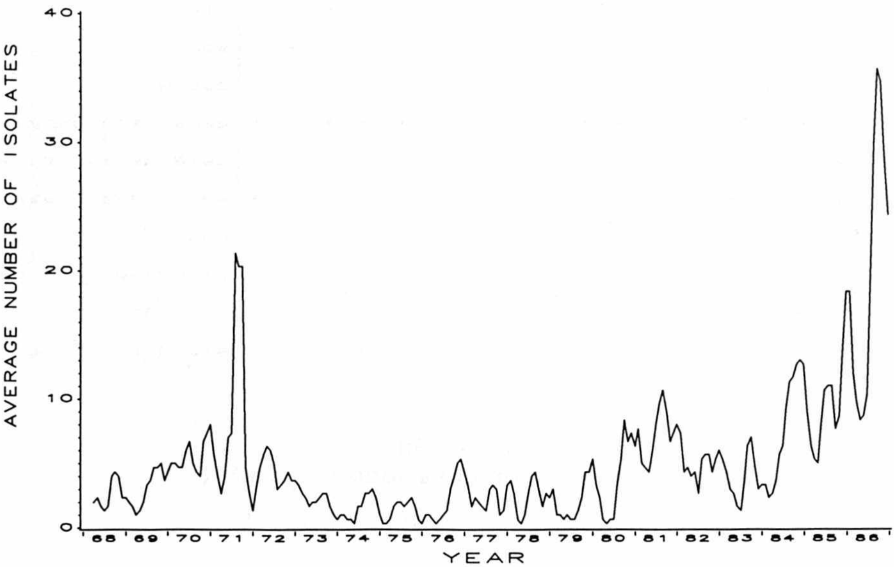


Figure 3. Number of reported isolates, by age-group and year.

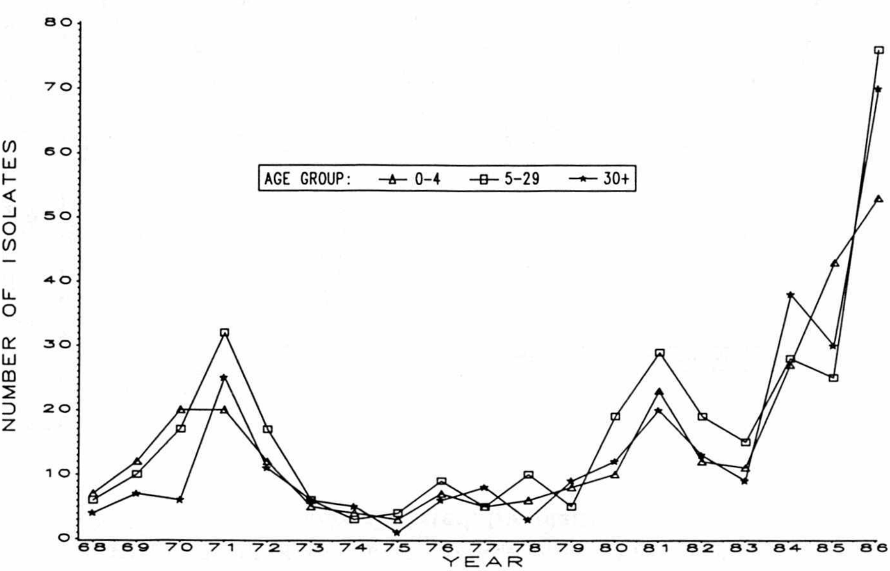
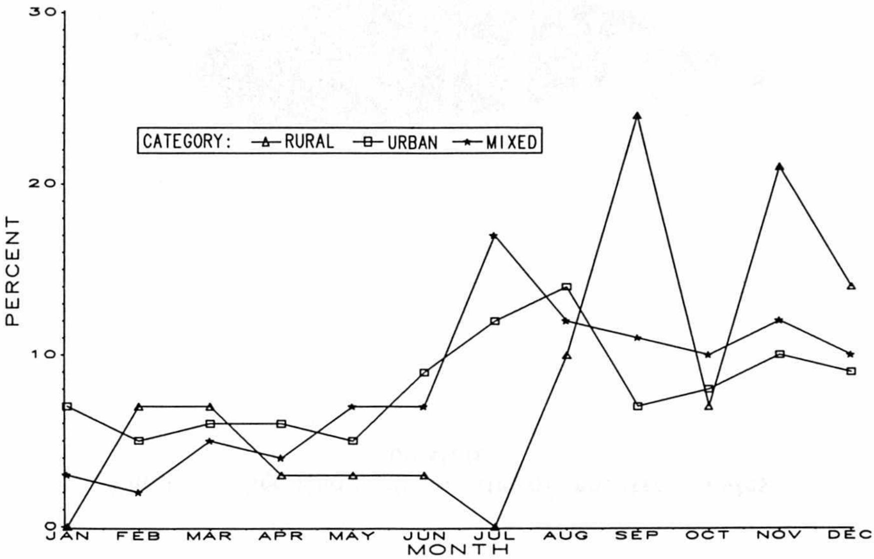


Figure 2. Percent of reported isolates from urban and rural counties, by month.



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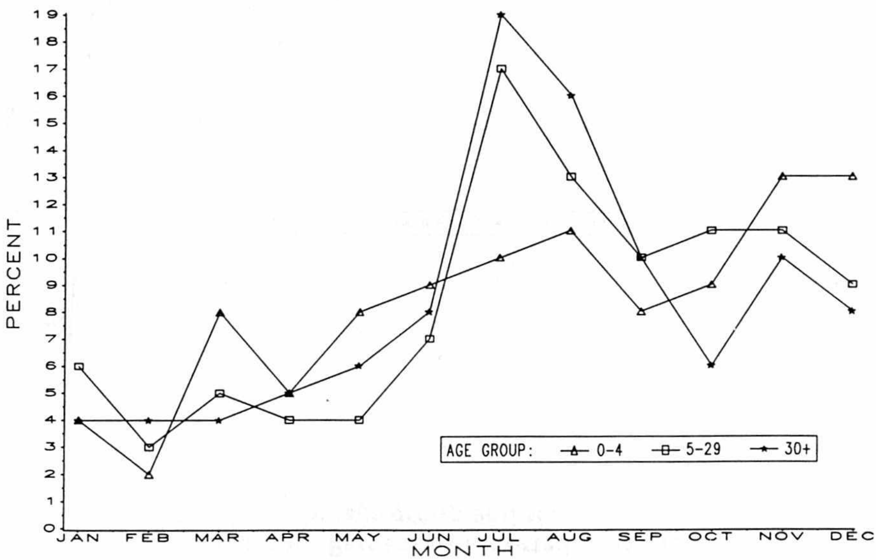

S. berta

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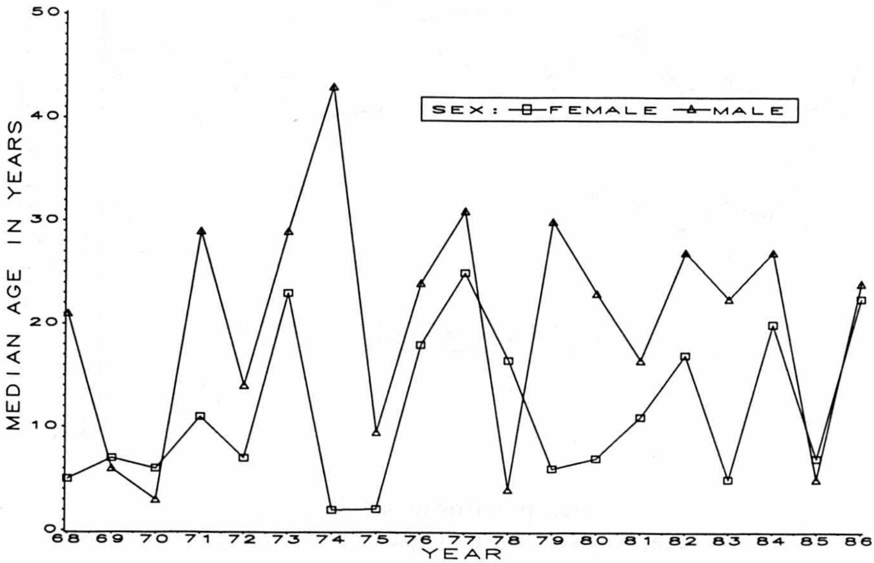

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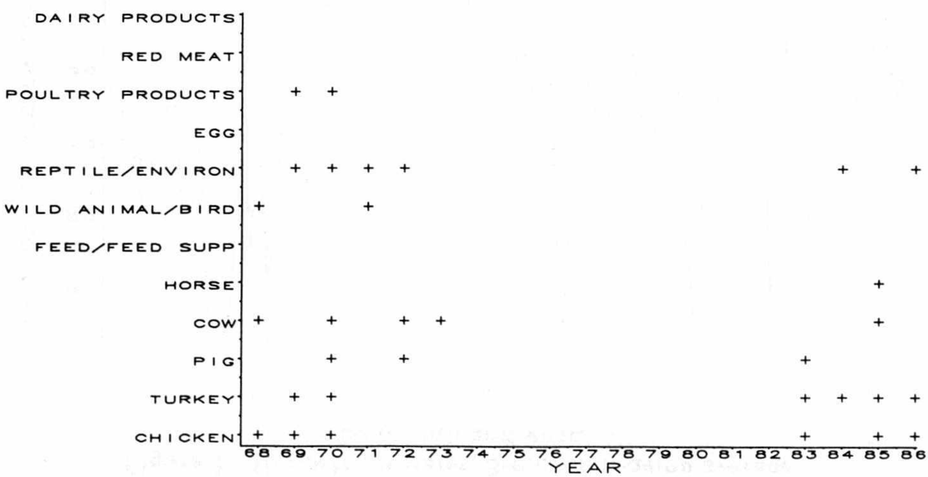


Figure 6. Percent of reported isolates, by age-group and sex.

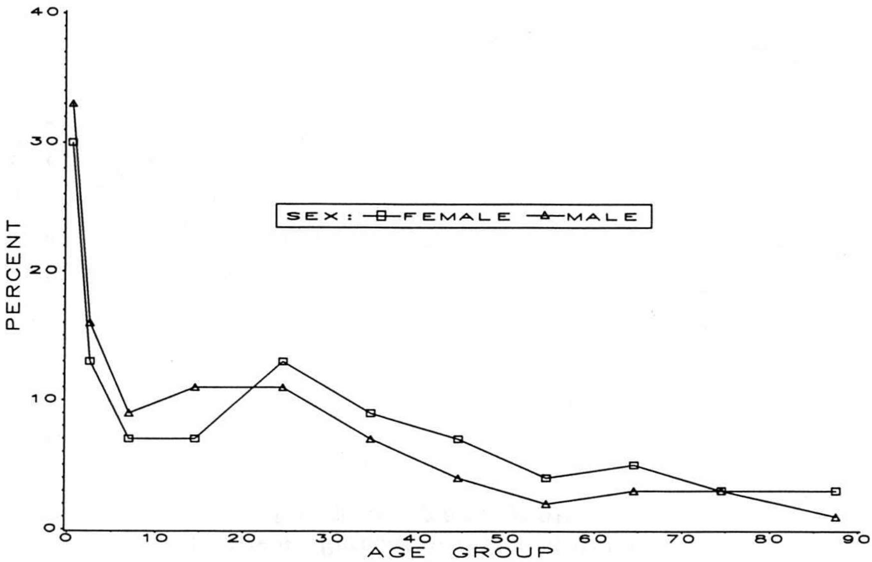
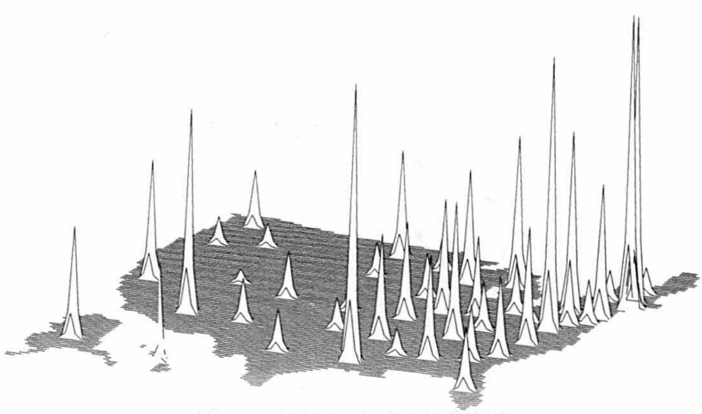


Figure 8. Age-standardized rates of reported isolates, by state.



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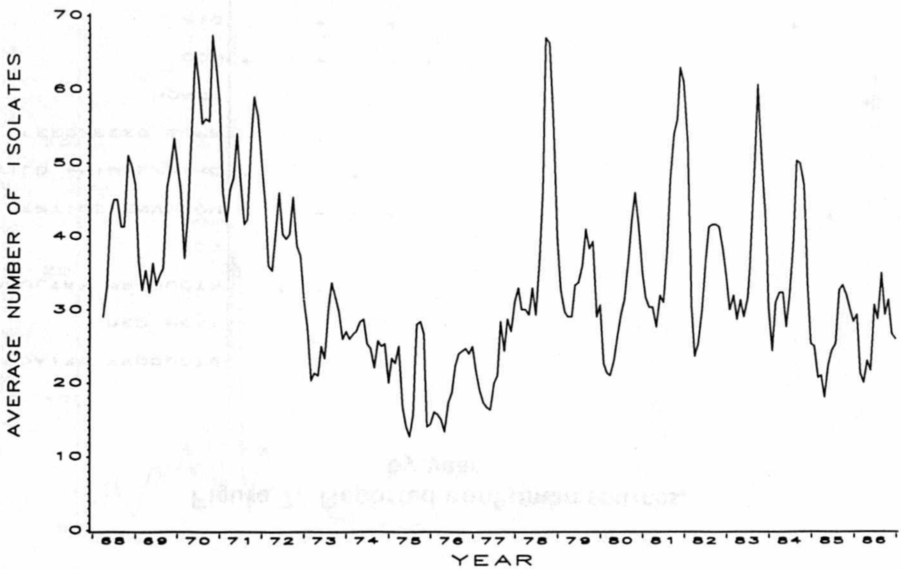


Figure 3. Number of reported isolates, by age-group and year.

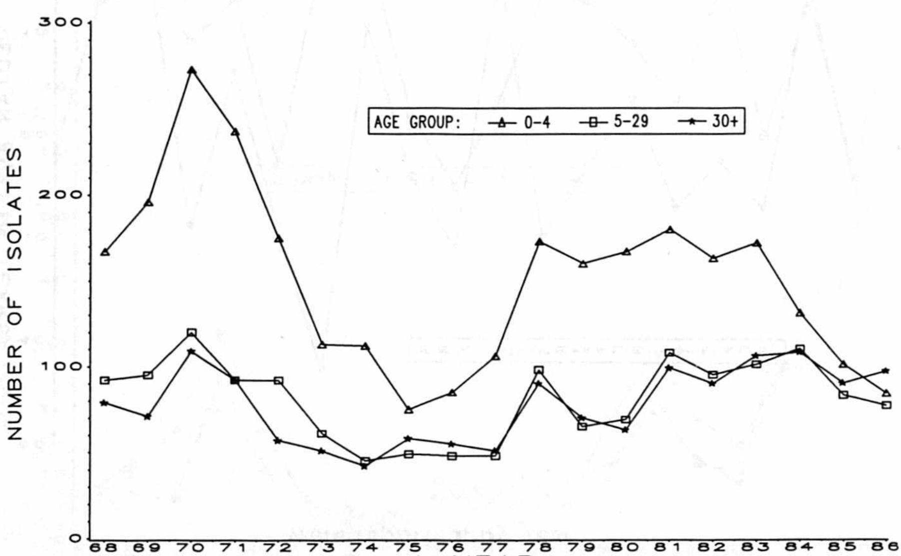
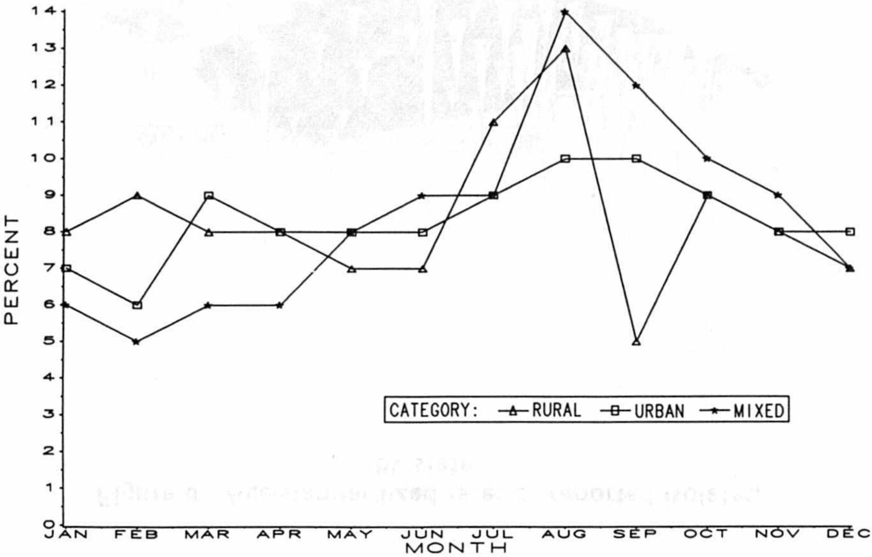


Figure 2. Percent of reported isolates from urban and rural counties, by month.



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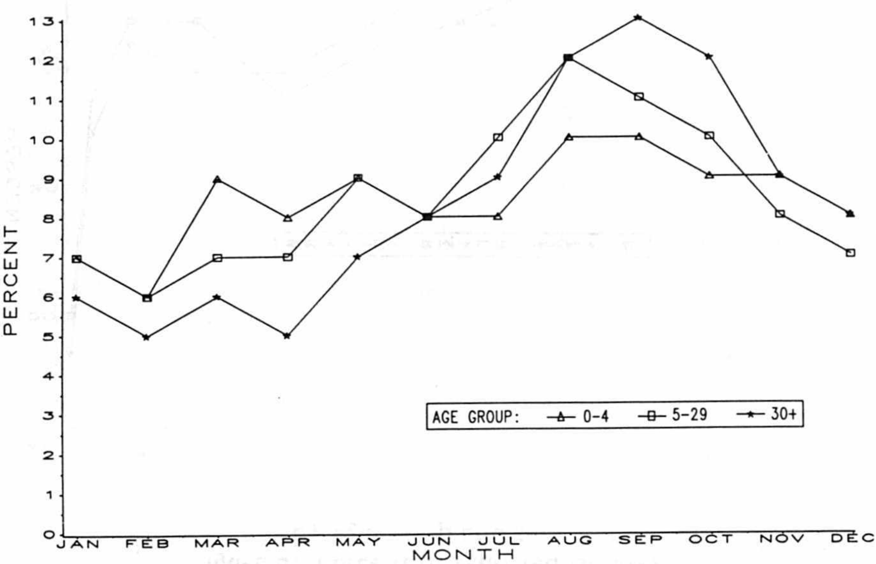

S. blockley

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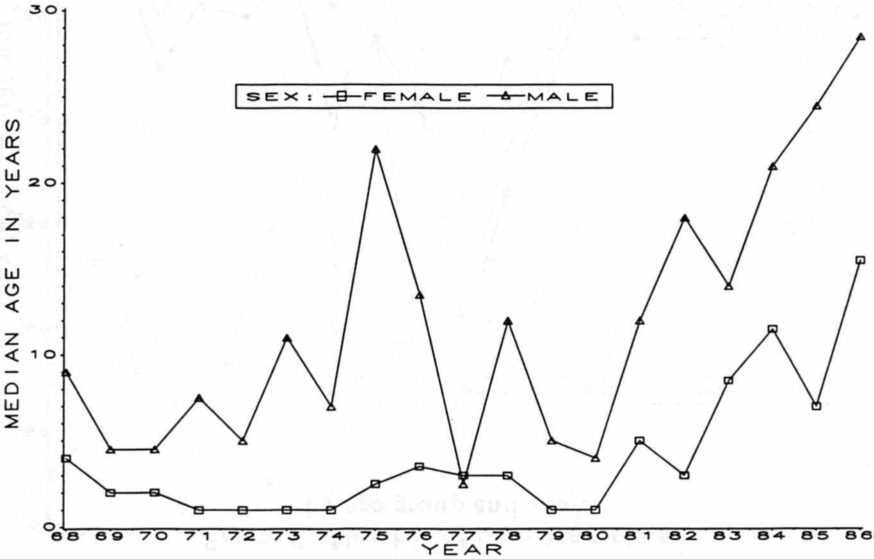

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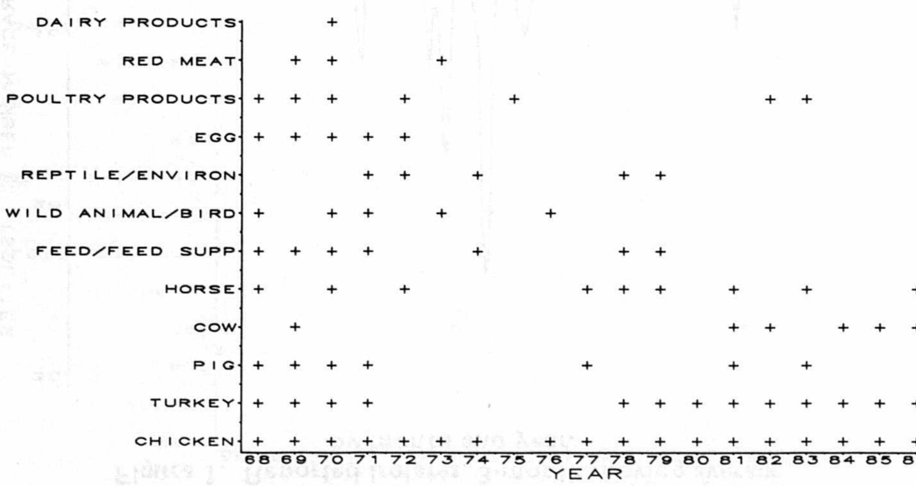
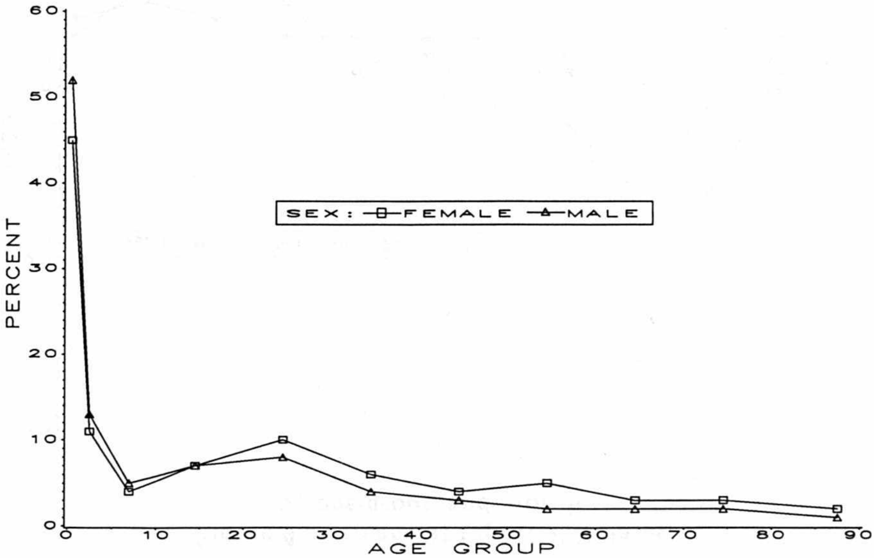


Figure 6. Percent of reported isolates, by age-group and sex.



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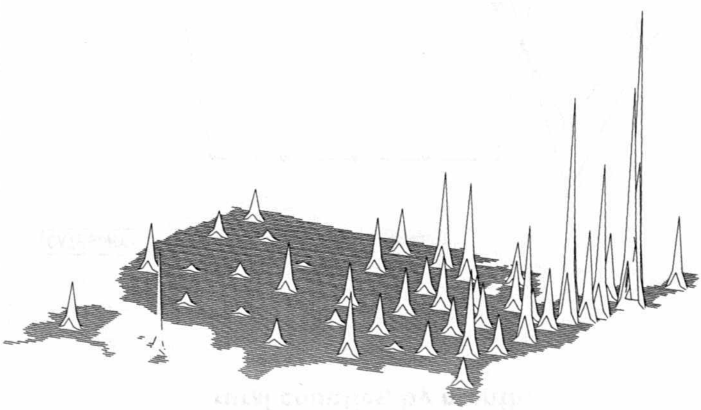


S. blockley

Figure 1. Reported isolates, 3-month moving average, by month and year.

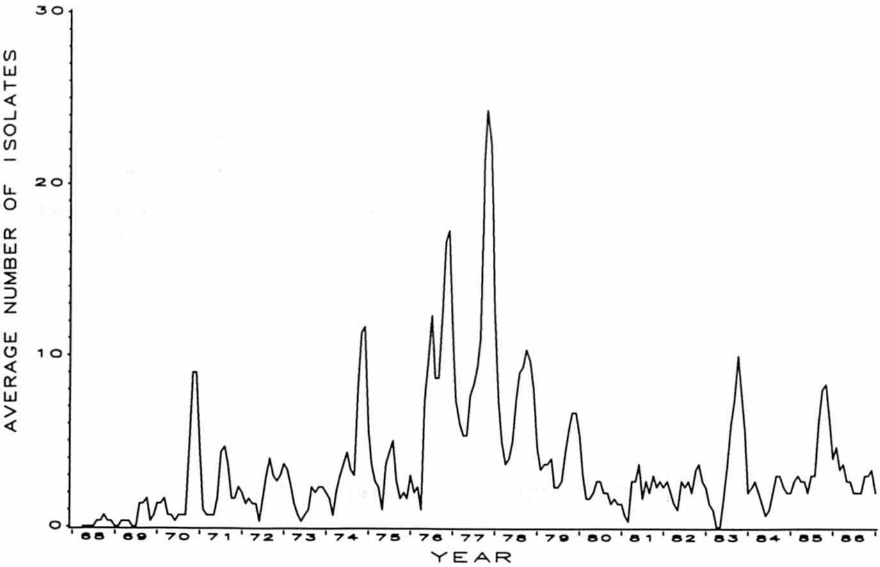
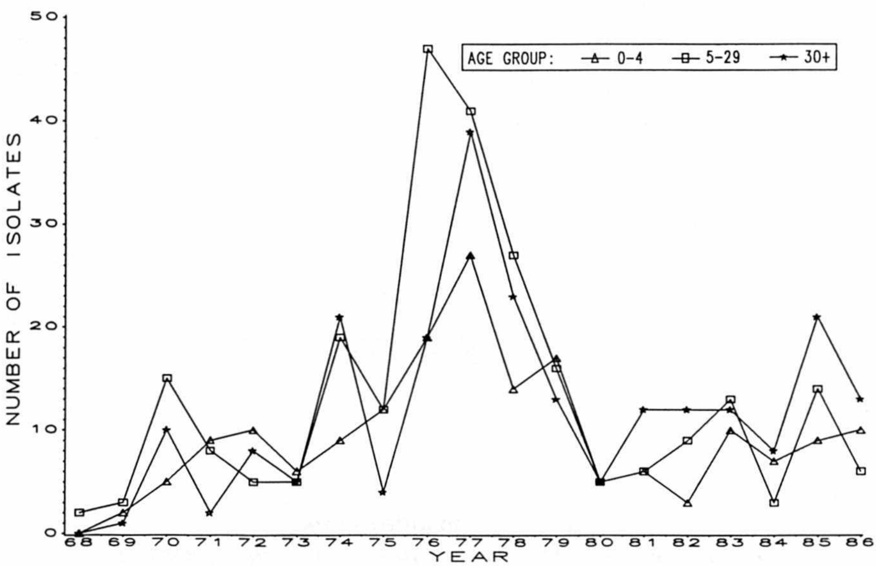


Figure 3. Number of reported isolates, by age-group and year.



S. bovismorbificans

Figure 2. Percent of reported isolates from urban and rural counties, by month.

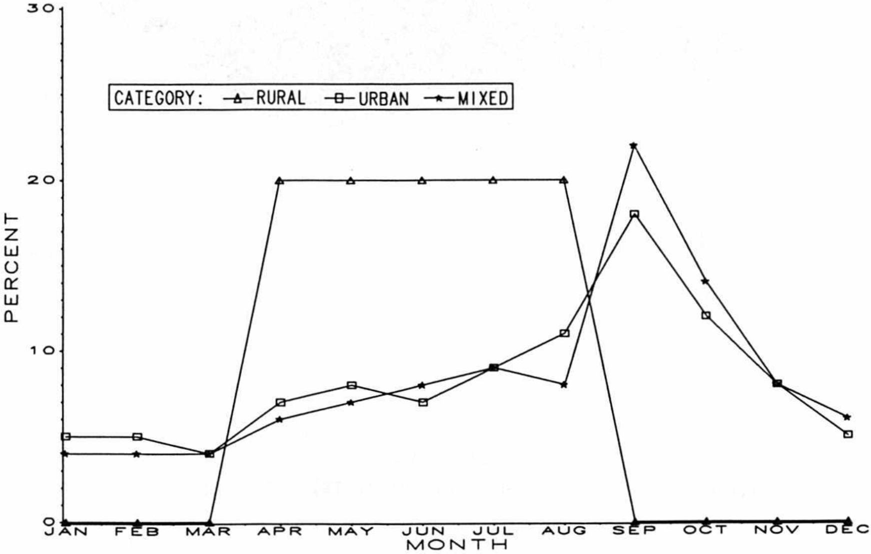


Figure 4. Percent of reported isolates, by age-group and month.

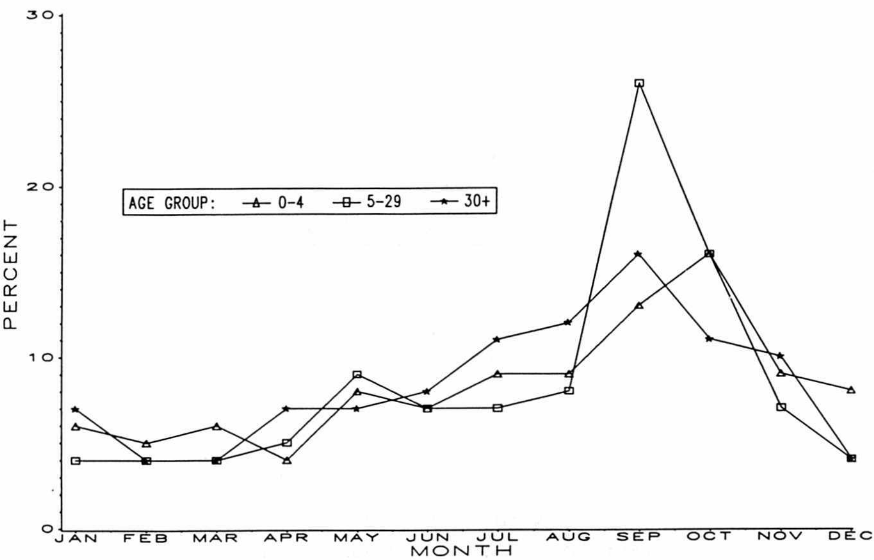


Figure 5. Median age of persons from whom isolates were reported, by year.

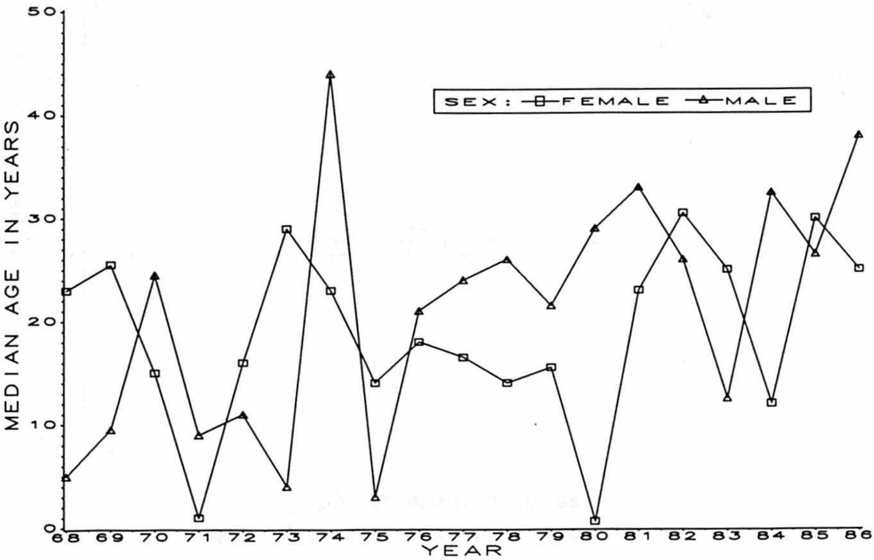


Figure 7. Reported nonhuman sources, by year.

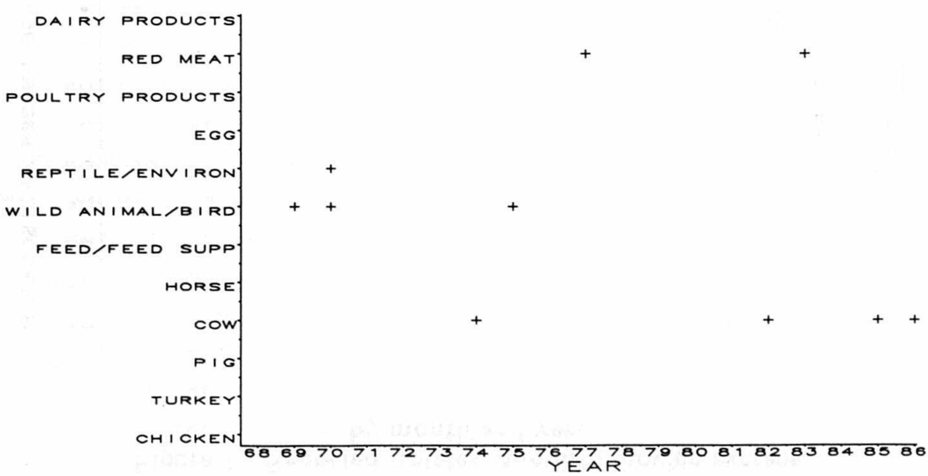


Figure 6. Percent of reported isolates, by age-group and sex.

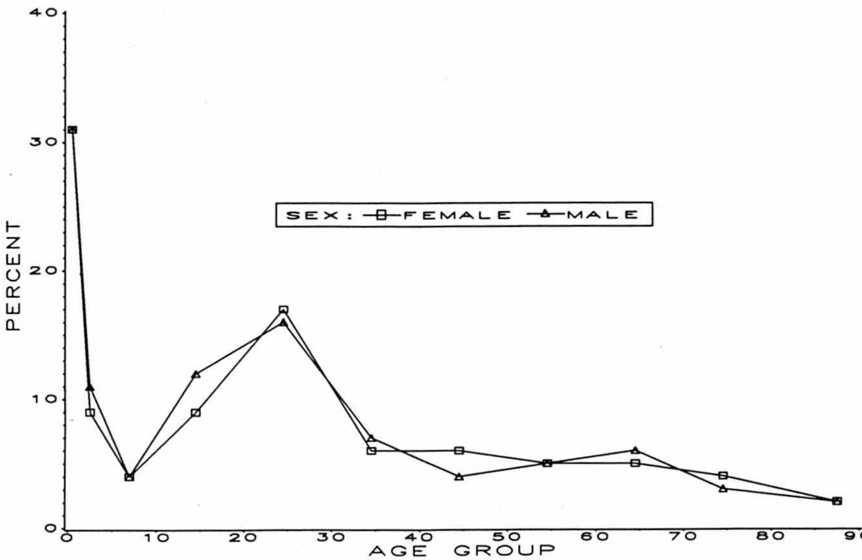
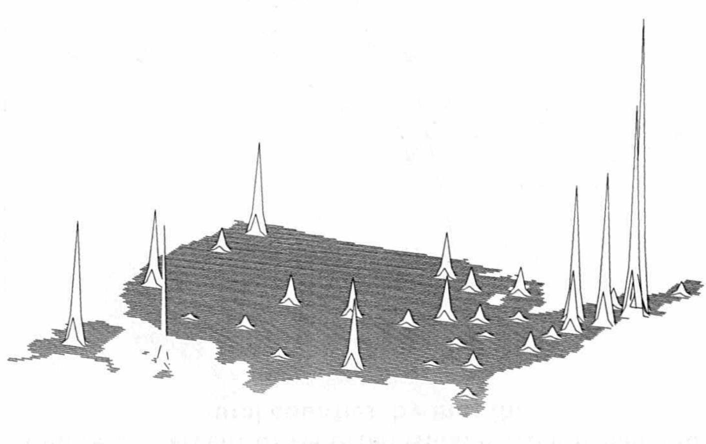


Figure 8. Age-standardized rates of reported isolates, by state.



S. bovismorbificans

Figure 1. Reported isolates, 3-month moving average, by month and year.

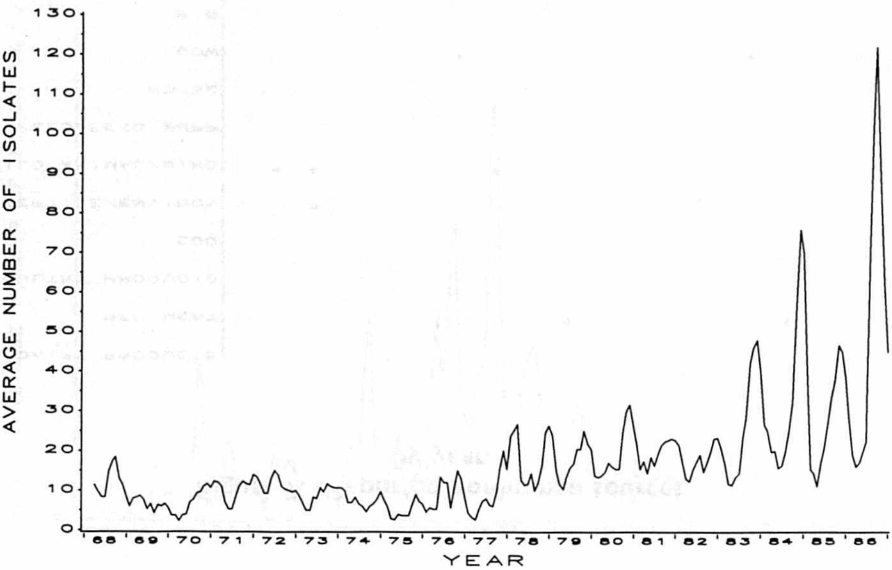


Figure 3. Number of reported isolates, by age-group and year.

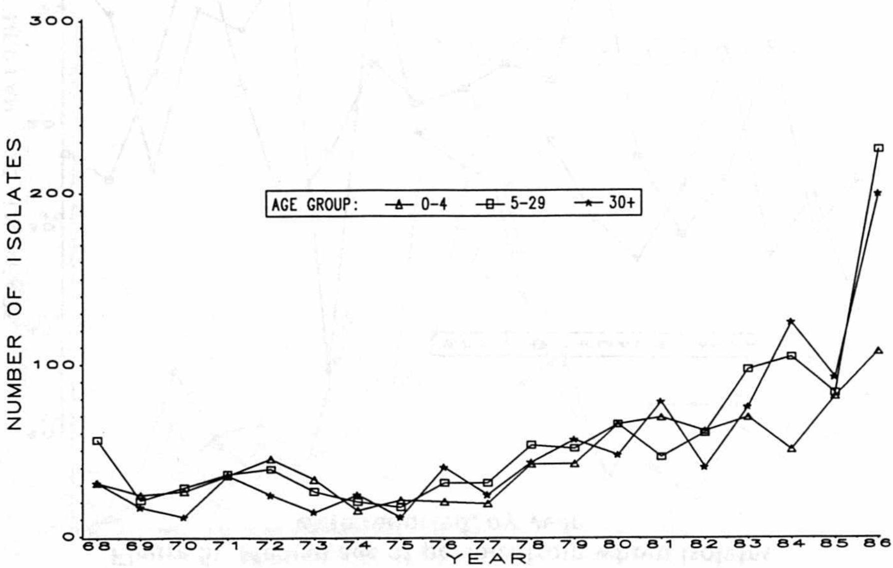


Figure 2. Percent of reported isolates from urban and rural counties, by month.

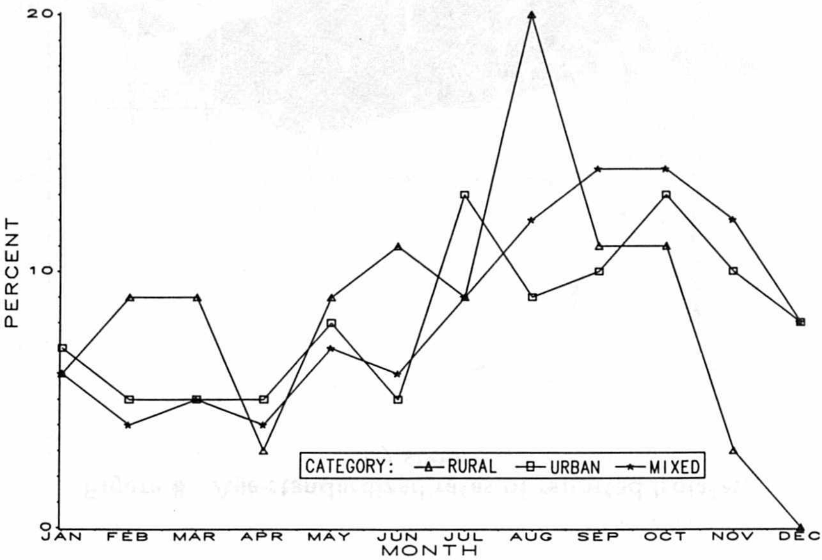
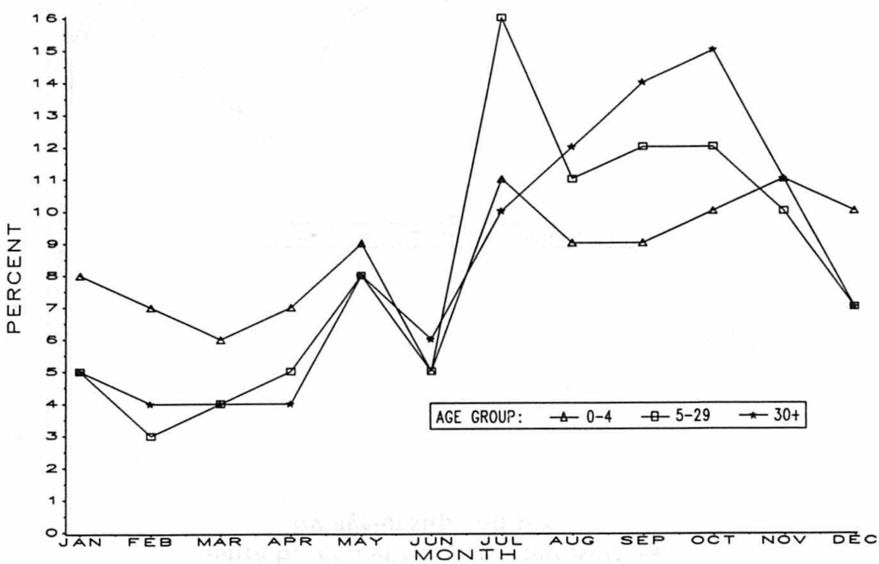


Figure 4. Percent of reported isolates, by age-group and month.



S. braenderup

Figure 5. Median age of persons from whom isolates were reported, by year.

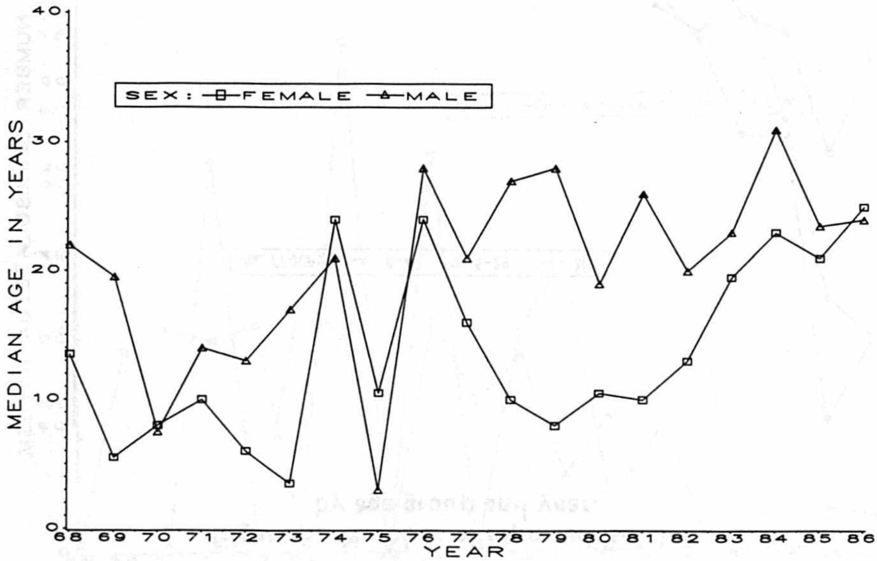


Figure 7. Reported nonhuman sources, by year.

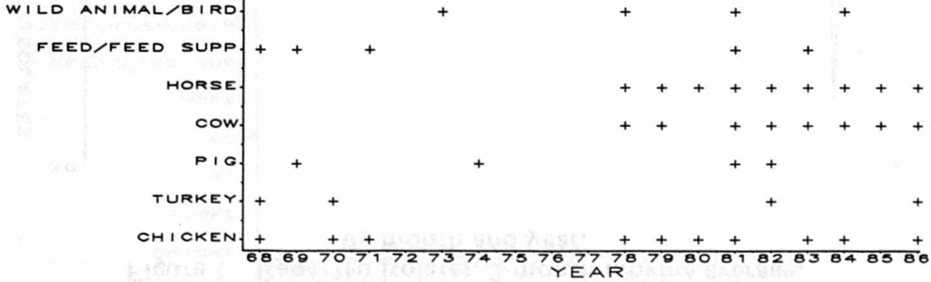
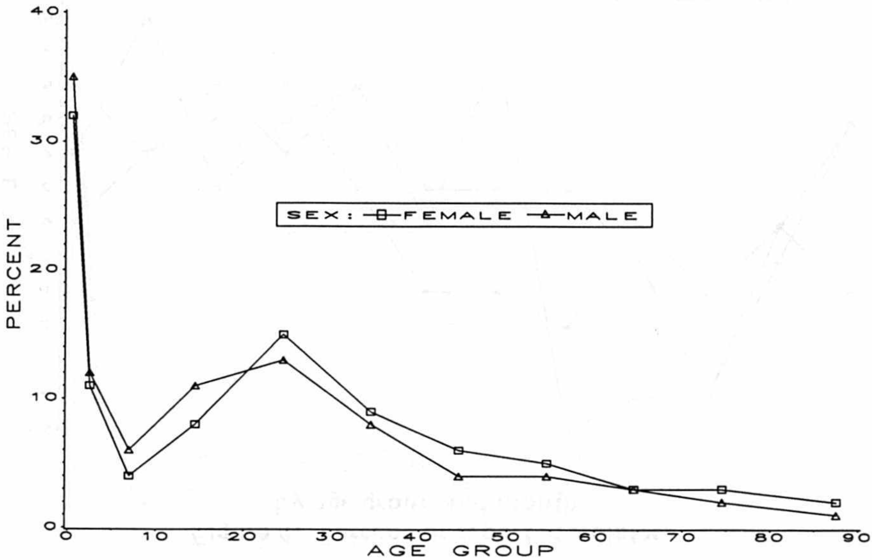


Figure 6. Percent of reported isolates, by age-group and sex.



S. braenderup

Figure 8. Age-standardized rates of reported isolates, by state.

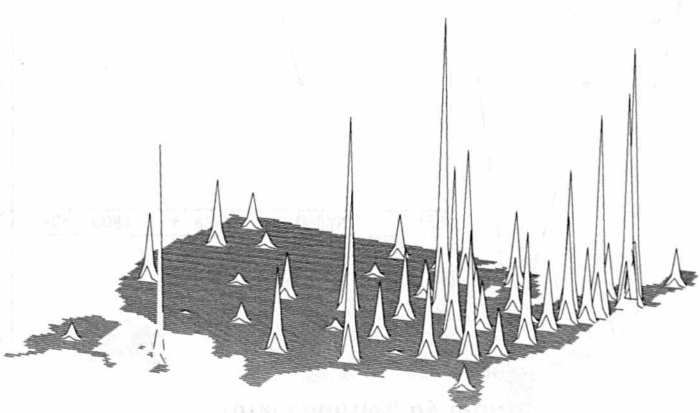


Figure 1. Reported isolates, 3-month moving average, by month and year.

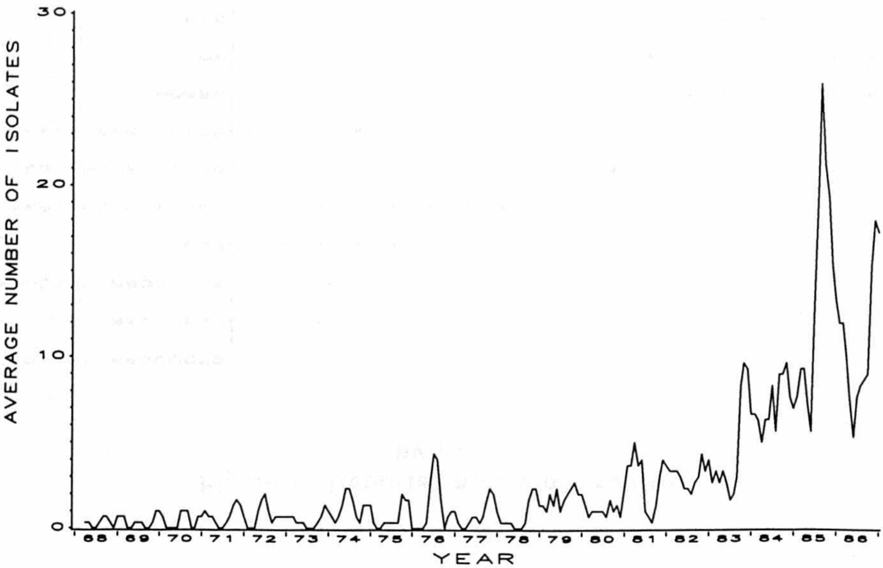


Figure 3. Number of reported isolates, by age-group and year.

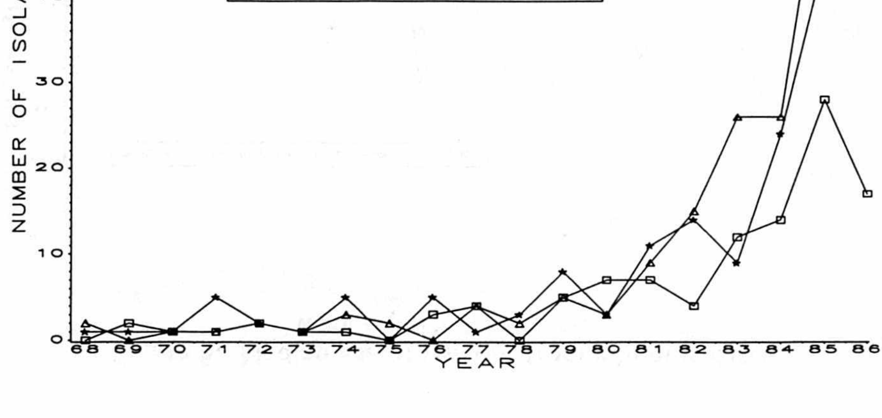


Figure 2. Percent of reported isolates from urban and rural counties, by month.

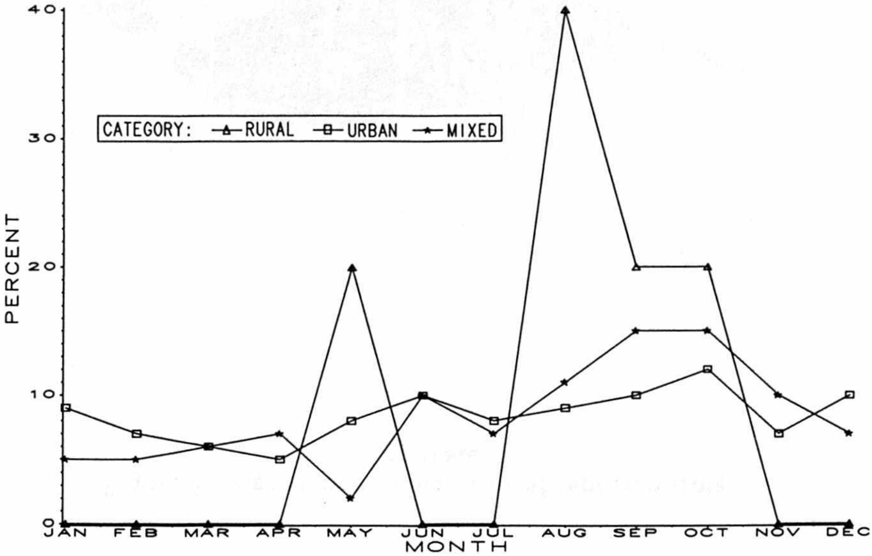
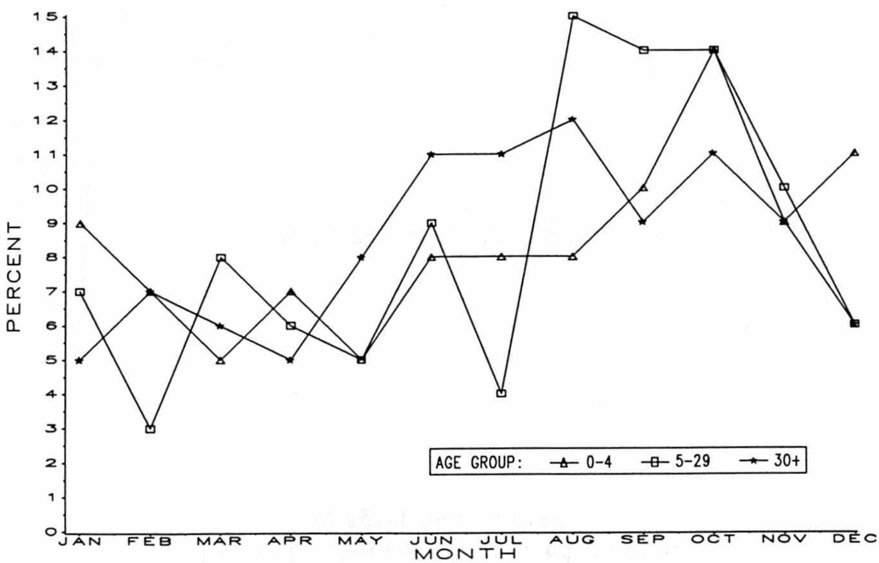


Figure 4. Percent of reported isolates, by age-group and month.



S. brandenburg

Figure 5. Median age of persons from whom isolates were reported, by year.

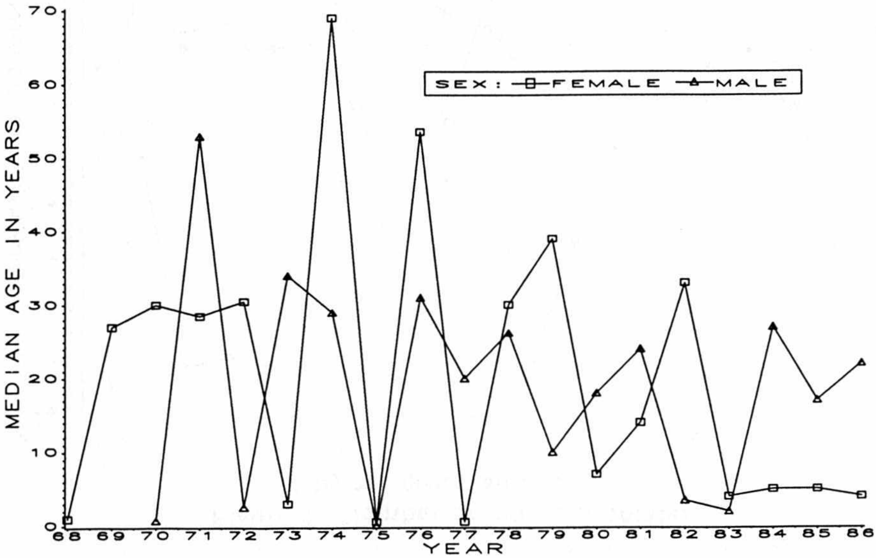


Figure 7. Reported nonhuman sources, by year.

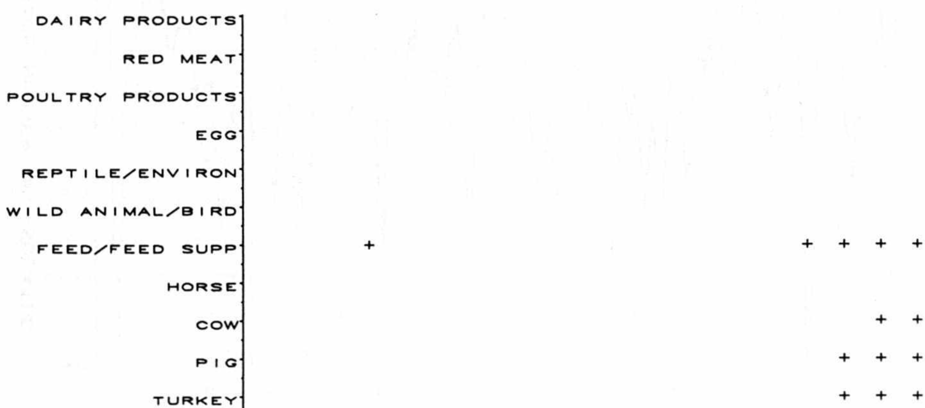


Figure 6. Percent of reported isolates, by age-group and sex.

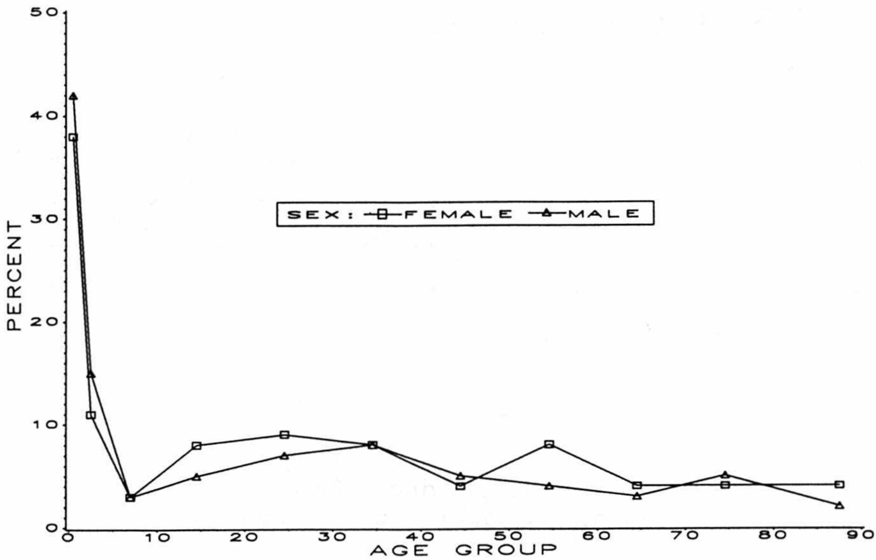


Figure 8. Age-standardized rates of reported isolates, by state.

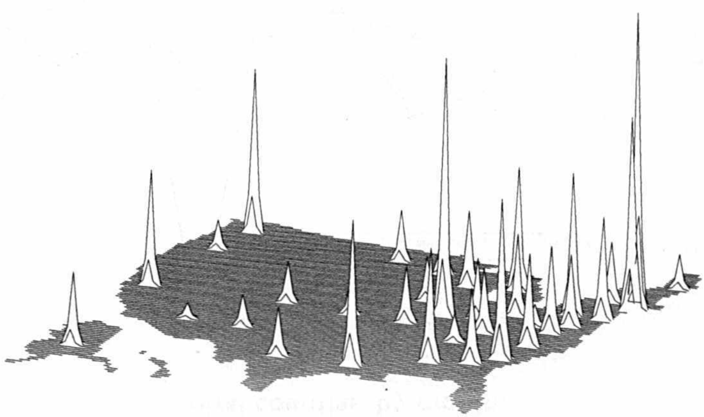


Figure 1. Reported isolates, 3-month moving average, by month and year.

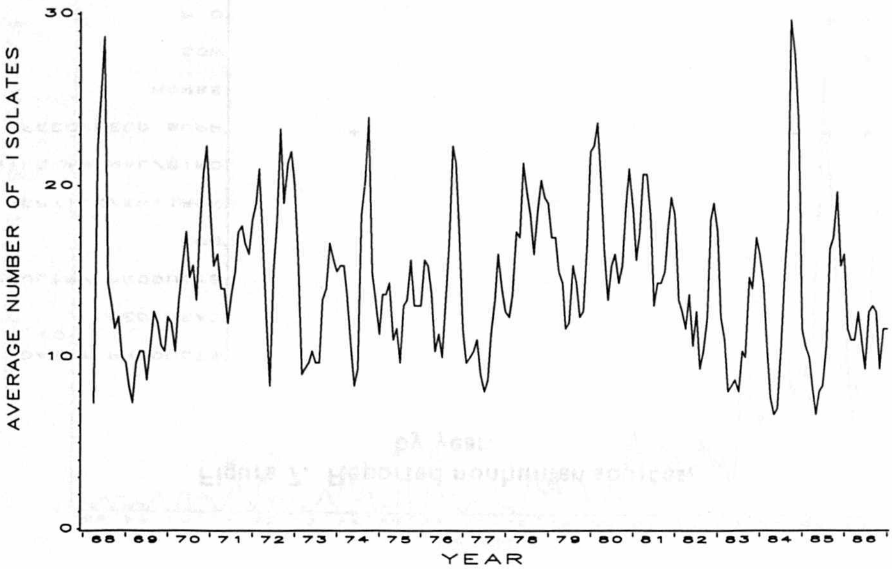


Figure 3. Number of reported isolates, by age-group and year.

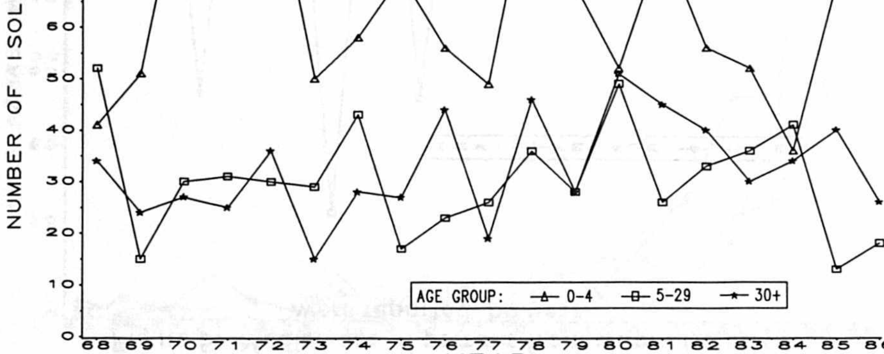


Figure 2. Percent of reported isolates from urban and rural counties, by month.

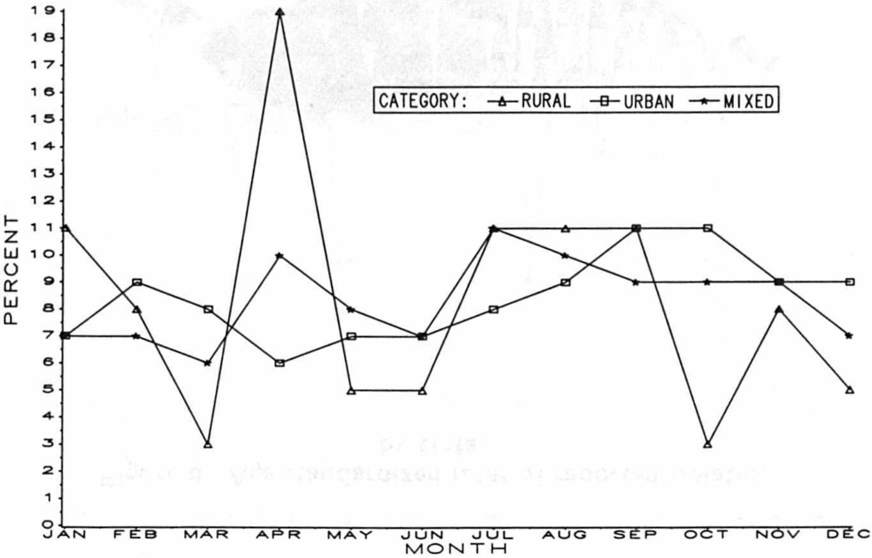
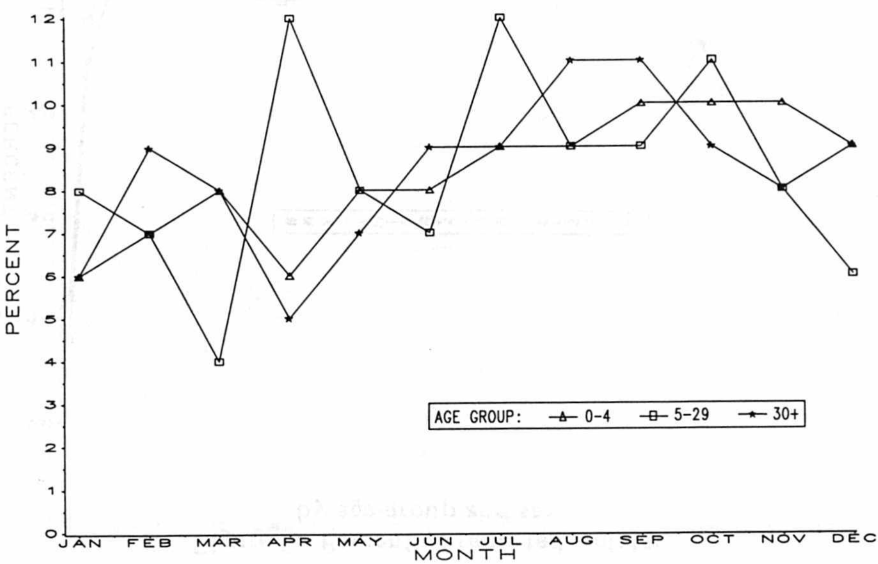


Figure 4. Percent of reported isolates, by age-group and month.



S. bredeney

Figure 5. Median age of persons from whom isolates were reported, by year.

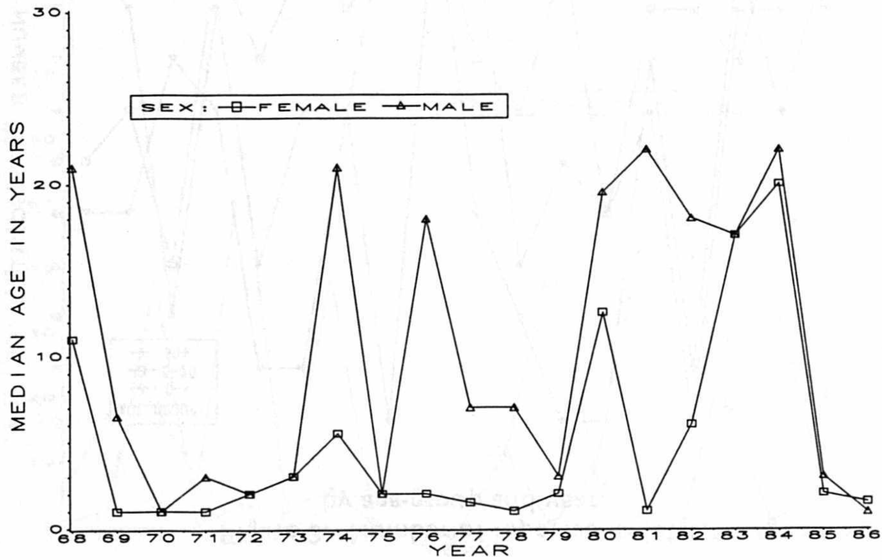


Figure 7. Reported nonhuman sources, by year.

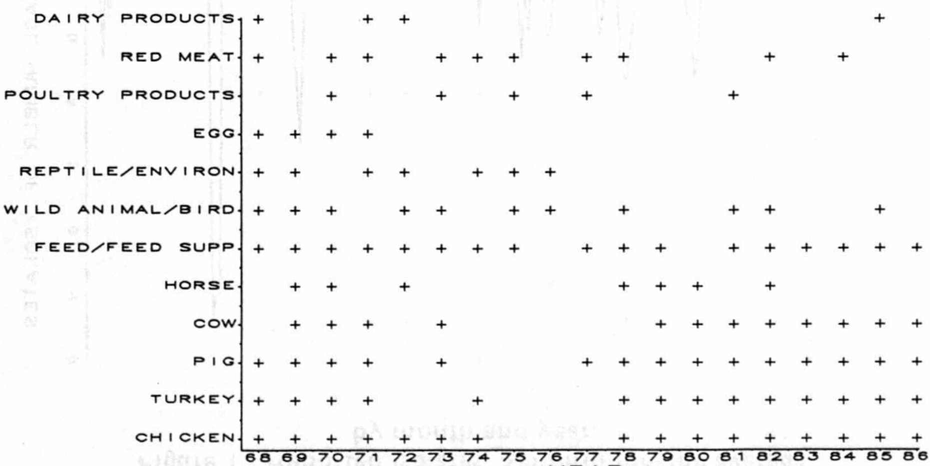


Figure 6. Percent of reported isolates, by age-group and sex.

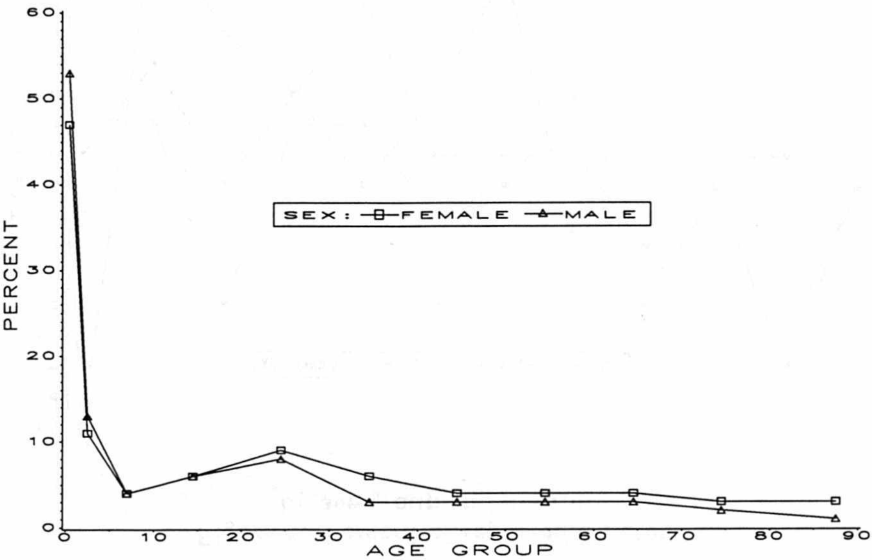
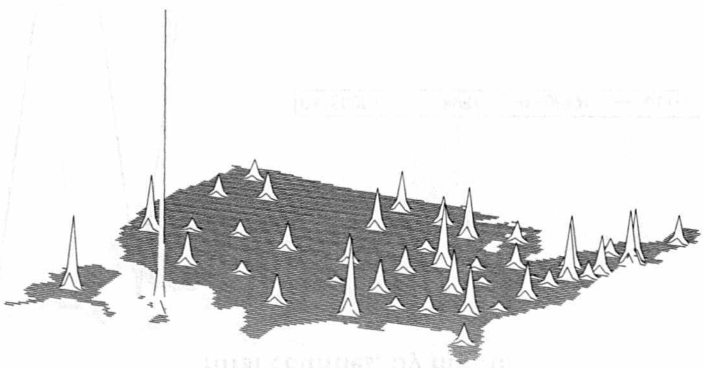


Figure 8. Age-standardized rates of reported isolates, by state.



S. bredeney

Figure 1. Reported isolates, 3-month moving average, by month and year.

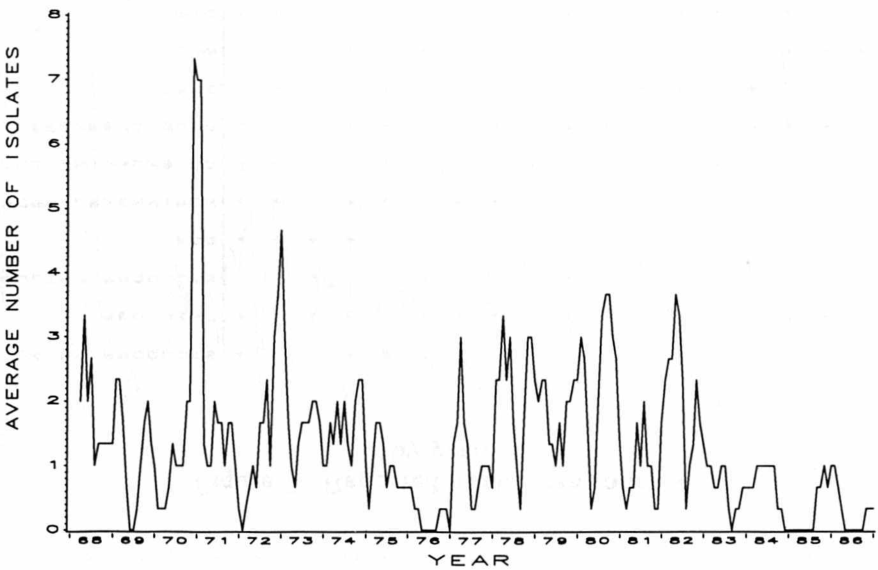


Figure 3. Number of reported isolates, by age-group and year.

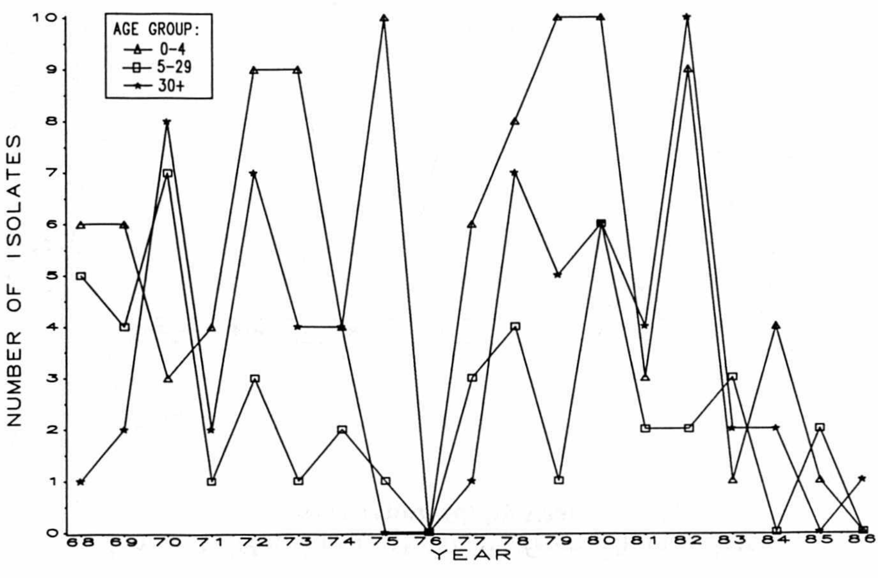


Figure 2. Percent of reported isolates from urban and rural counties, by month.

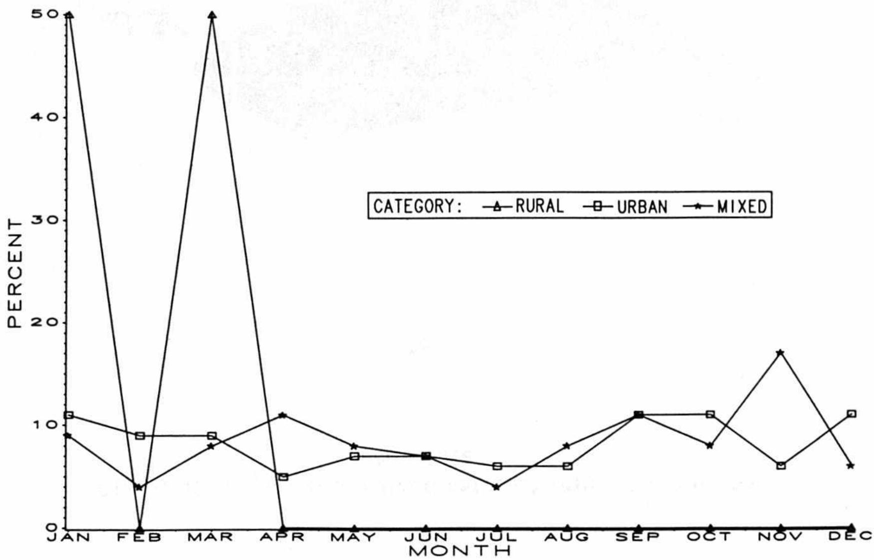
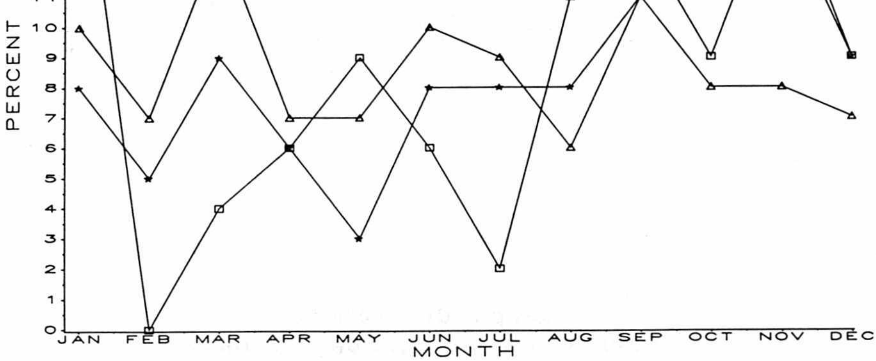


Figure 4. Percent of reported isolates, by age-group and month.



S. california

Figure 5. Median age of persons from whom isolates were reported, by year.

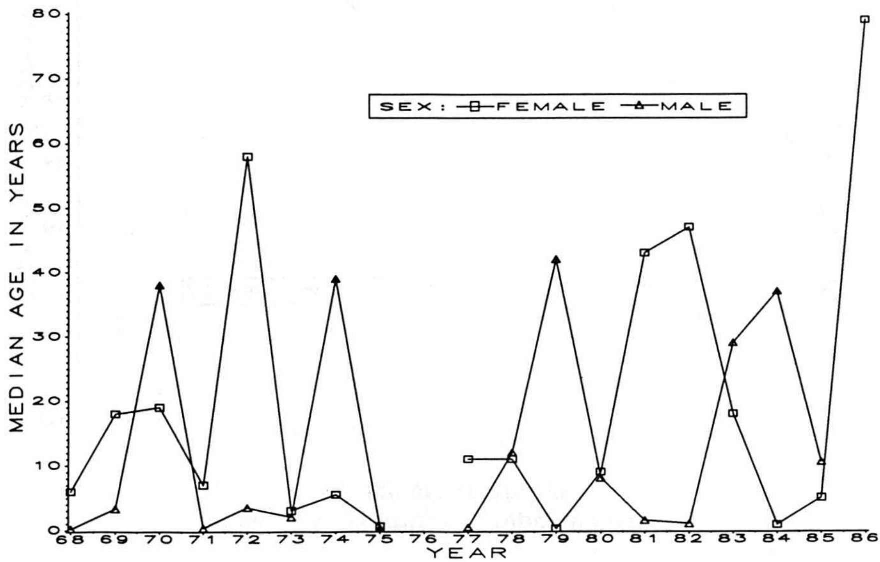


Figure 7. Reported nonhuman sources, by year.

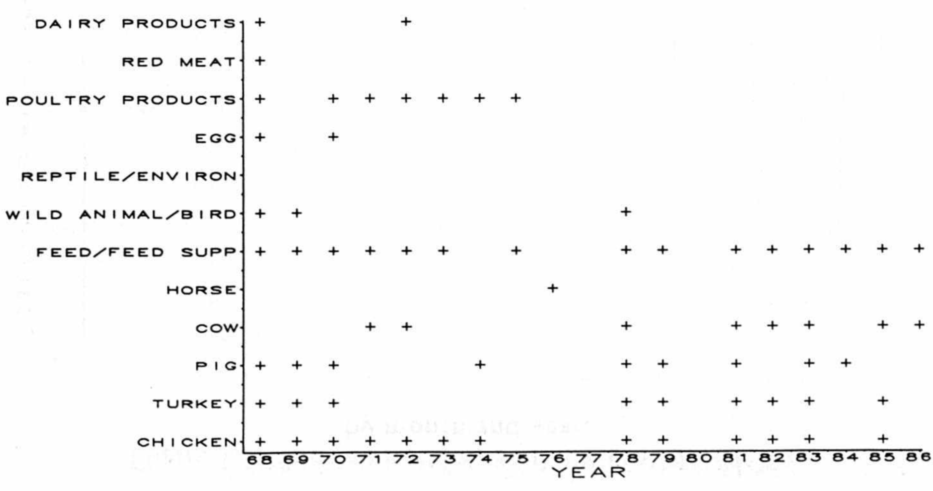


Figure 6. Percent of reported isolates, by age-group and sex.

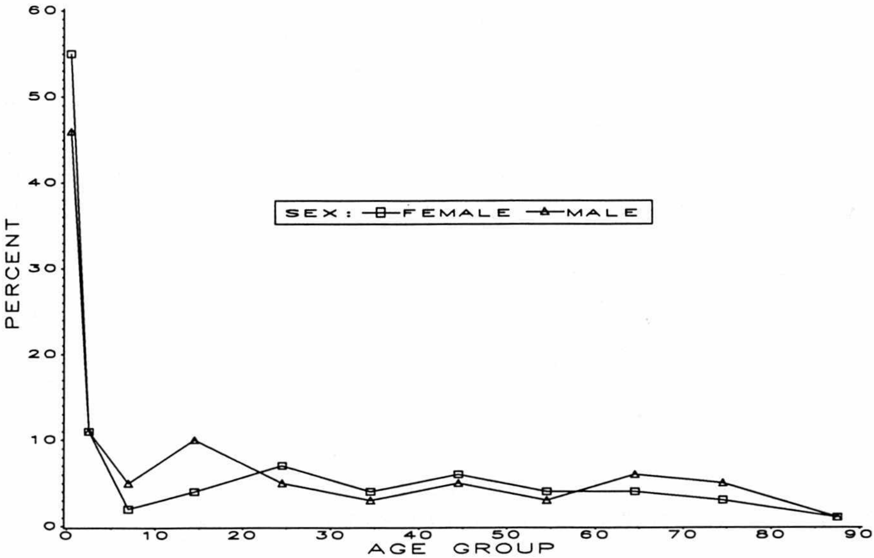


Figure 8. Age-standardized rates of reported isolates, by state.

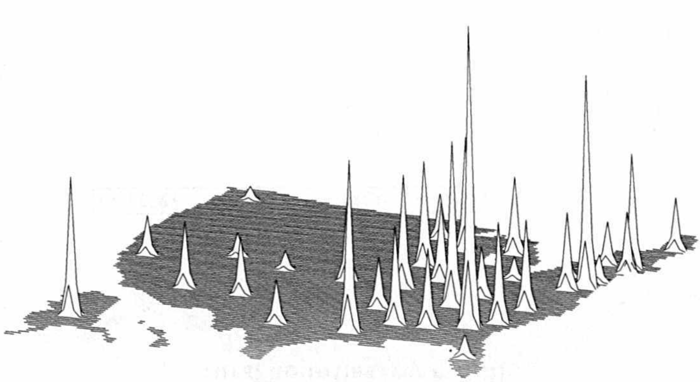


Figure 1. Reported isolates, 3-month moving average, by month and year.

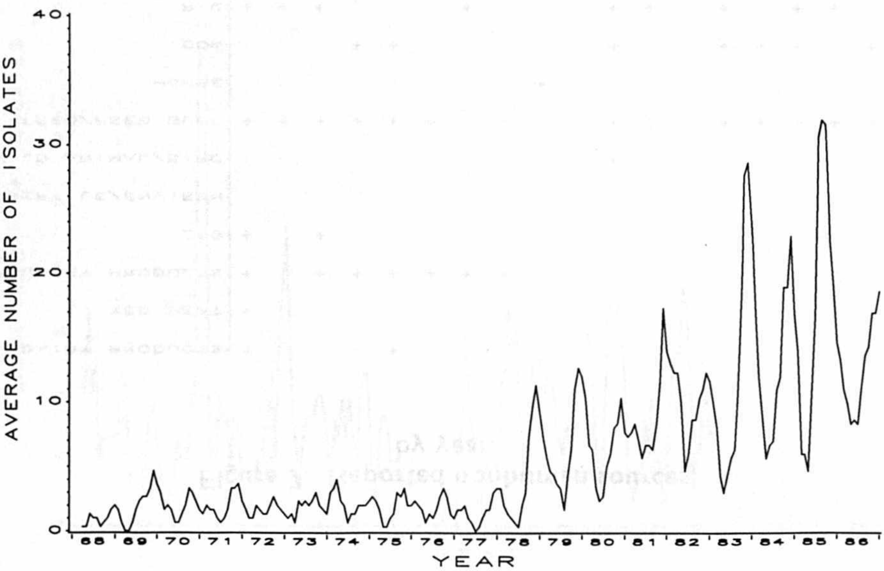


Figure 3. Number of reported isolates, by age-group and year.

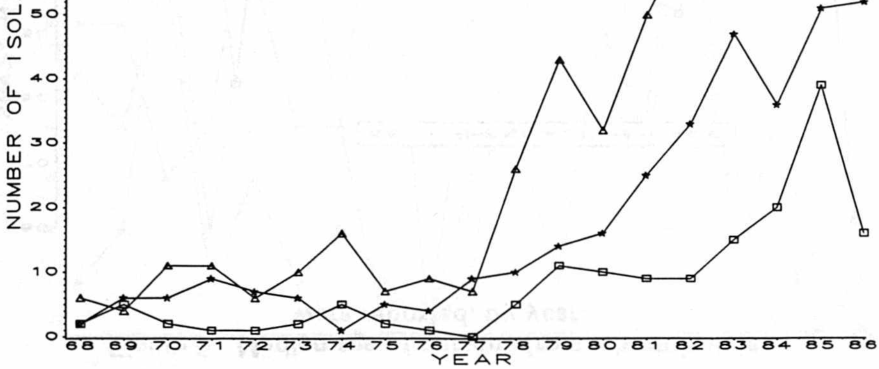


Figure 2. Percent of reported isolates from urban and rural counties, by month.

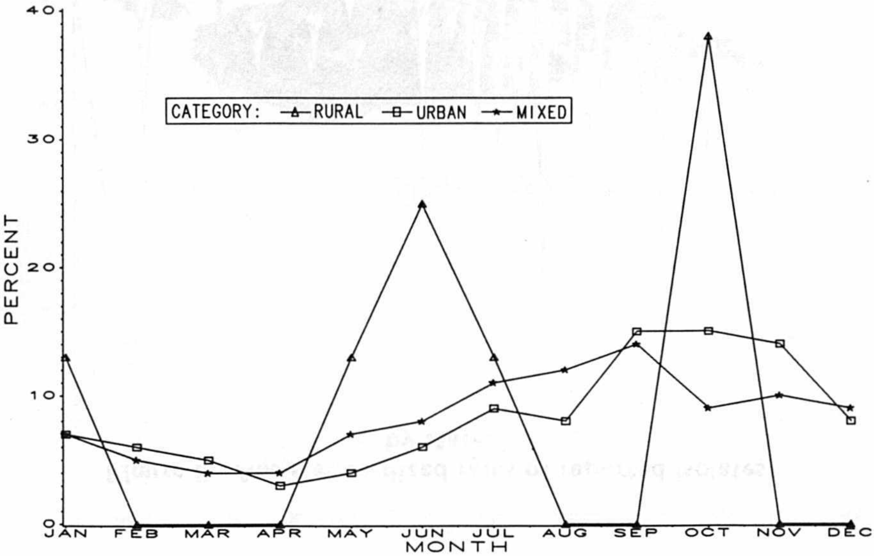
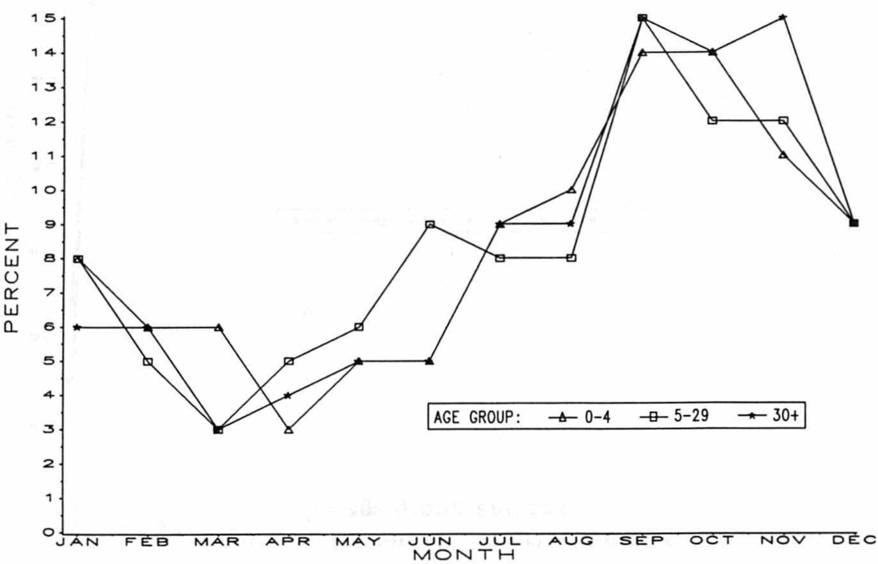


Figure 4. Percent of reported isolates, by age-group and month.



S. cerro

Figure 5. Median age of persons from whom isolates were reported, by year.

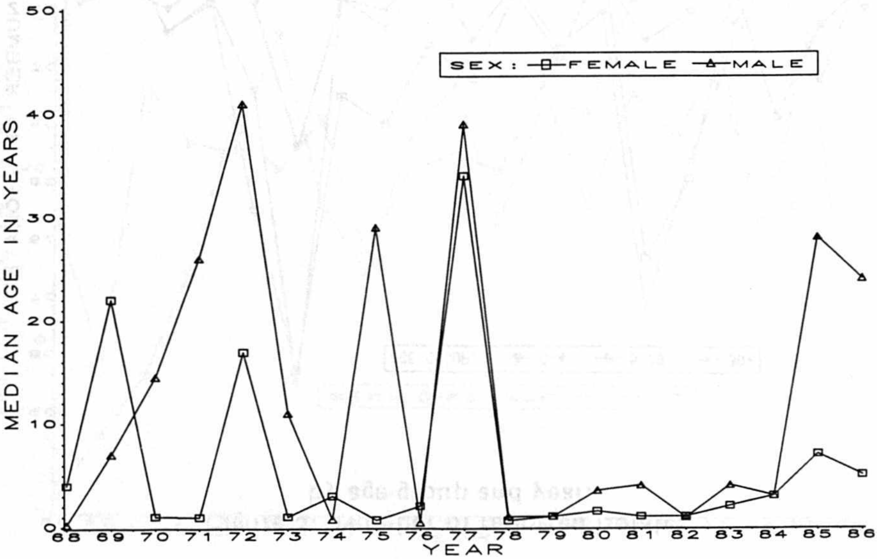


Figure 7. Reported nonhuman sources, by year.

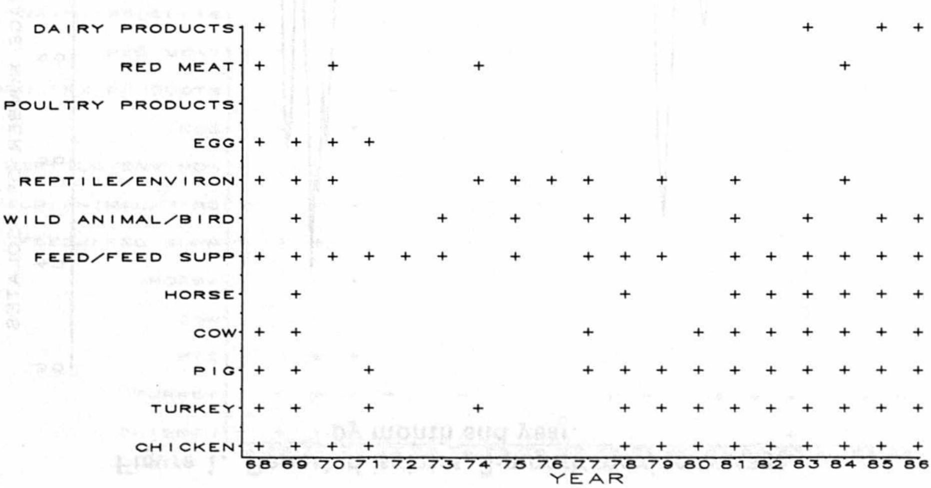


Figure 6. Percent of reported isolates, by age-group and sex.

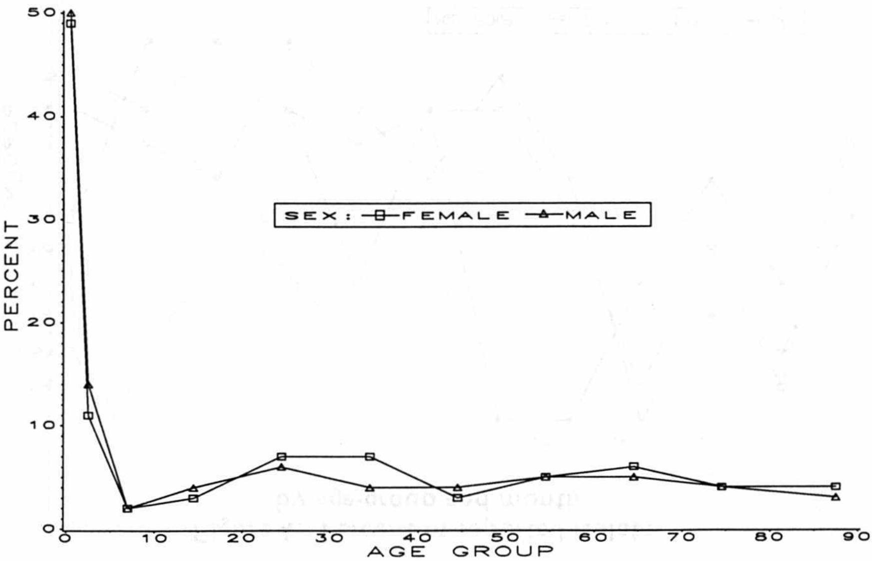
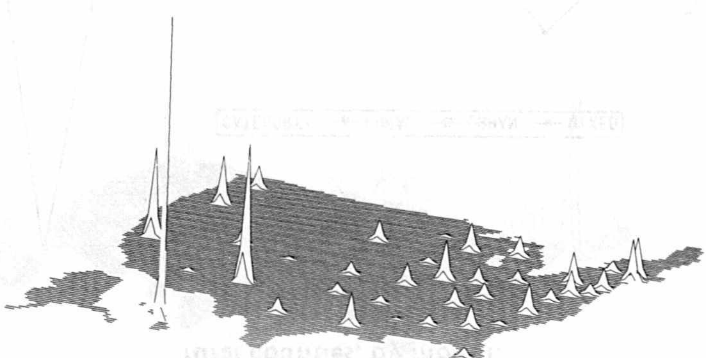


Figure 8. Age-standardized rates of reported isolates, by state.



S. cerro

Figure 1. Reported isolates, 3-month moving average, by month and year.

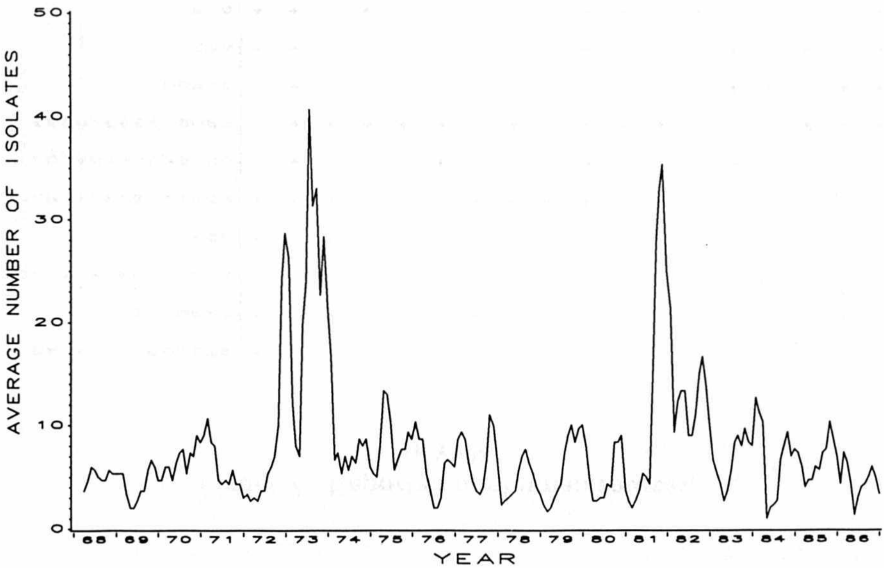


Figure 3. Number of reported isolates, by age-group and year.

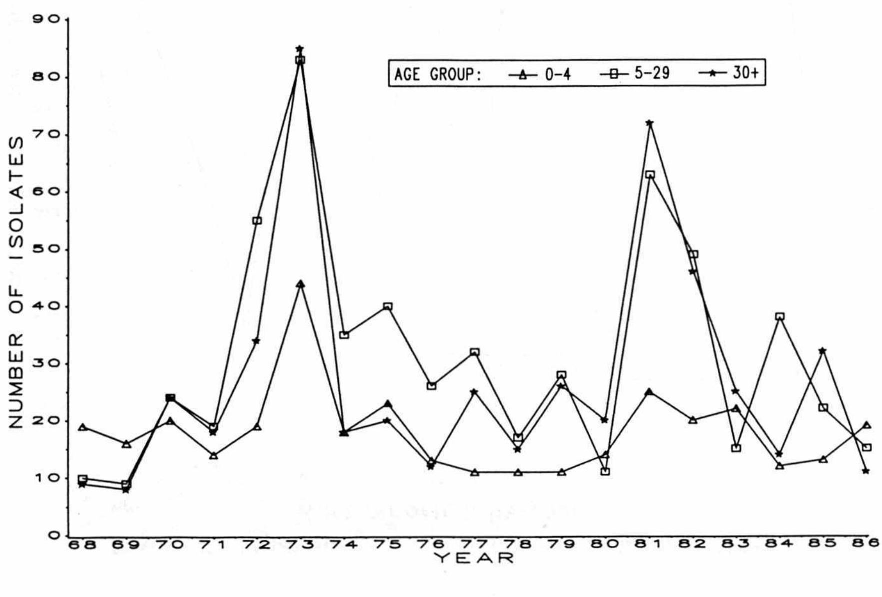


Figure 2. Percent of reported isolates from urban and rural counties, by month.

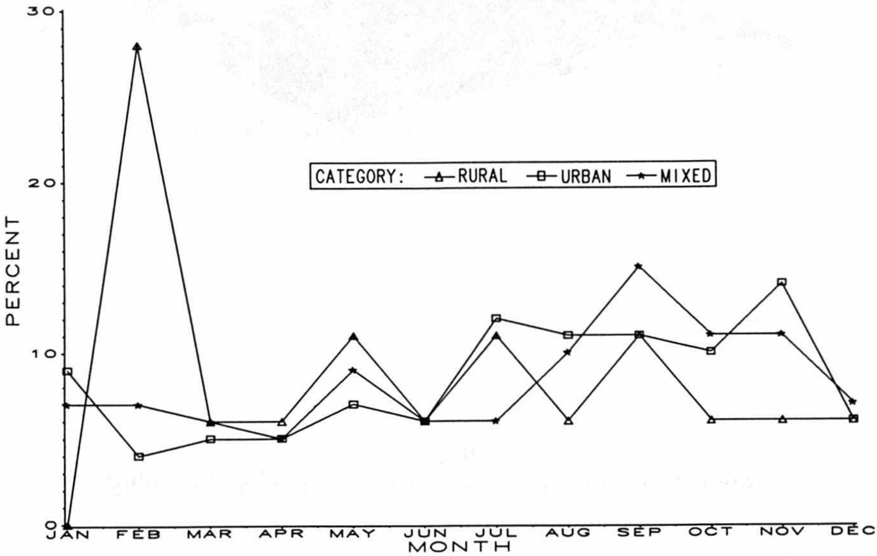
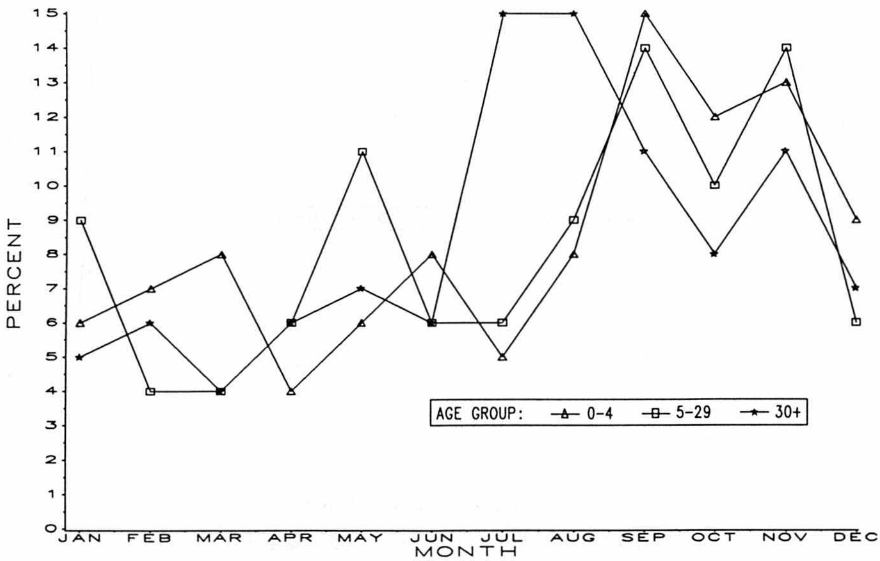


Figure 4. Percent of reported isolates, by age-group and month.



S. chester

Figure 5. Median age of persons from whom isolates were reported, by year.

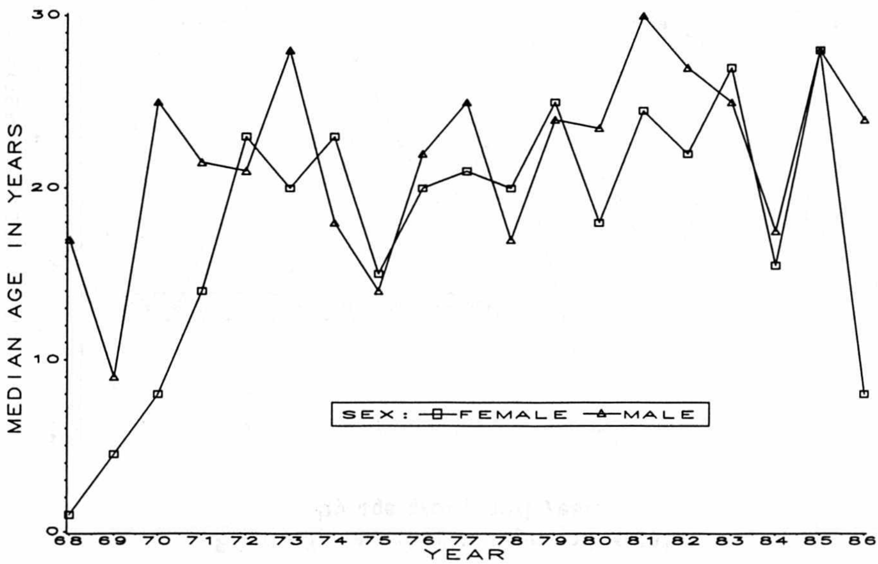


Figure 7. Reported nonhuman sources, by year.

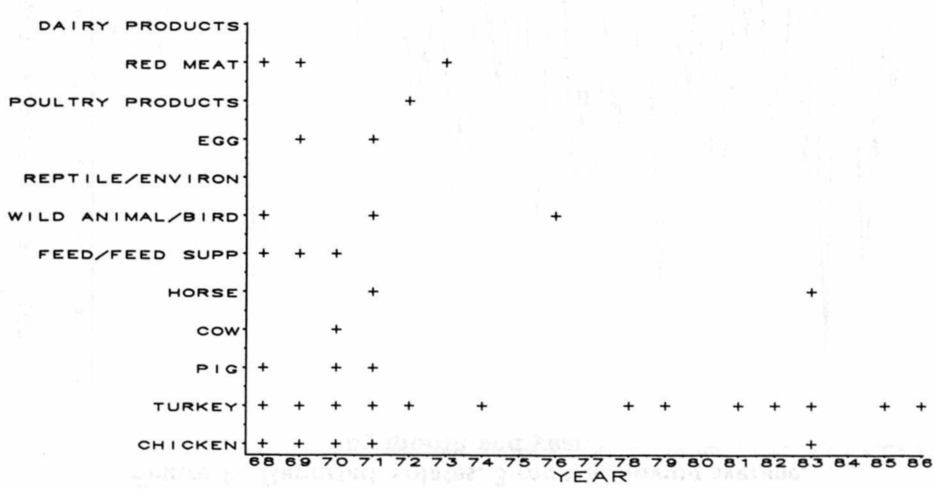


Figure 6. Percent of reported isolates, by age-group and sex.

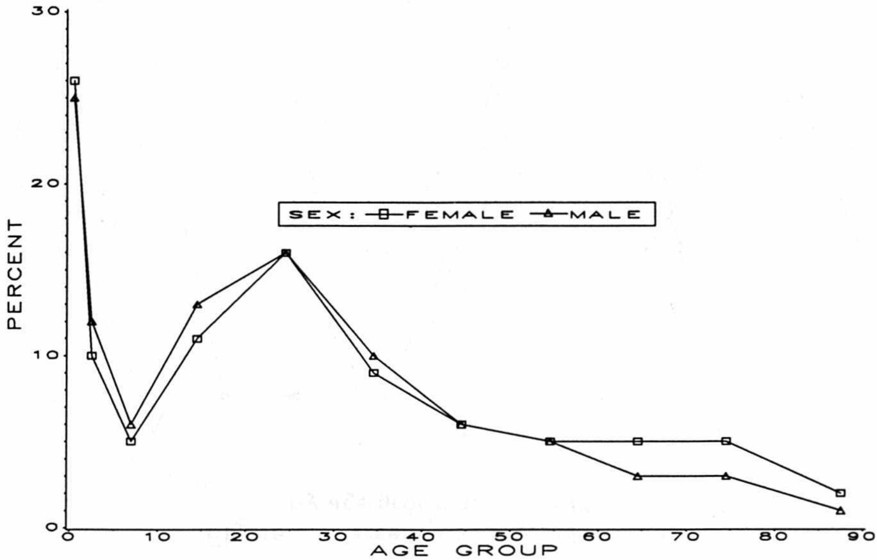
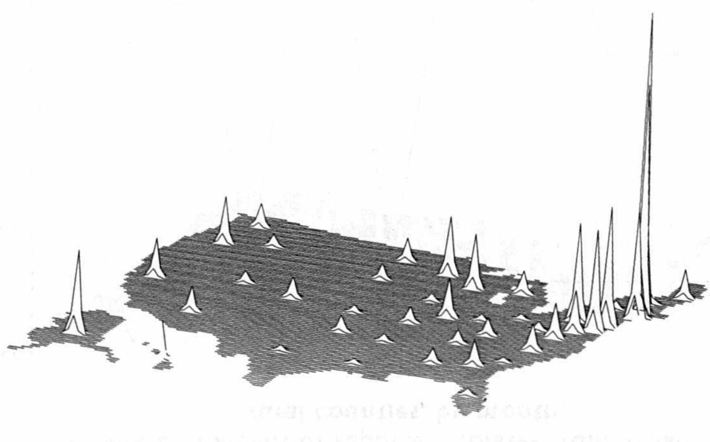


Figure 8. Age-standardized rates of reported isolates, by state.



S. chester

Figure 1. Reported isolates, 3-month moving average, by month and year.

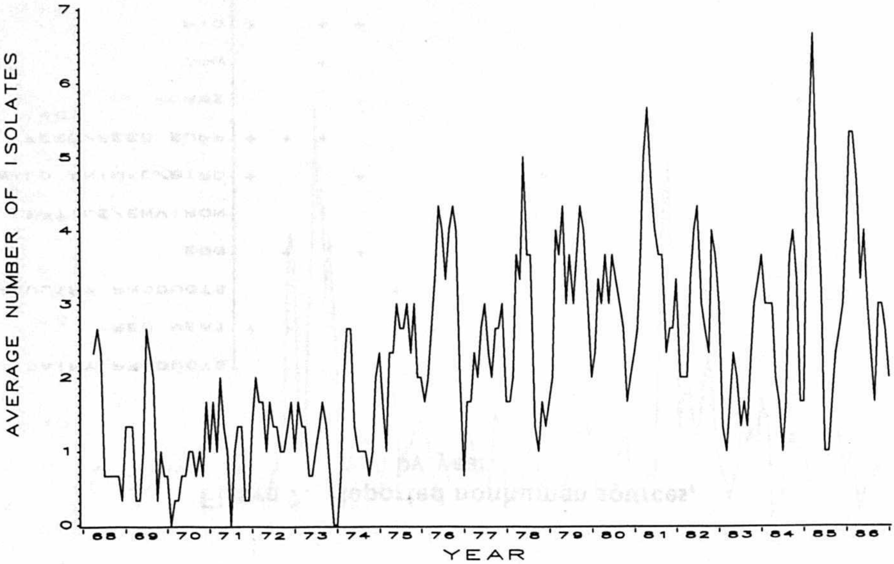


Figure 3. Number of reported isolates, by age-group and year.

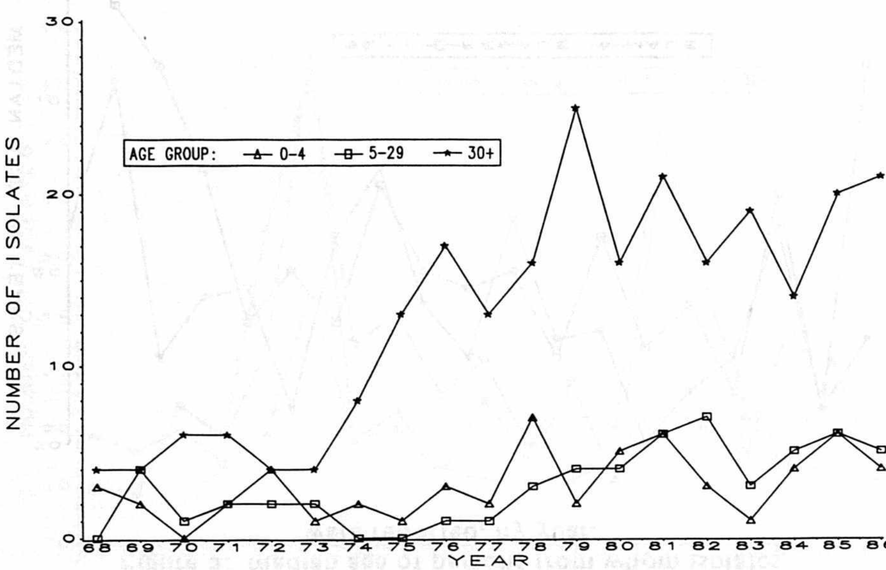


Figure 2. Percent of reported isolates from urban and rural counties, by month.

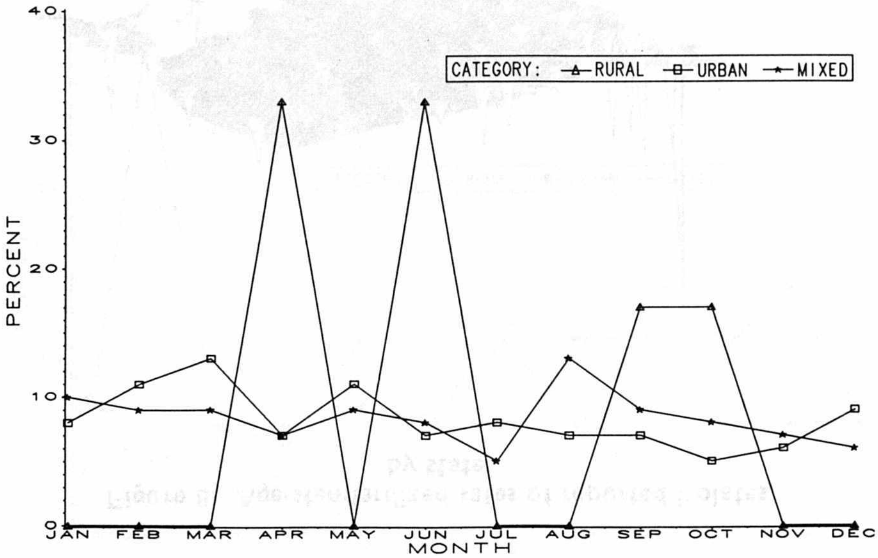
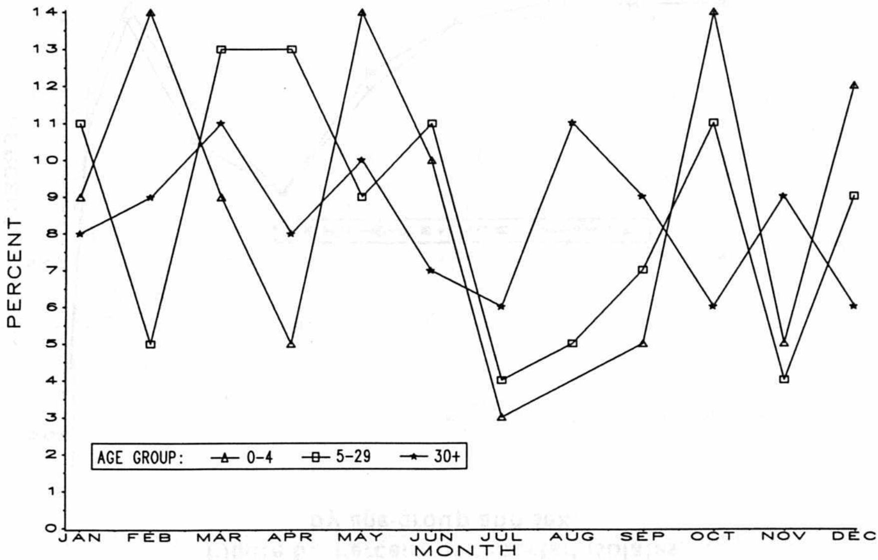


Figure 4. Percent of reported isolates, by age-group and month.



S. choleraesuis

Figure 5. Median age of persons from whom isolates were reported, by year.

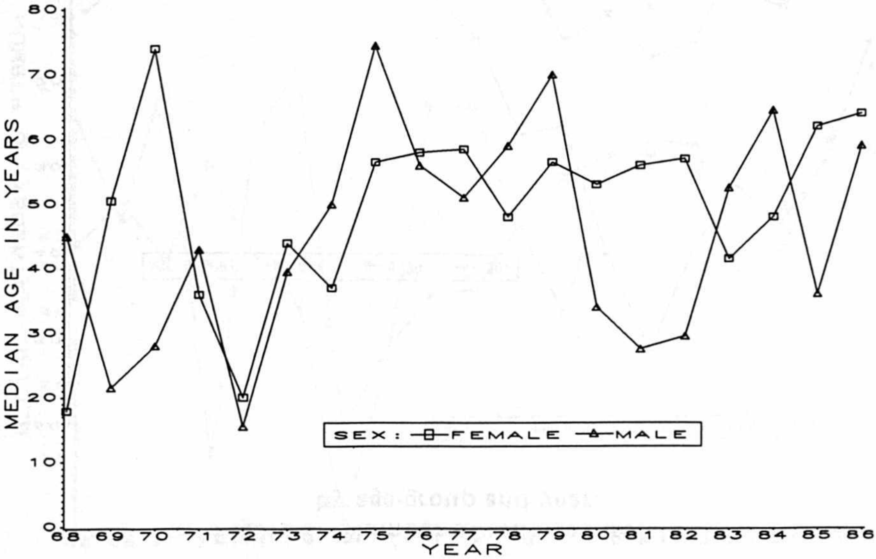


Figure 7. Reported nonhuman sources, by year.

Figure 6. Percent of reported isolates, by age-group and sex.

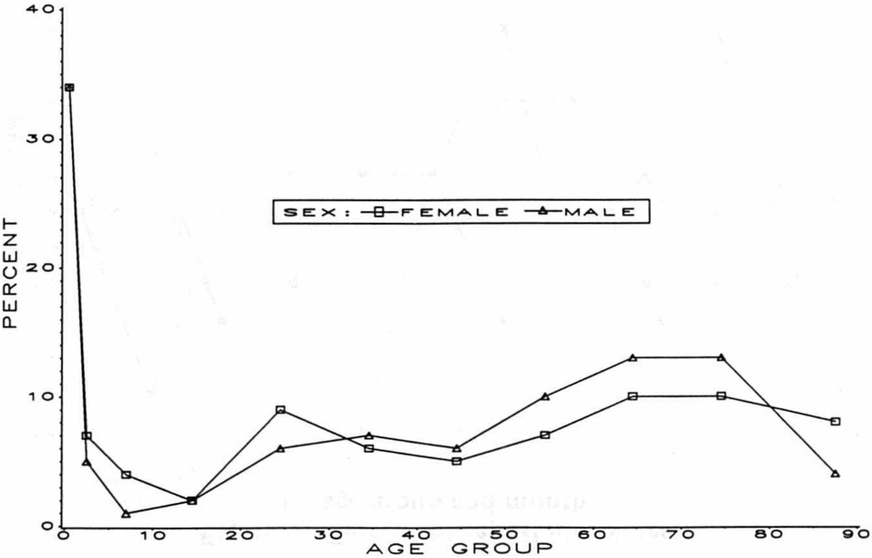


Figure 8. Age-standardized rates of reported isolates, by state.

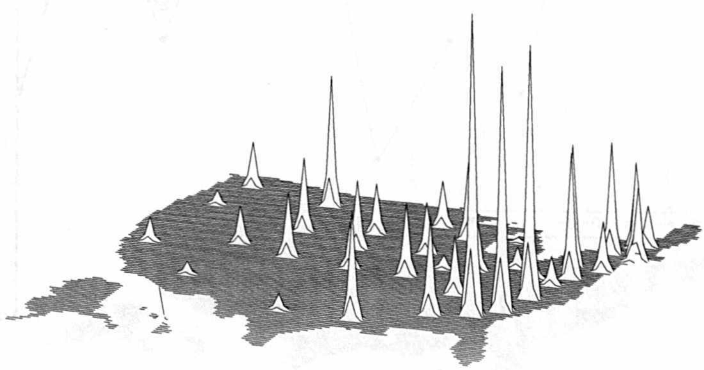


Figure 1. Reported isolates, 3-month moving average, by month and year.

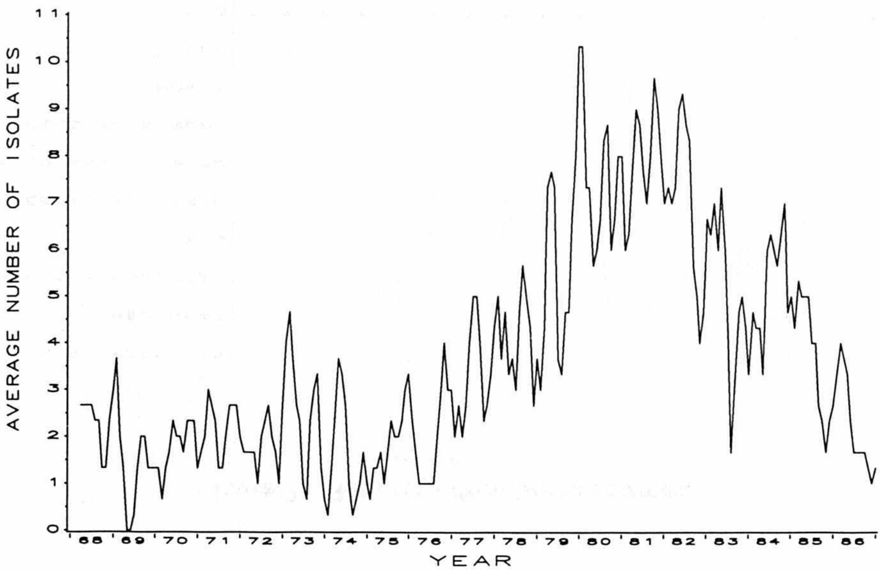


Figure 3. Number of reported isolates, by age-group and year.

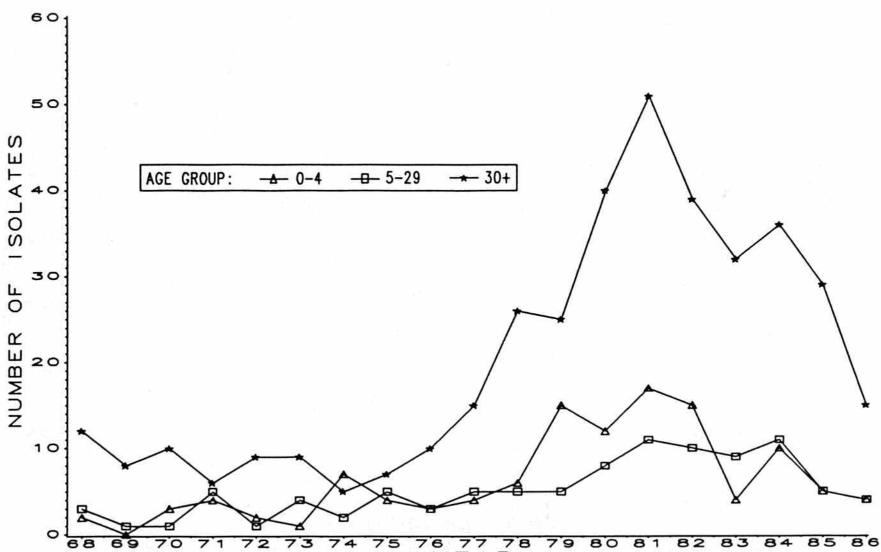


Figure 2. Percent of reported isolates from urban and rural counties, by month.

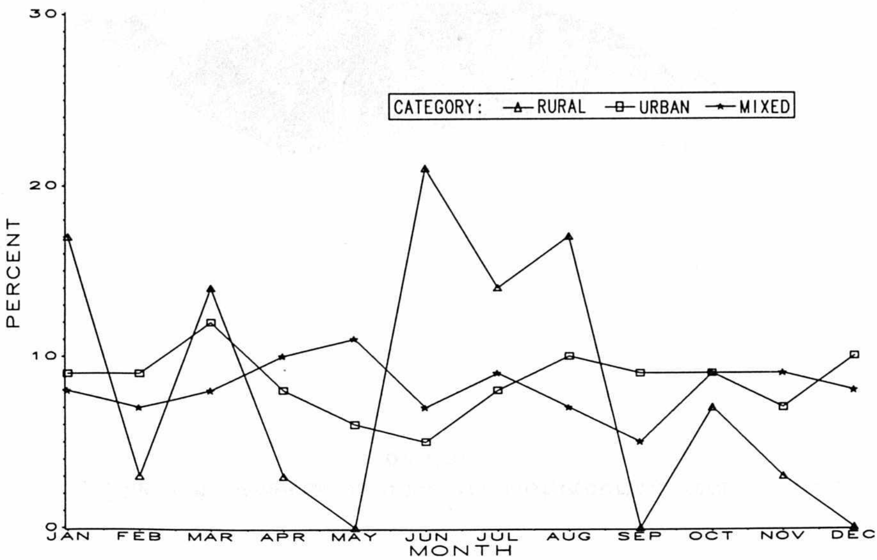


Figure 4. Percent of reported isolates, by age-group and month.

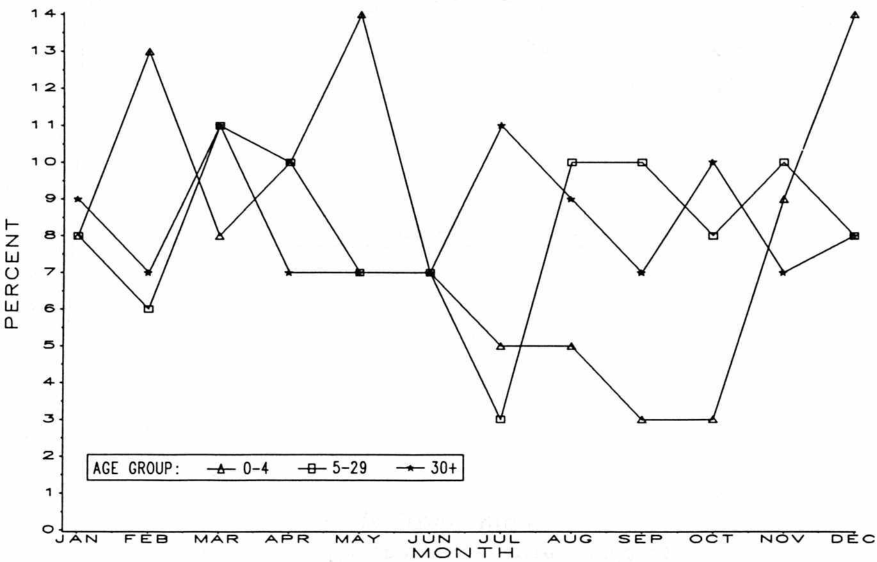


Figure 5. Median age of persons from whom isolates were reported, by year.

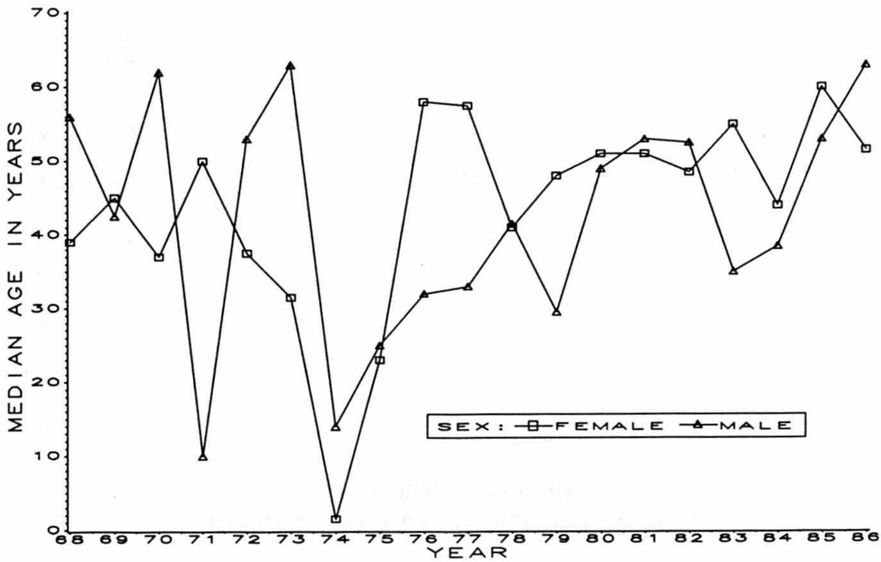


Figure 7. Reported nonhuman sources, by year.

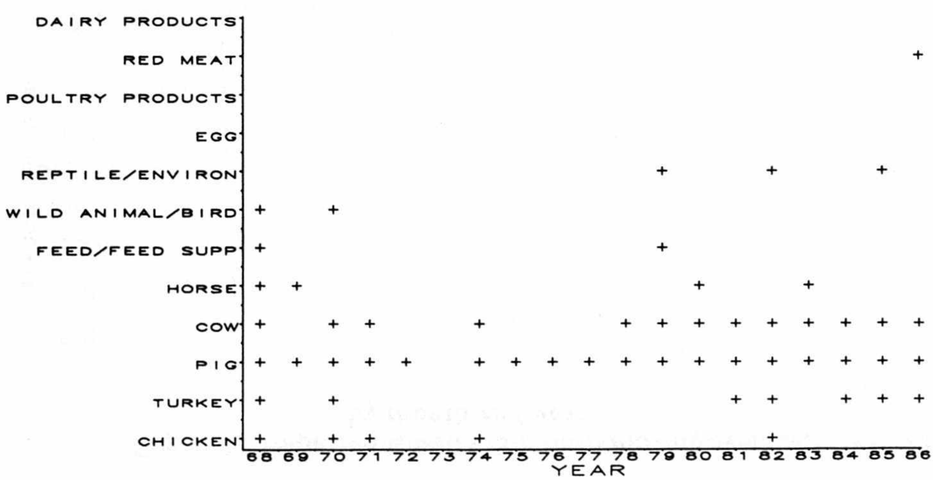


Figure 6. Percent of reported isolates, by age-group and sex.

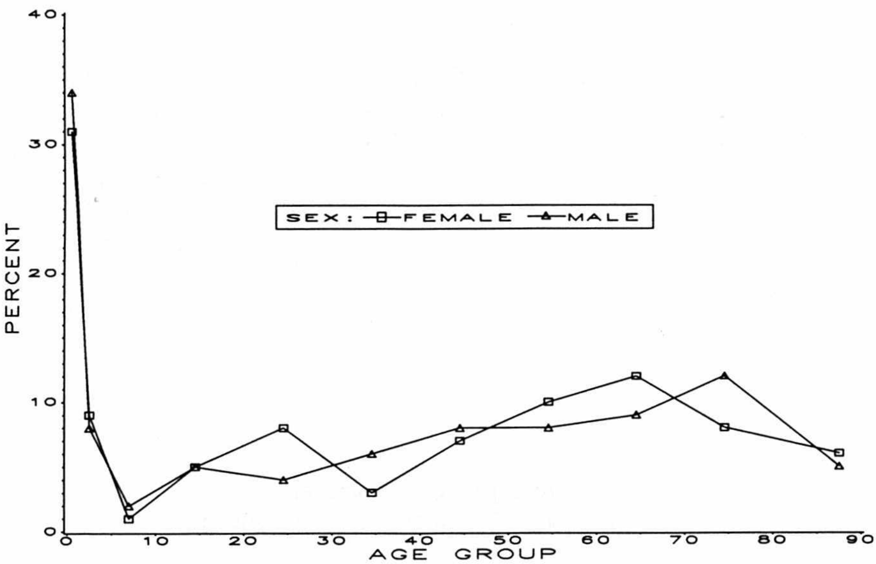


Figure 8. Age-standardized rates of reported isolates, by state.

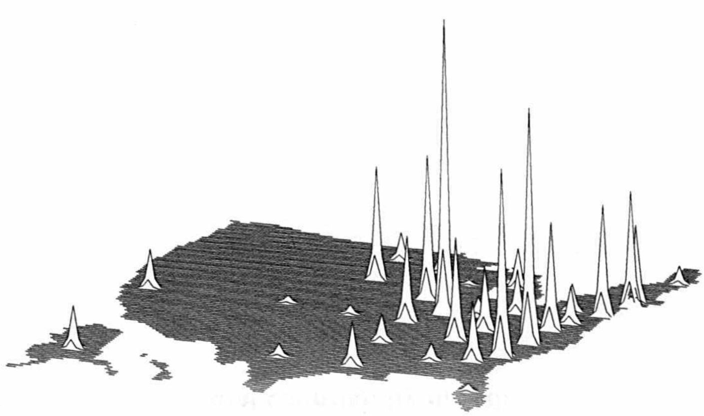


Figure 1. Reported isolates, 3-month moving average, by month and year.

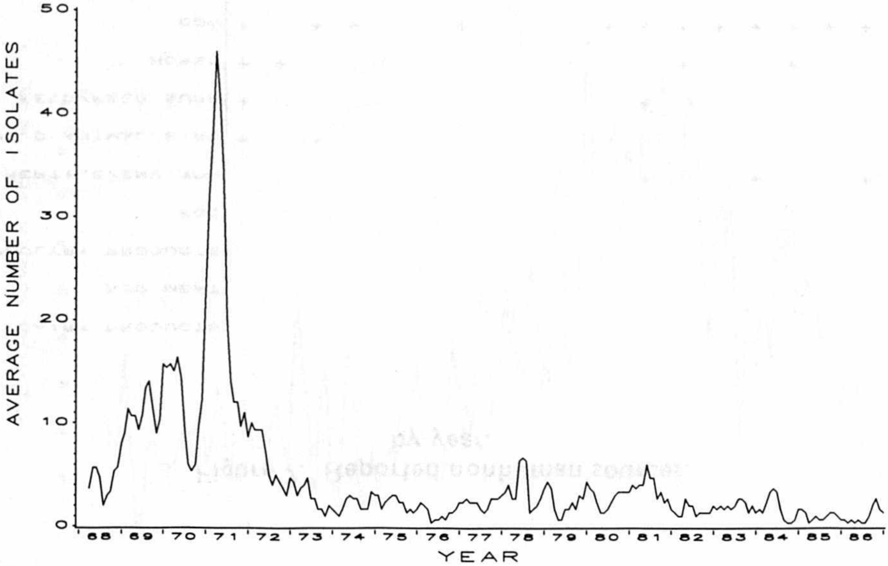


Figure 3. Number of reported isolates, by age-group and year.

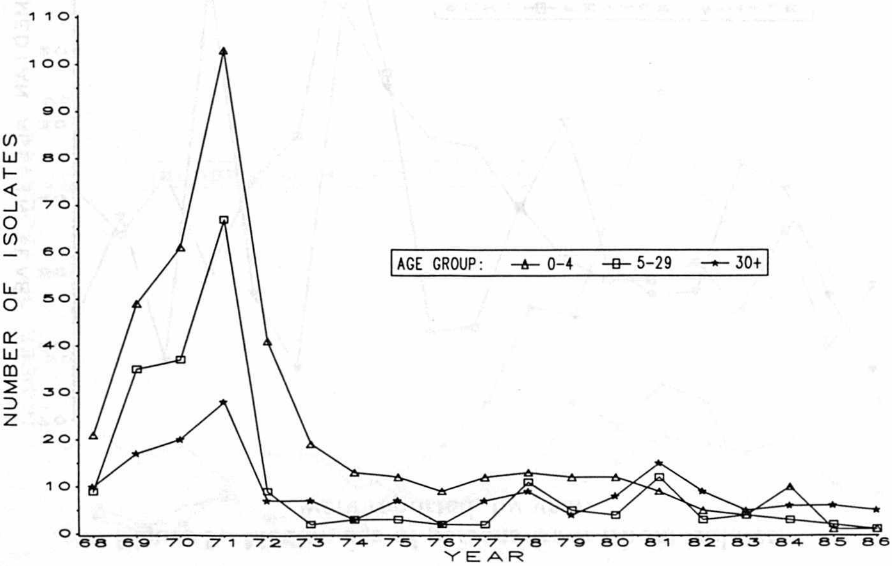


Figure 2. Percent of reported isolates from urban and rural counties, by month.

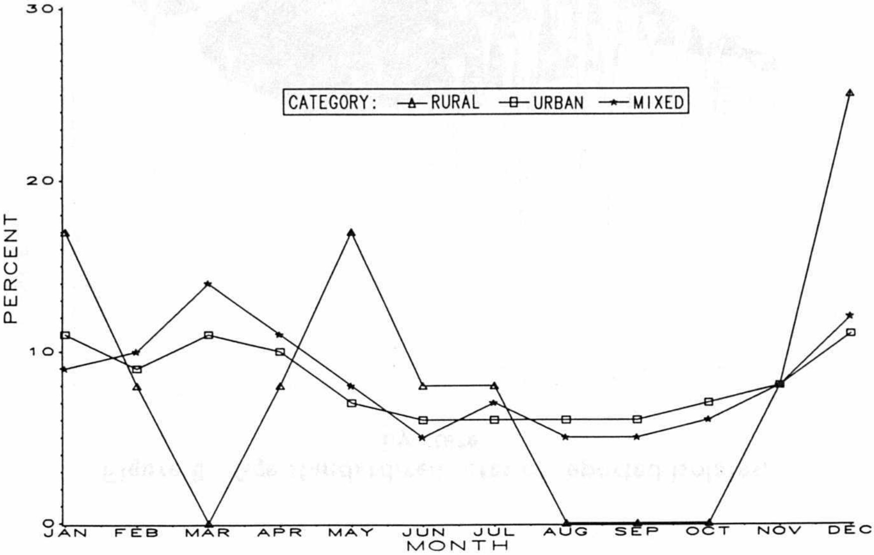
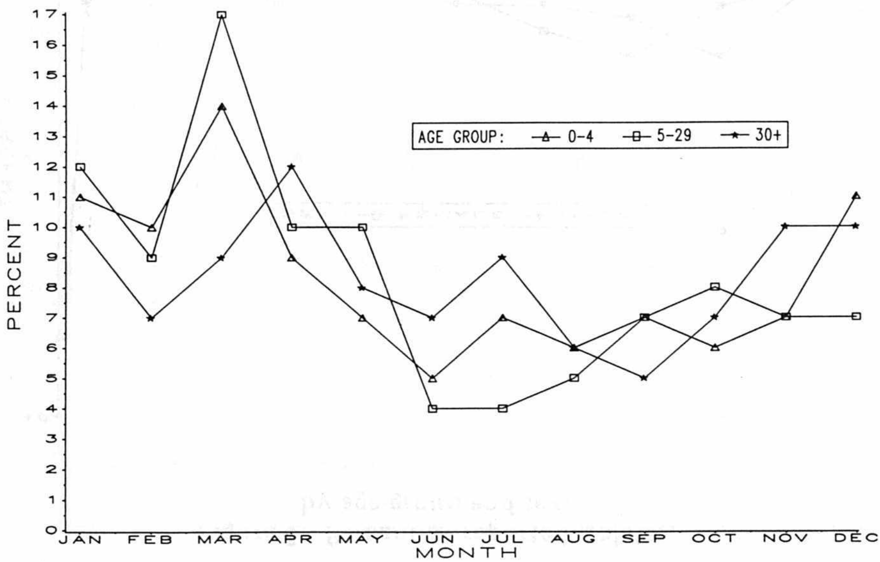


Figure 4. Percent of reported isolates, by age-group and month.



S. cubana

Figure 5. Median age of persons from whom isolates were reported, by year.

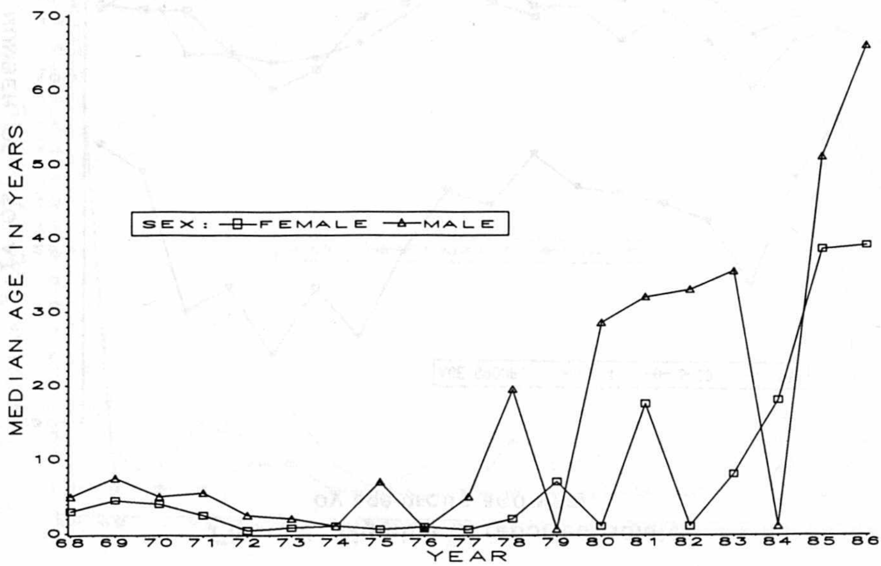


Figure 7. Reported nonhuman sources, by year.

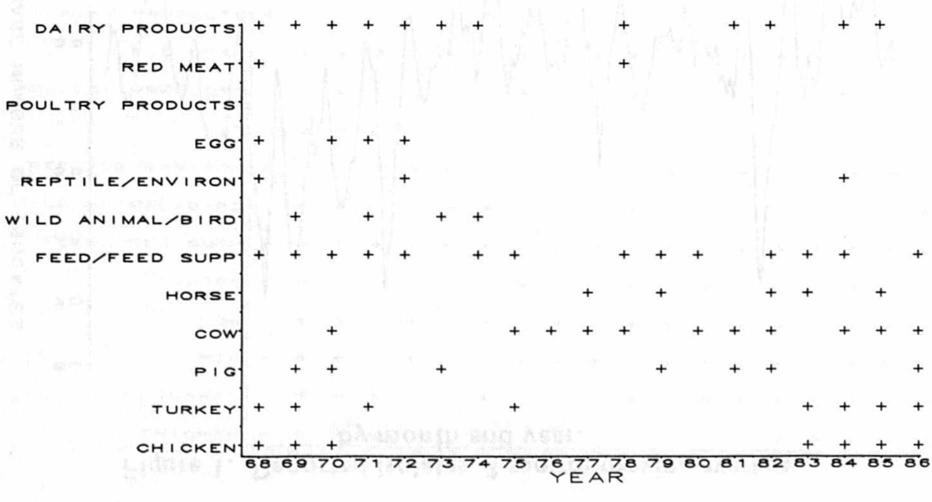


Figure 6. Percent of reported isolates, by age-group and sex.

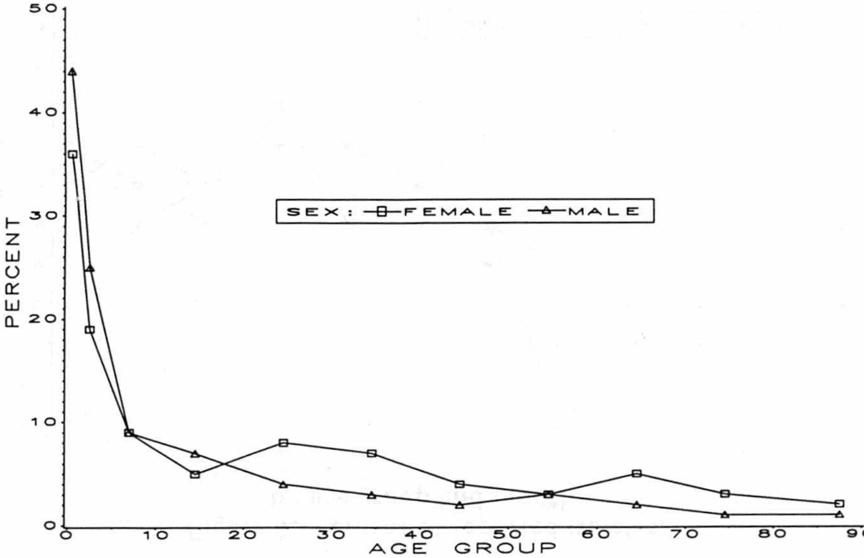
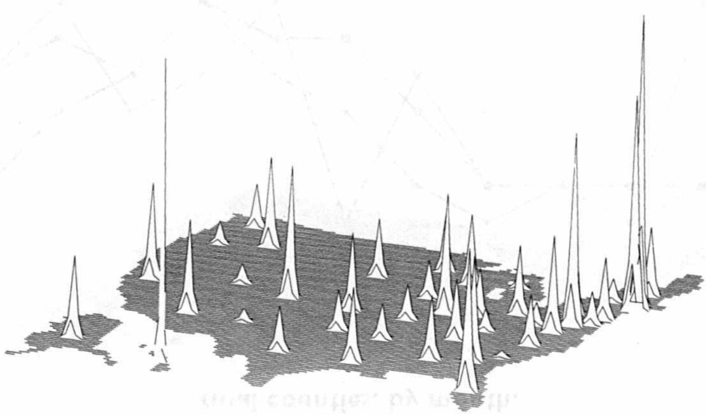


Figure 8. Age-standardized rates of reported isolates, by state.



S. cubana

Figure 1. Reported isolates, 3-month moving average, by month and year.

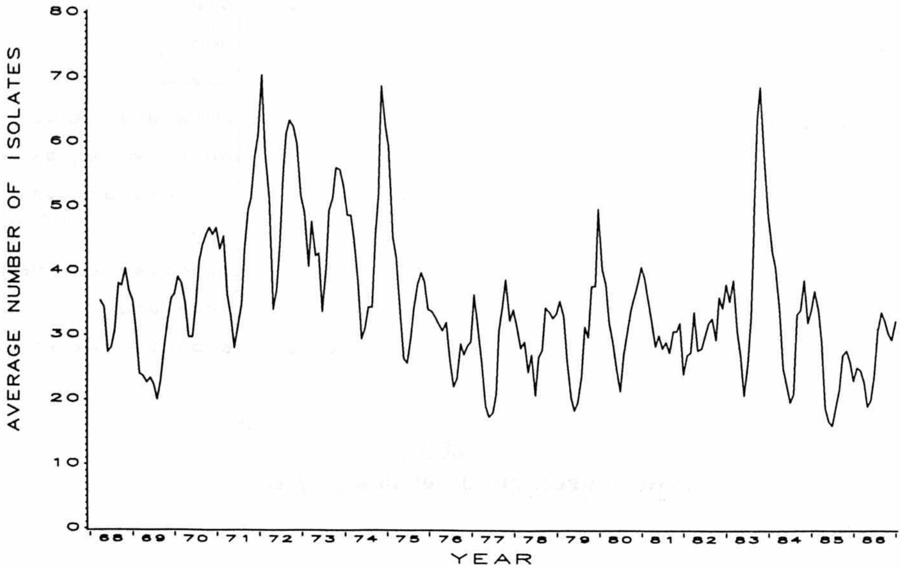


Figure 3. Number of reported isolates, by age-group and year.

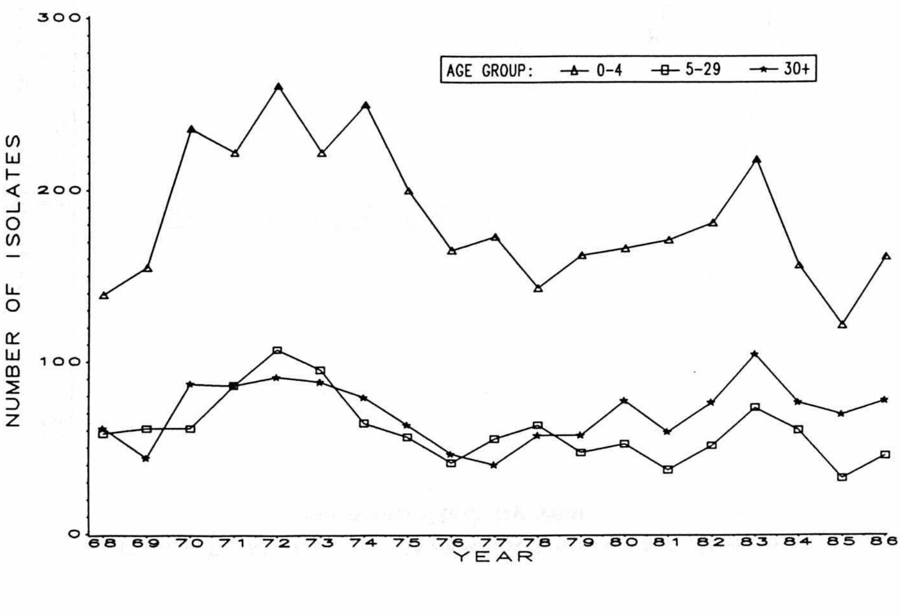


Figure 2. Percent of reported isolates from urban and rural counties, by month.

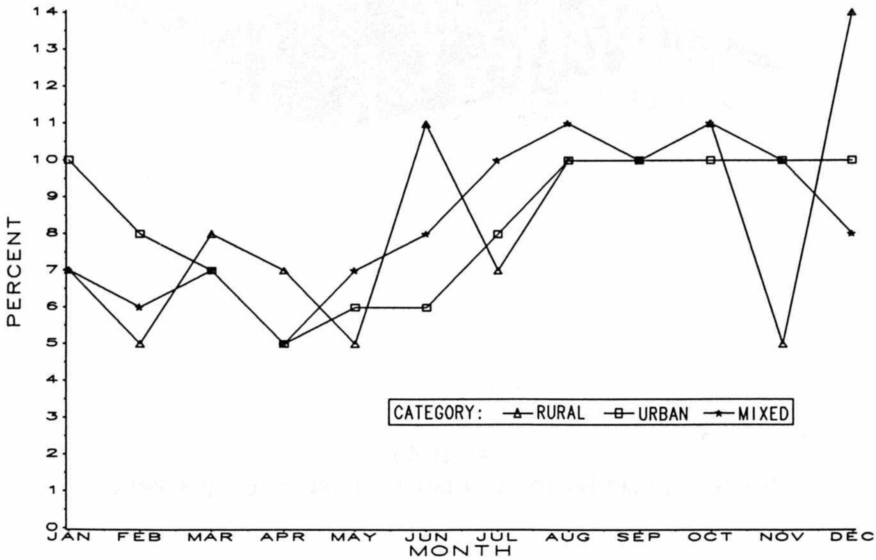
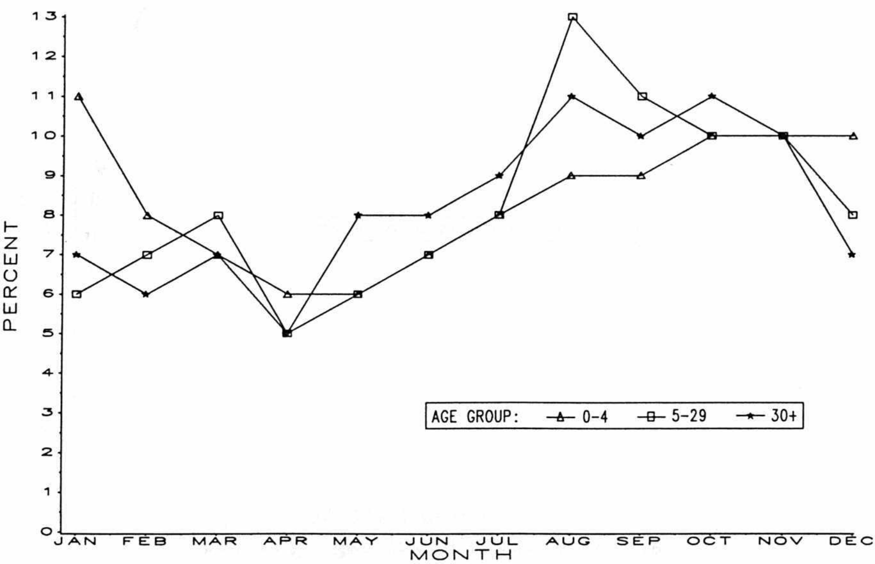


Figure 4. Percent of reported isolates, by age-group and month.



S. derby

Figure 5. Median age of persons from whom isolates were reported, by year.

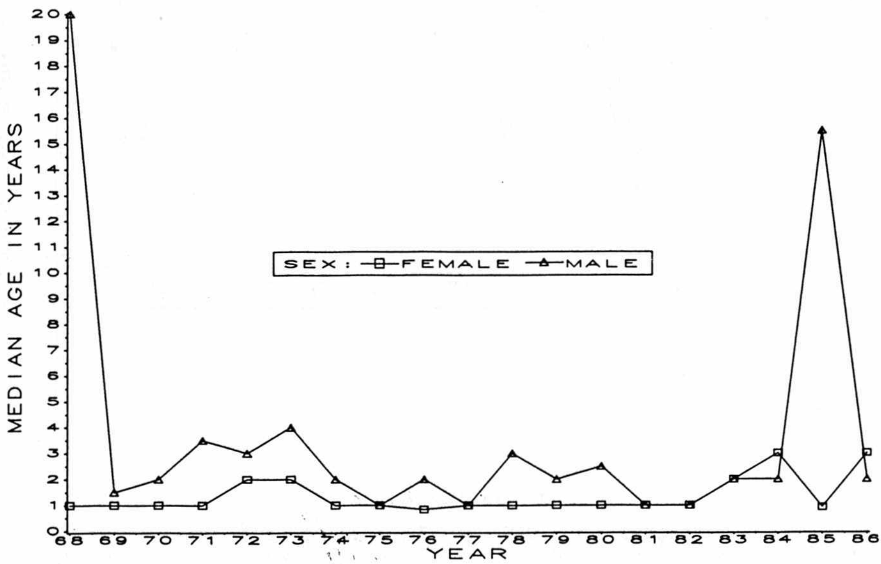


Figure 7. Reported nonhuman sources, by year.

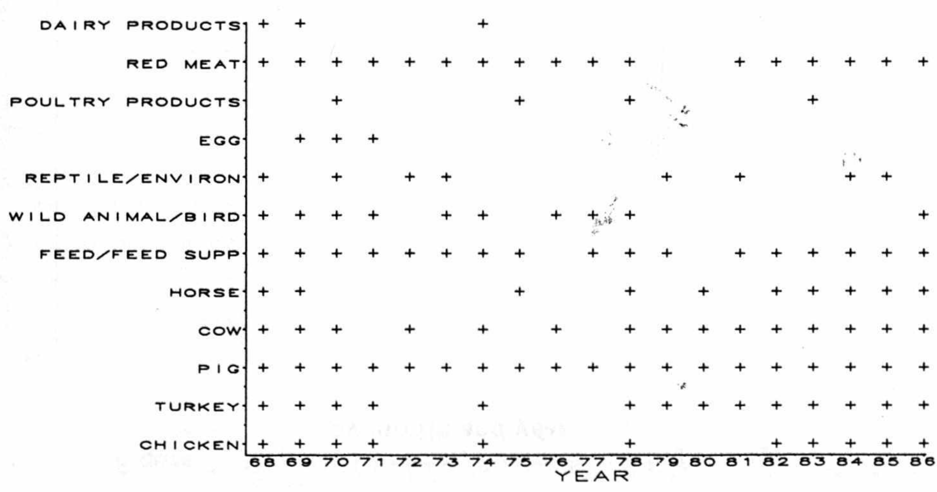


Figure 6. Percent of reported isolates, by age-group and sex.

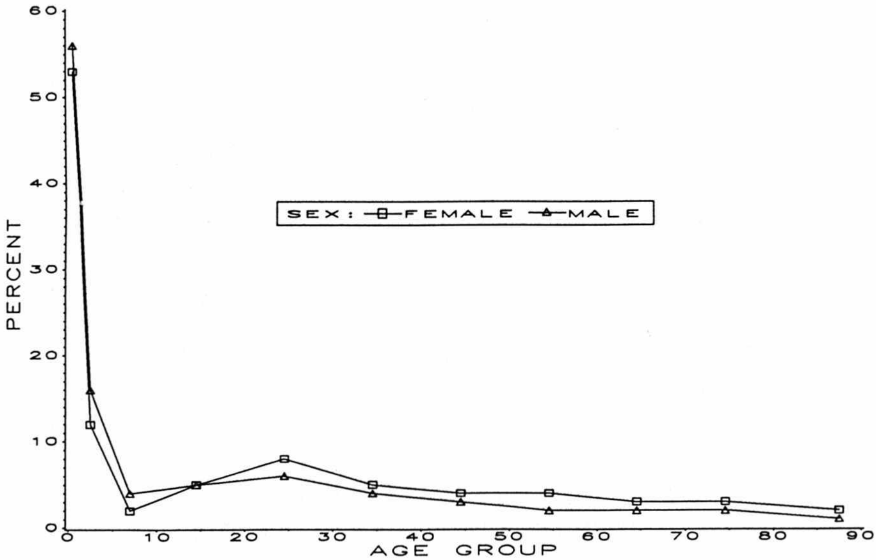


Figure 8. Age-standardized rates of reported isolates, by state.

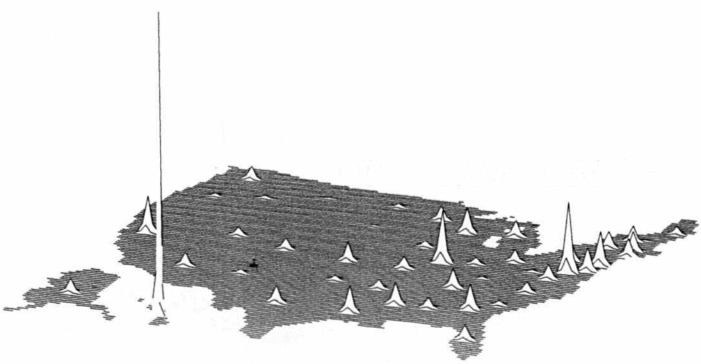


Figure 1. Reported isolates, 3-month moving average, by month and year.

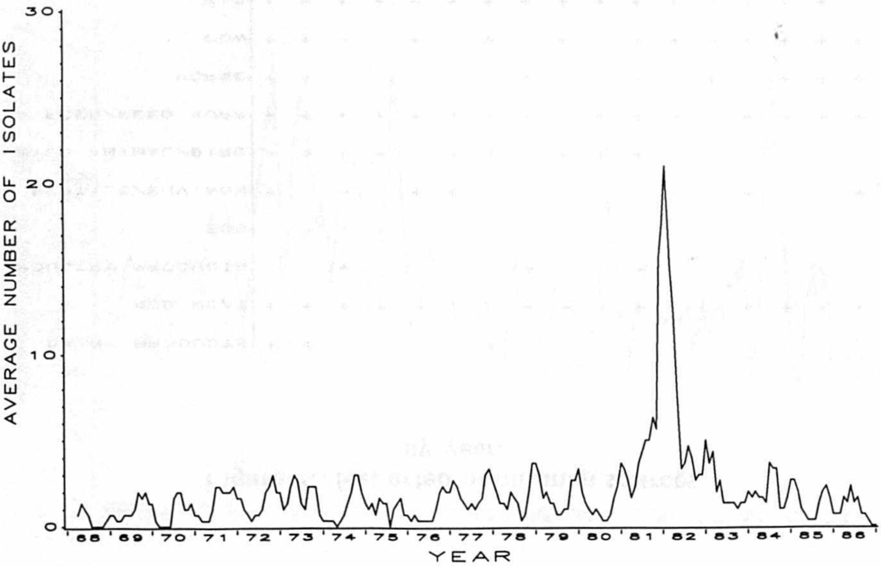


Figure 3. Number of reported isolates, by age-group and year.

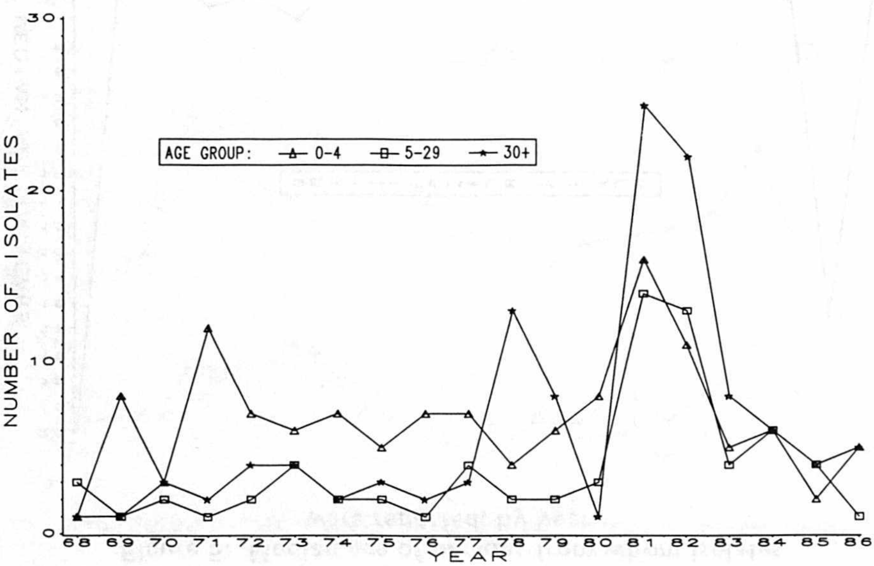


Figure 2. Percent of reported isolates from urban and rural counties, by month.

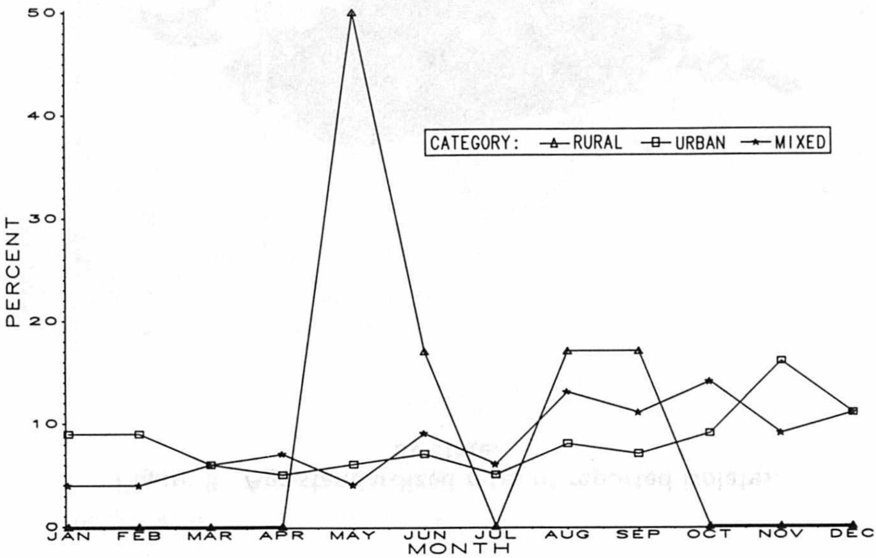
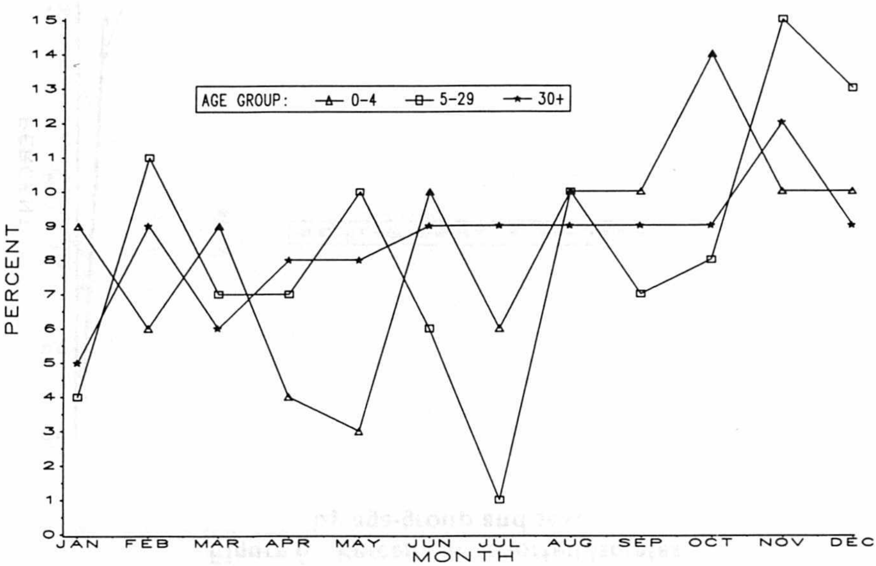


Figure 4. Percent of reported isolates, by age-group and month.



S. drypool

Figure 5. Median age of persons from whom isolates were reported, by year.

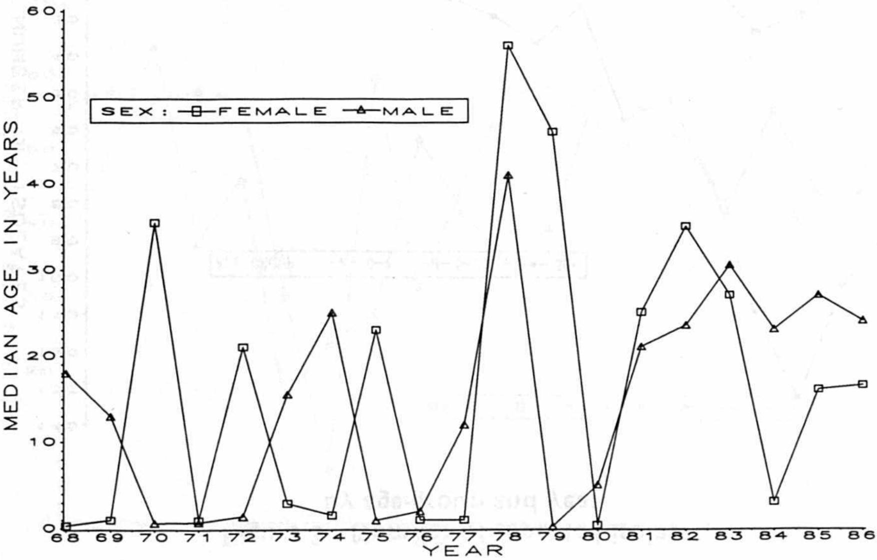


Figure 7. Reported nonhuman sources, by year.

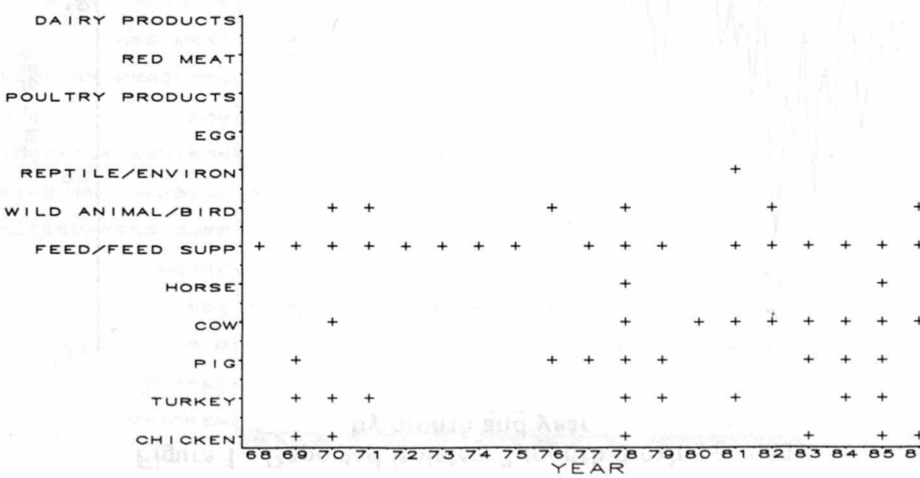


Figure 6. Percent of reported isolates, by age-group and sex.

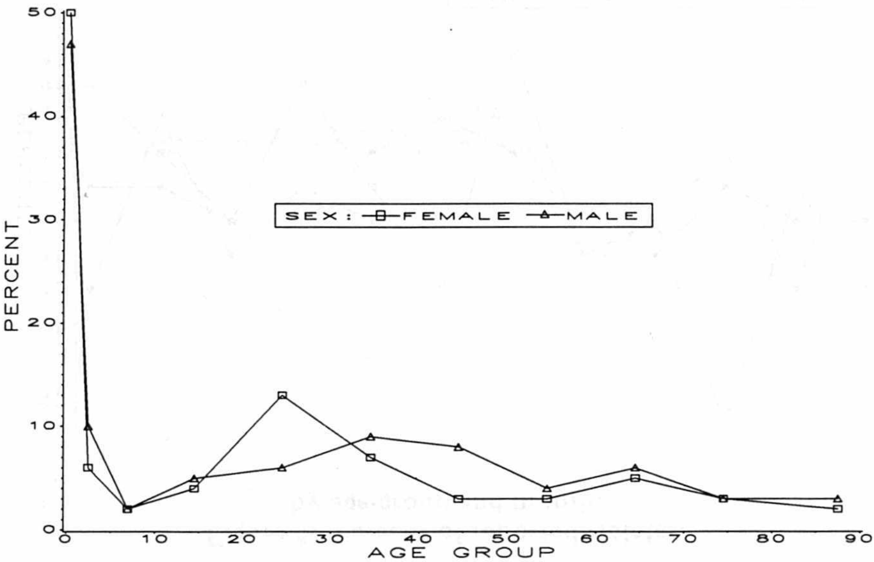


Figure 8. Age-standardized rates of reported isolates, by state.

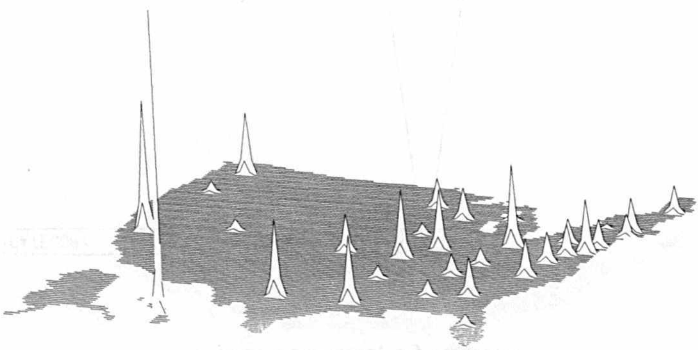


Figure 1. Reported isolates, 3-month moving average, by month and year.

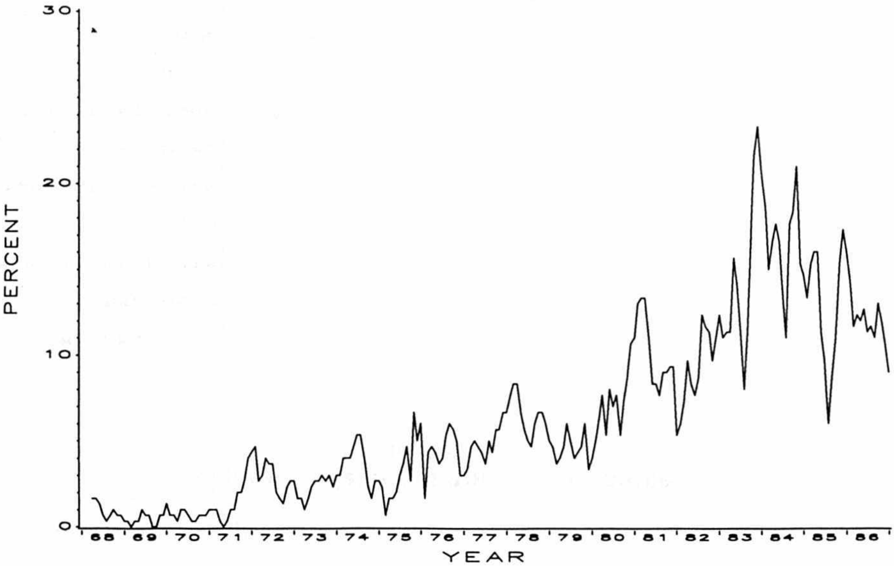


Figure 3. Number of reported isolates, by age-group and year.

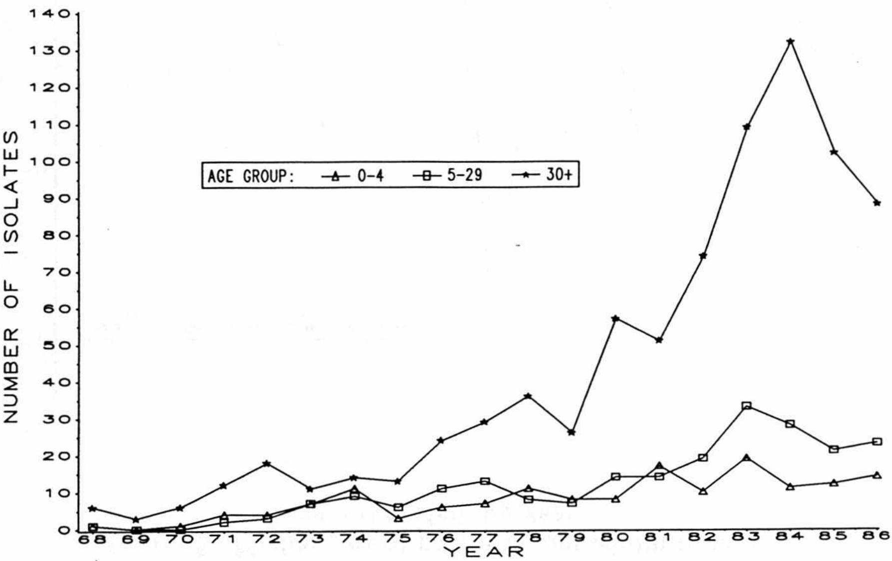


Figure 2. Percent of reported isolates from urban and rural counties, by month.

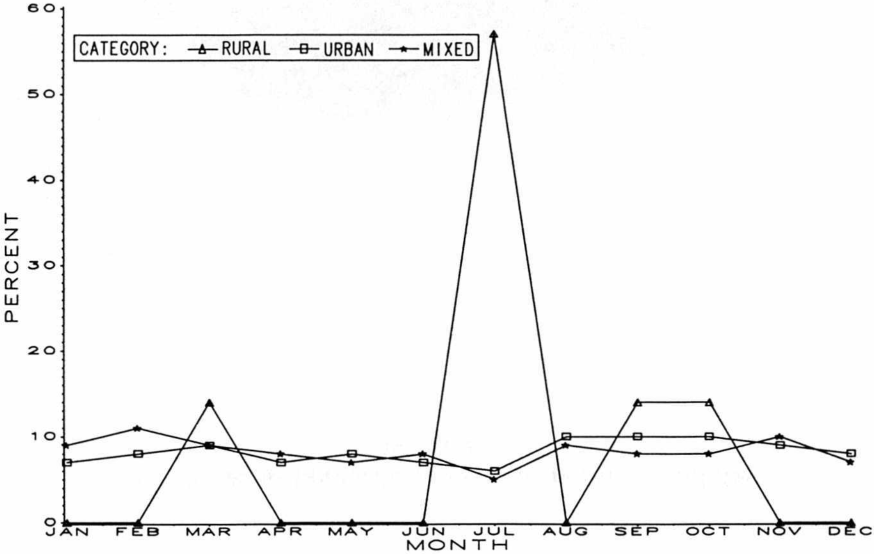
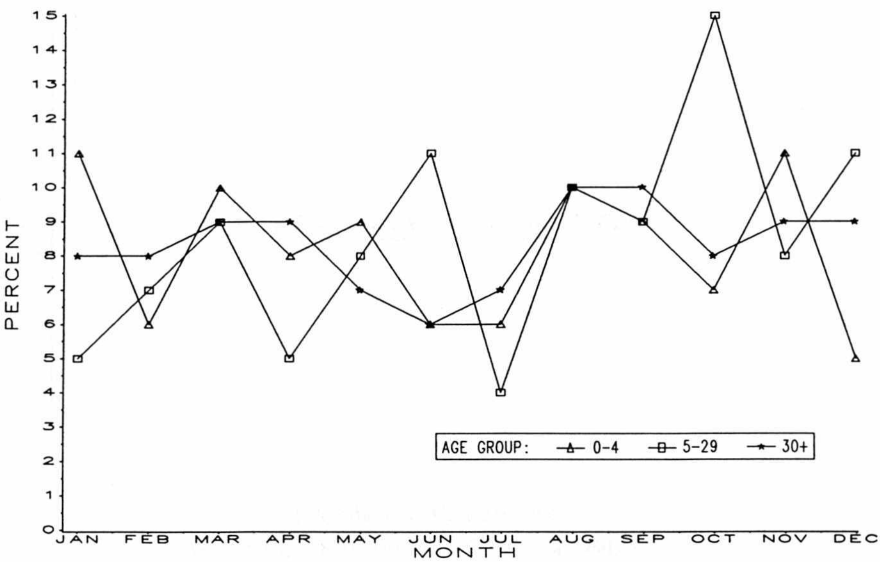


Figure 4. Percent of reported isolates, by age-group and month.



S. dublin

Figure 5. Median age of persons from whom isolates were reported, by year.

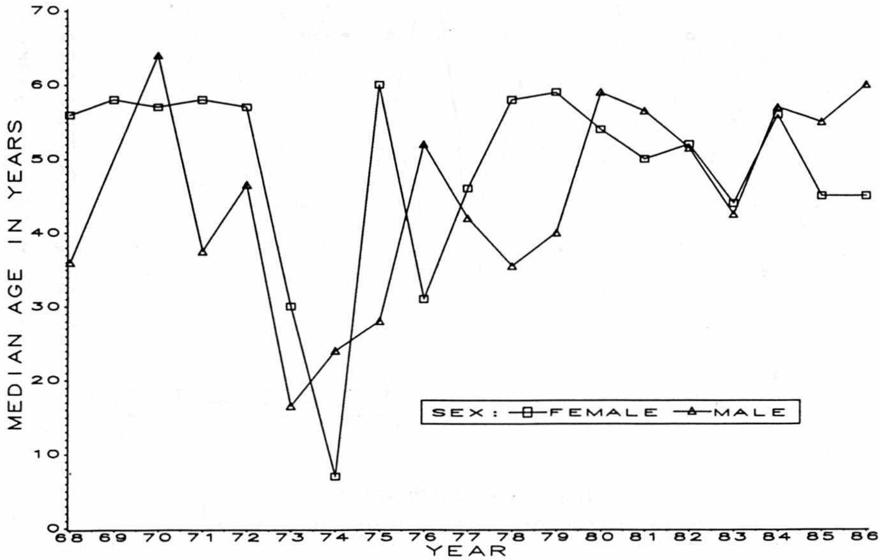


Figure 7. Reported nonhuman sources, by year.

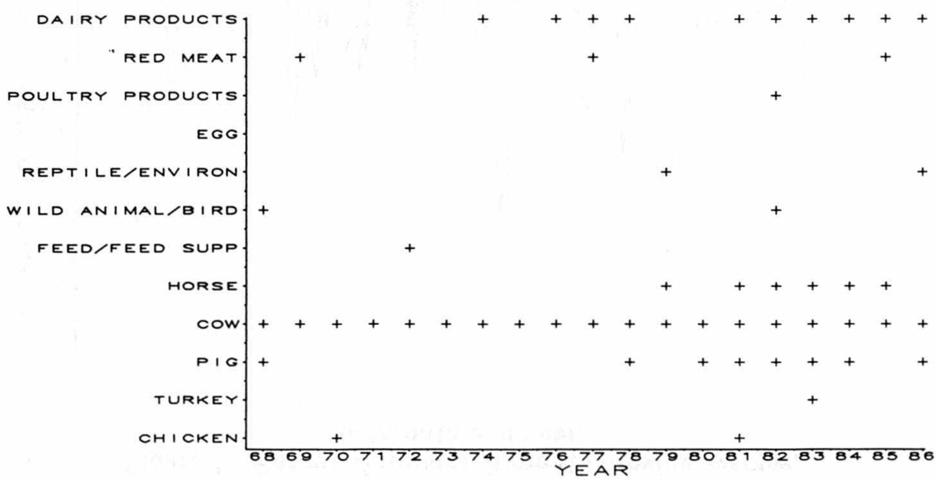


Figure 6. Percent of reported isolates, by age-group and sex.

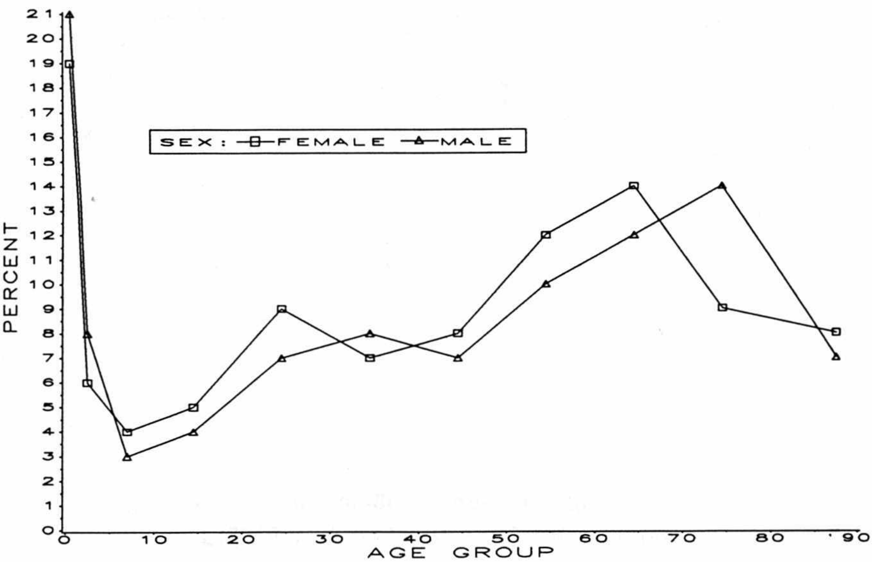


Figure 8. Age-standardized rates of reported isolates, by state.

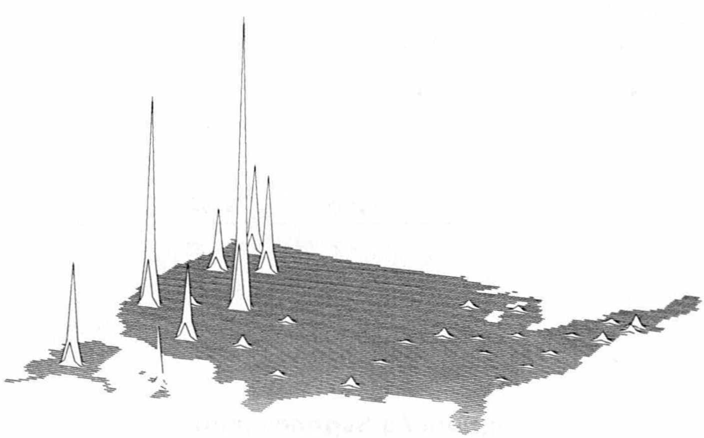


Figure 1. Reported isolates, 3-month moving average, by month and year.

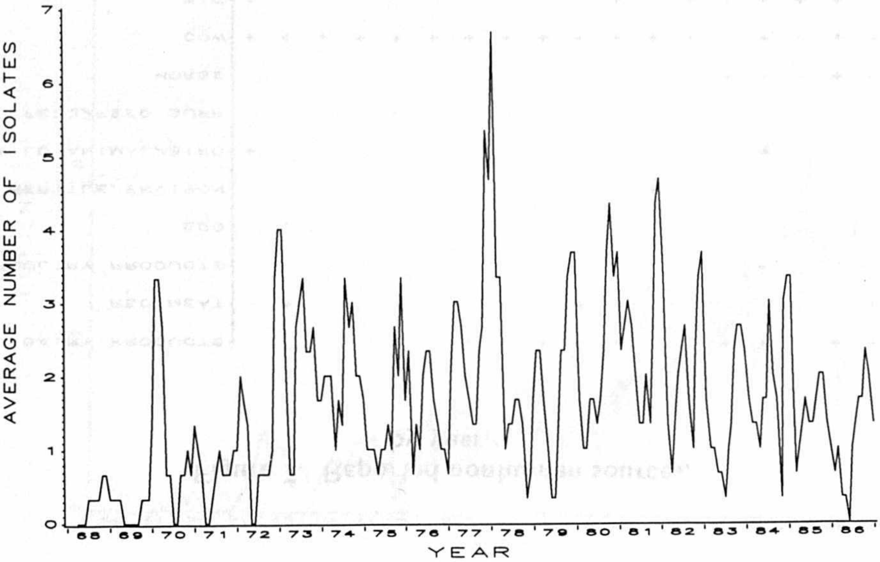


Figure 3. Number of reported isolates, by age-group and year.

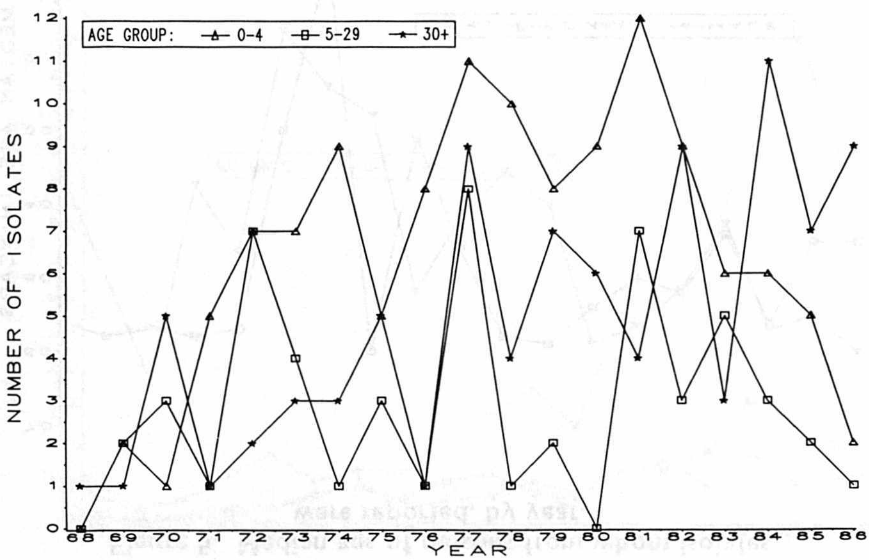


Figure 2. Percent of reported isolates from urban and rural counties, by month.

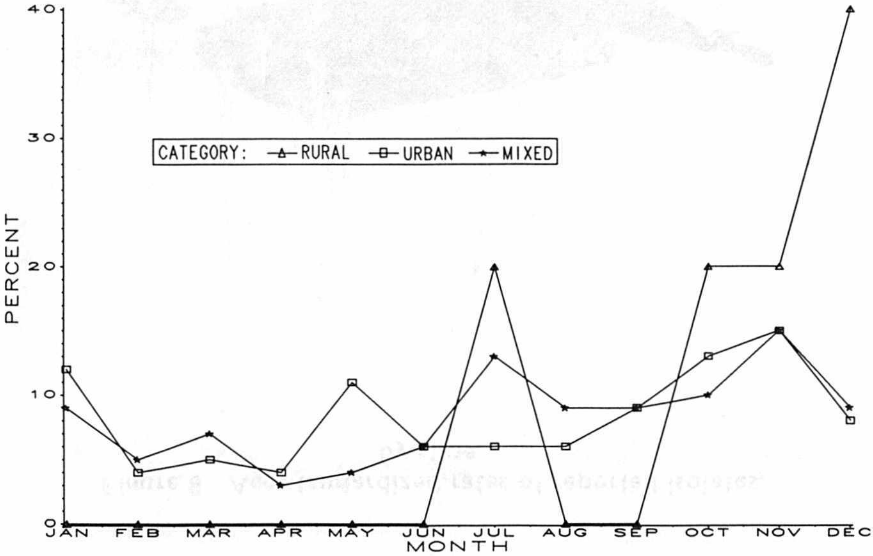
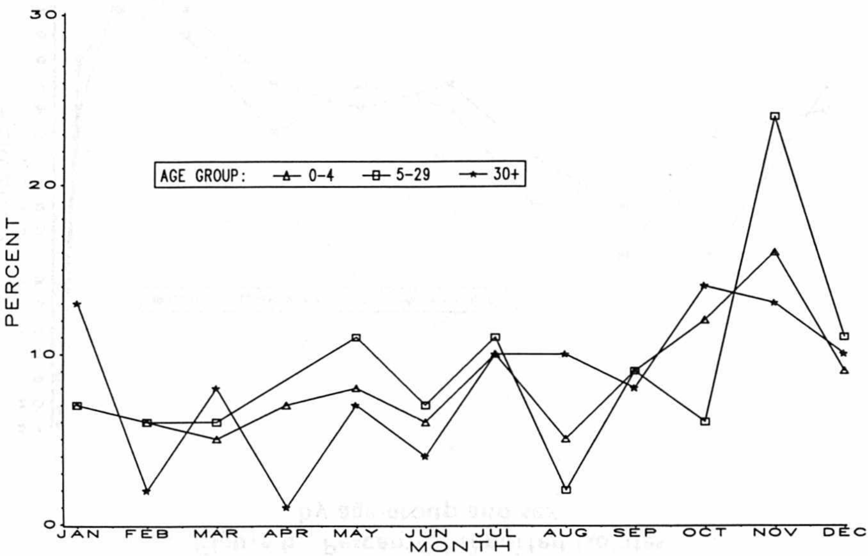


Figure 4. Percent of reported isolates, by age-group and month.



S. duesseldorf

Figure 5. Median age of persons from whom isolates were reported, by year.

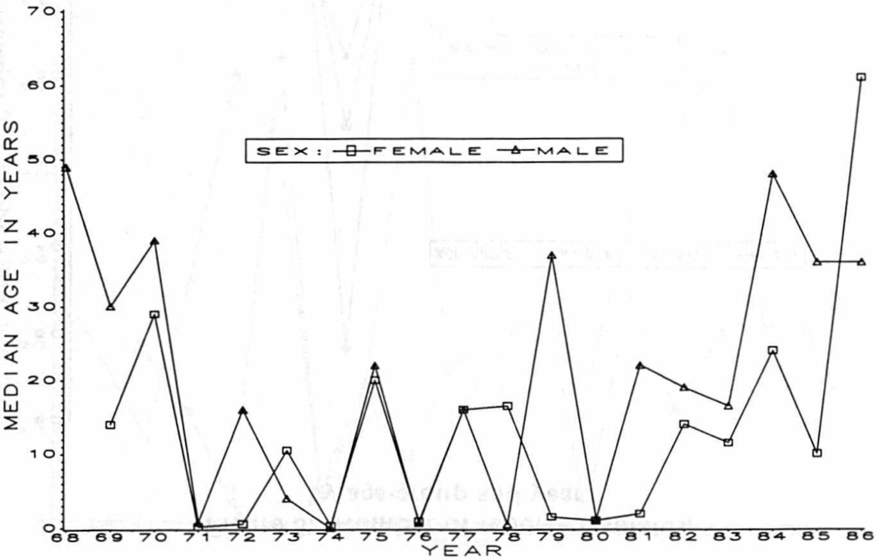


Figure 7. Reported nonhuman sources, by year.

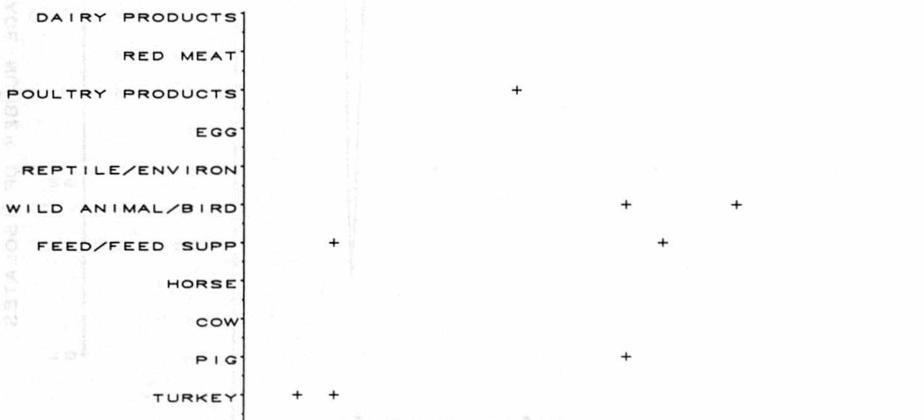


Figure 6. Percent of reported isolates, by age-group and sex.

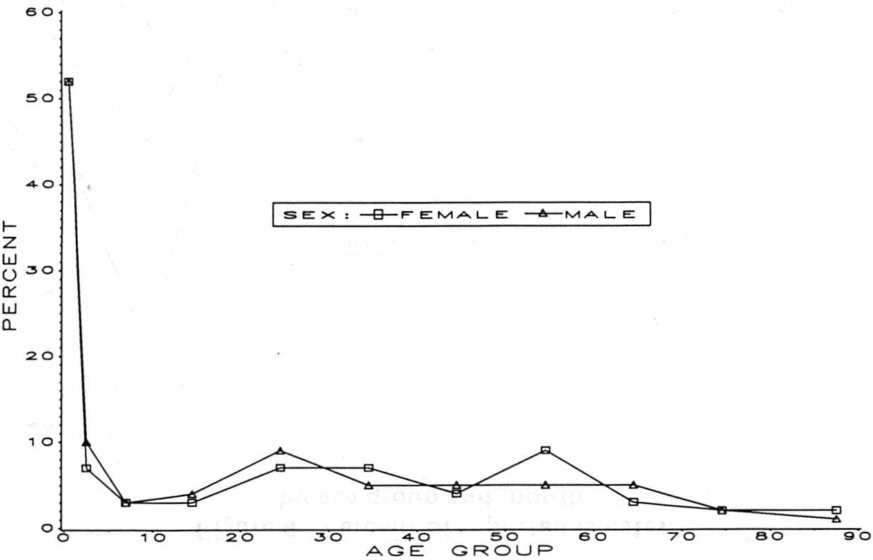
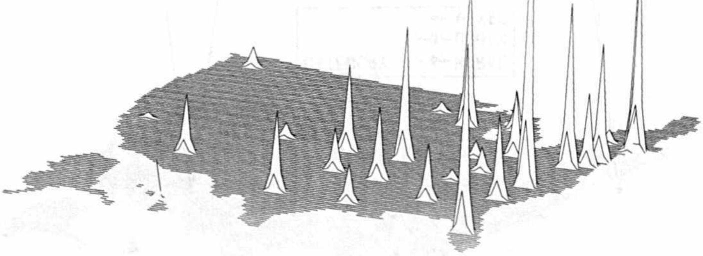


Figure 8. Age-standardized rates of reported isolates, by state.



S. duesseldorf

Figure 1. Reported isolates, 3-month moving average, by month and year.

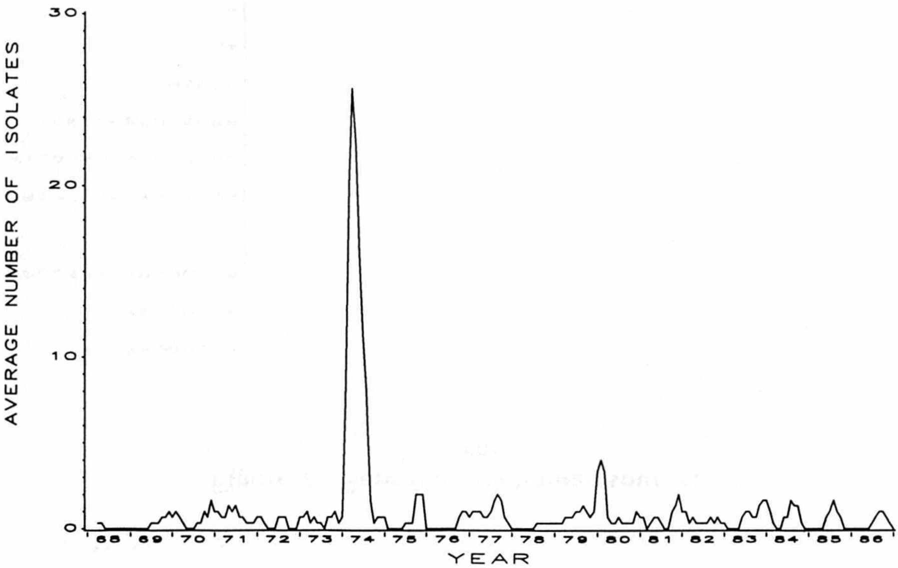


Figure 3. Number of reported isolates, by age-group and year.

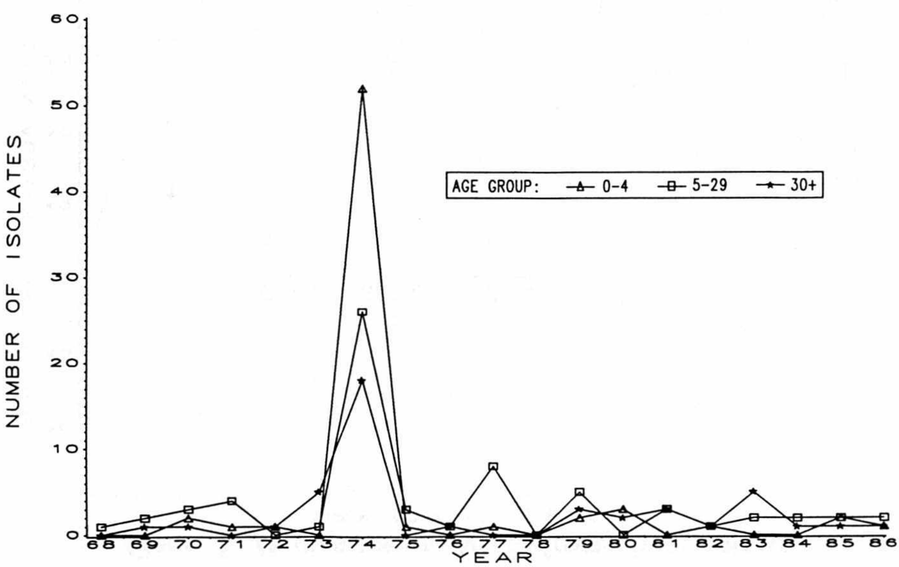


Figure 2. Percent of reported isolates from urban and rural counties, by month.

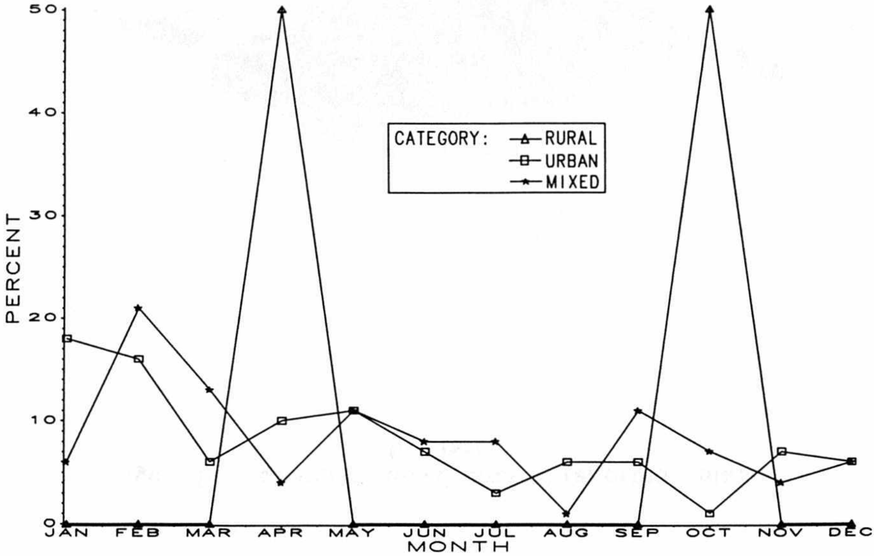
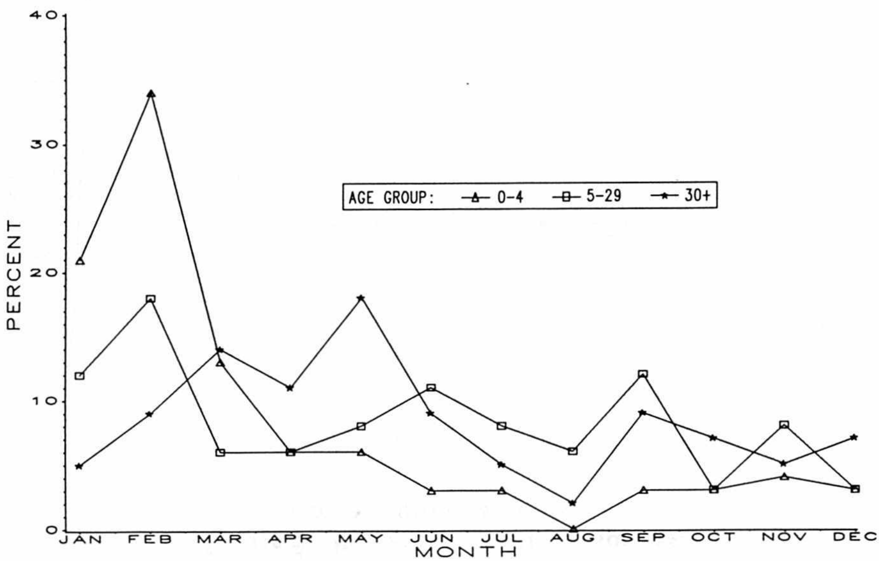


Figure 4. Percent of reported isolates, by age-group and month.



S. eastbourne

Figure 5. Median age of persons from whom isolates were reported, by year.

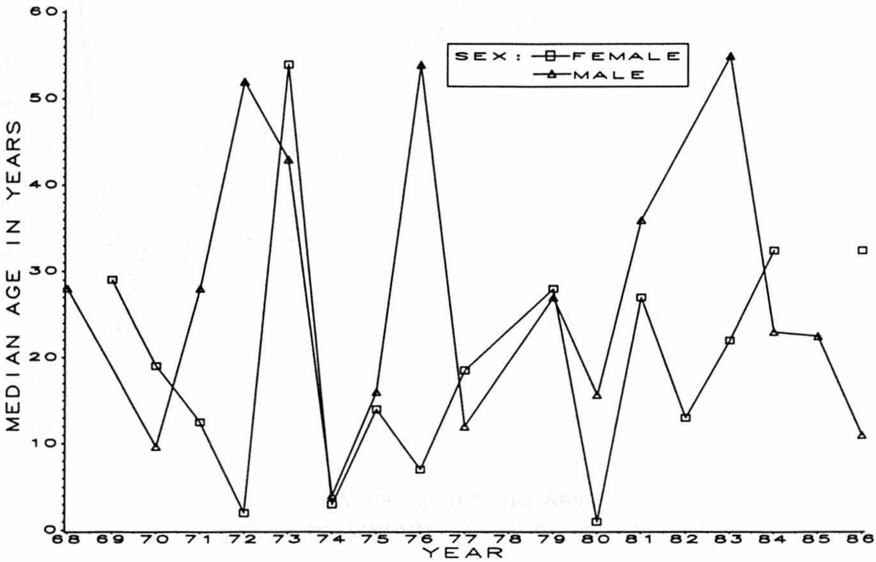


Figure 7. Reported nonhuman sources, by year.

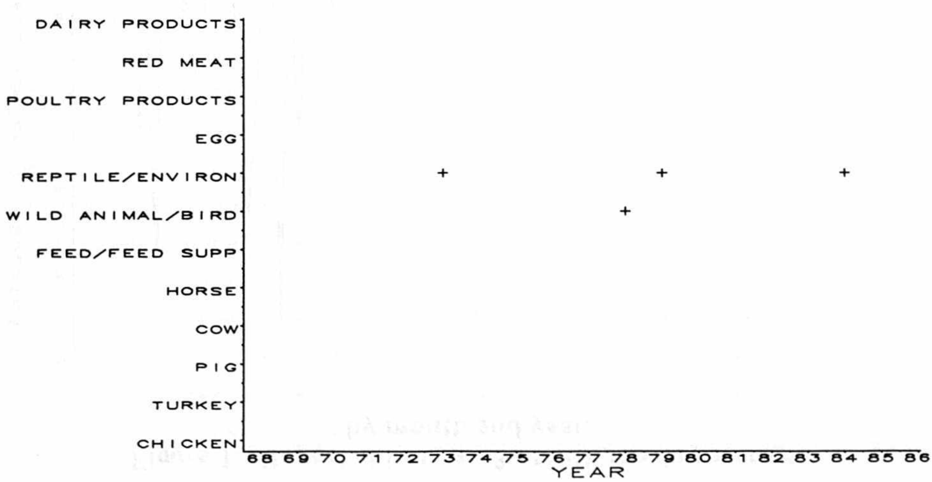
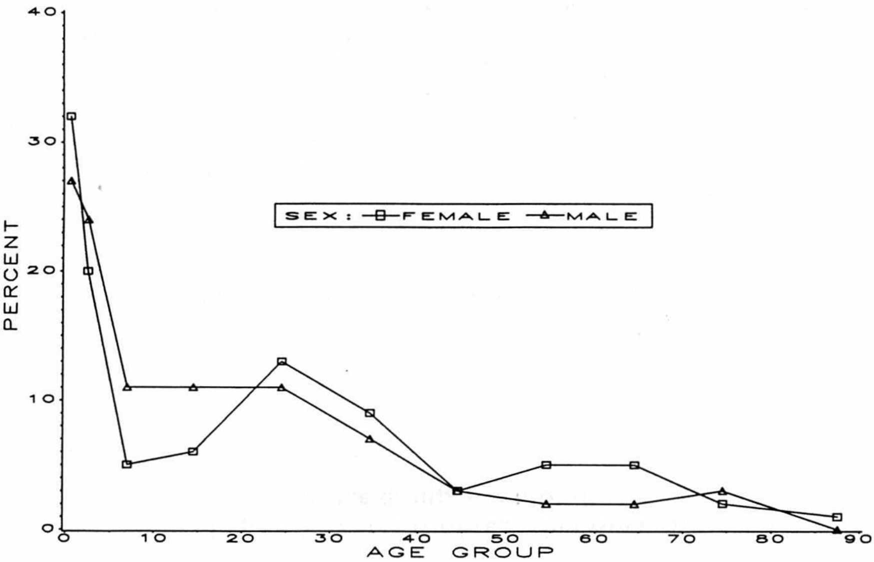


Figure 6. Percent of reported isolates, by age-group and sex.



S. eastbourne

Figure 8. Age-standardized rates of reported isolates, by state.

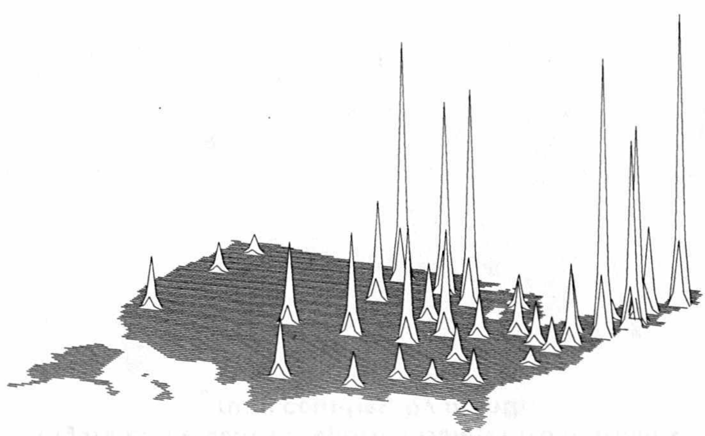


Figure 1. Reported isolates, 3-month moving average, by month and year.

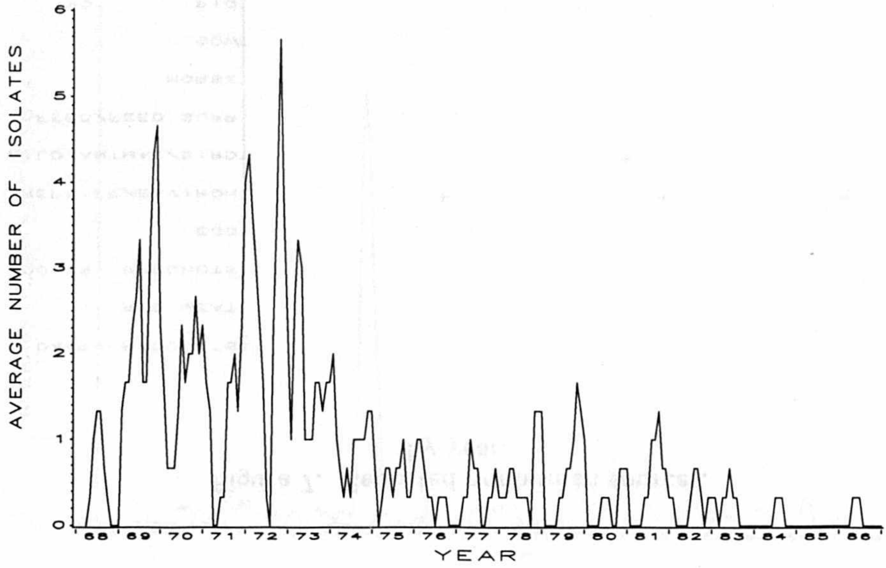


Figure 3. Number of reported isolates, by age-group and year.

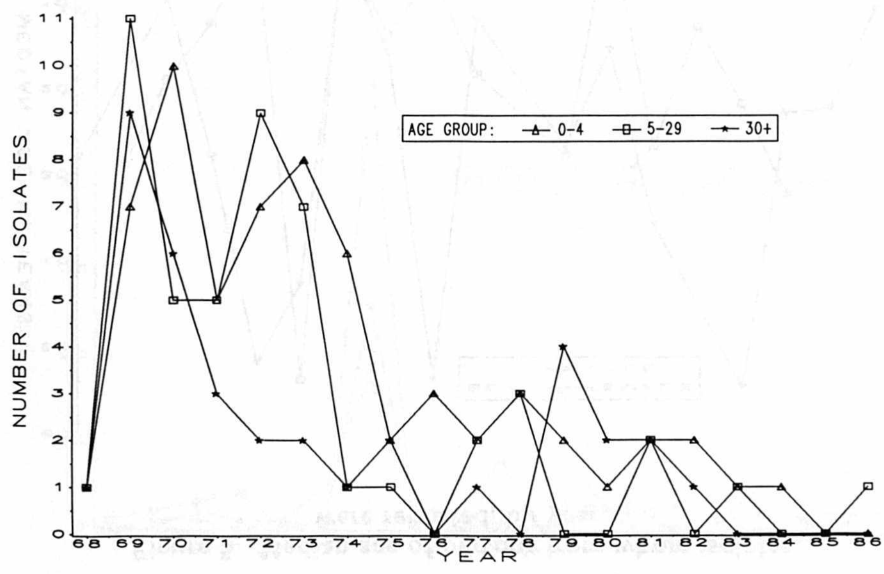


Figure 2. Percent of reported isolates from urban and rural counties, by month.

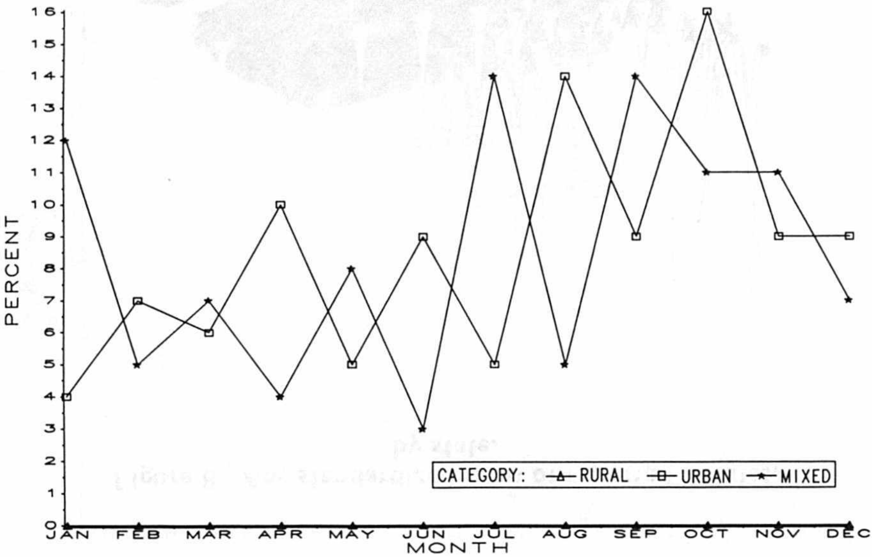
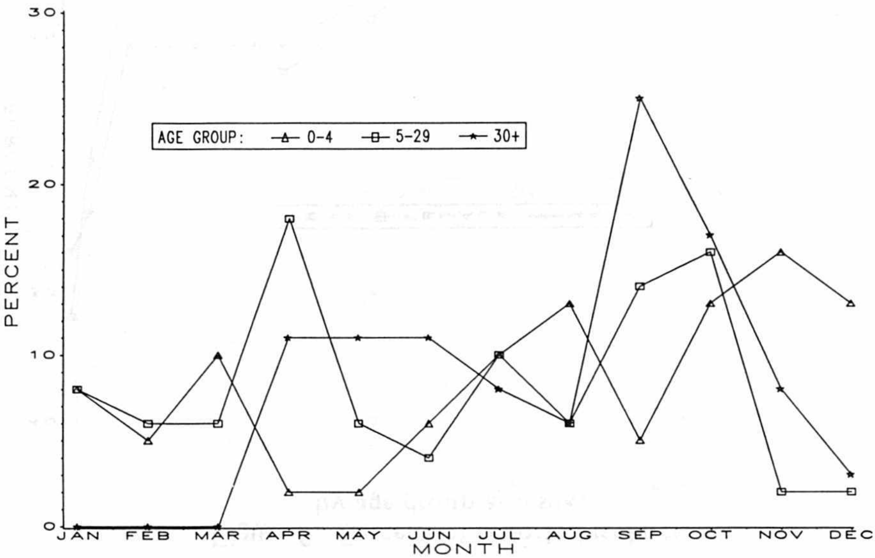


Figure 4. Percent of reported isolates, by age-group and month.



S. eimsbuettel

Figure 5. Median age of persons from whom isolates were reported, by year.

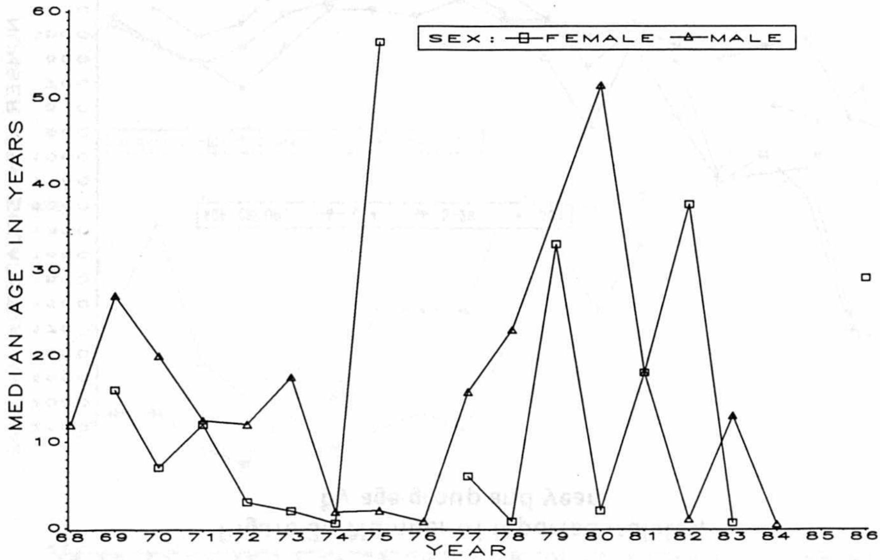


Figure 7. Reported nonhuman sources, by year.

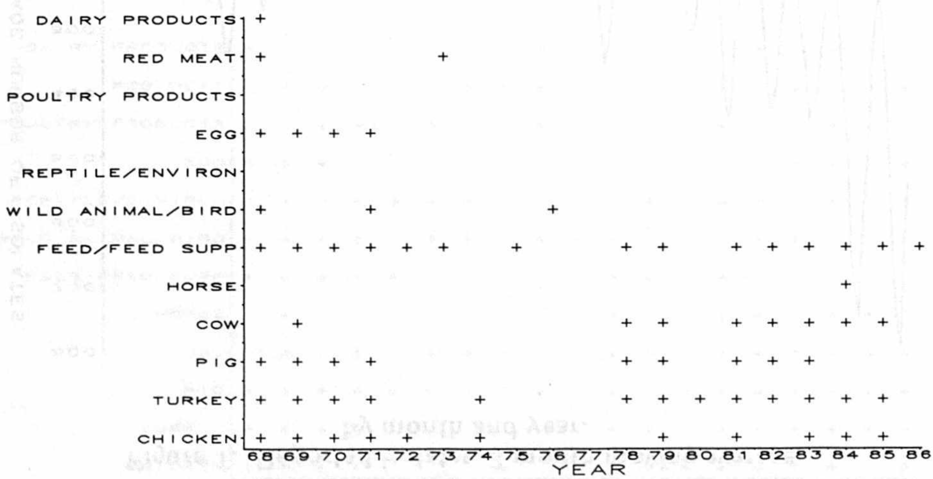
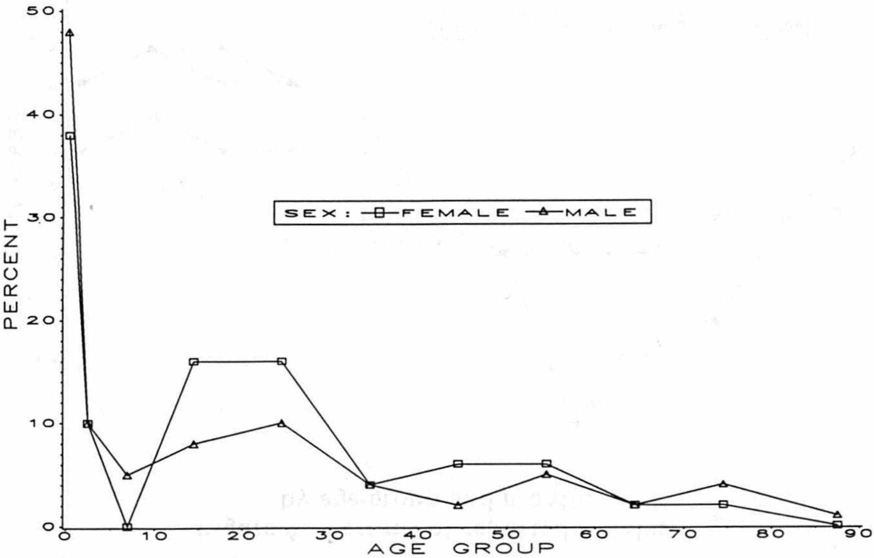


Figure 6. Percent of reported isolates, by age-group and sex.



S. eimsbuettel

Figure 8. Age-standardized rates of reported isolates, by state.

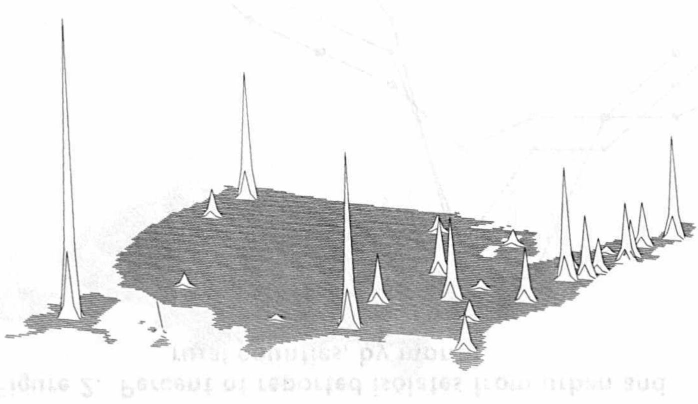


Figure 1. Reported isolates, 3-month moving average, by month and year.

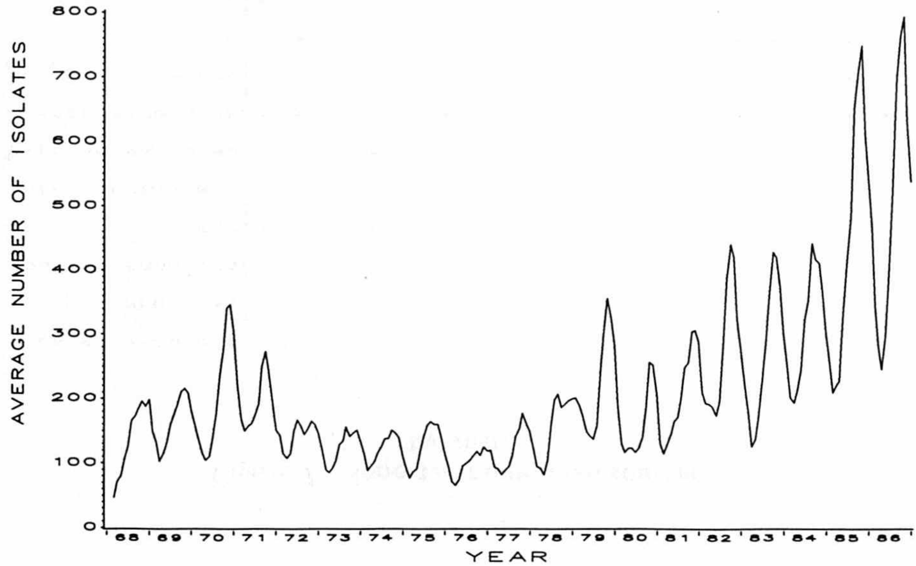


Figure 3. Number of reported isolates, by age-group and year.

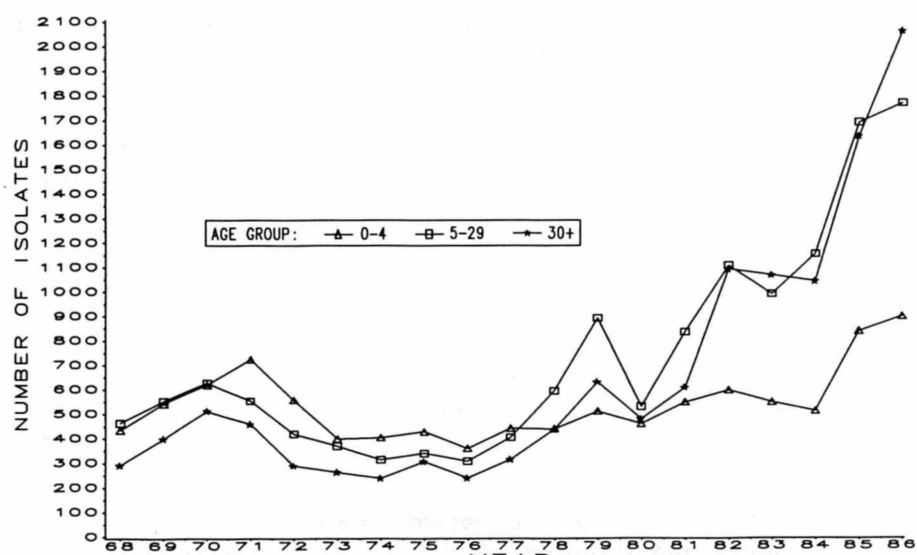


Figure 2. Percent of reported isolates from urban and rural counties, by month.

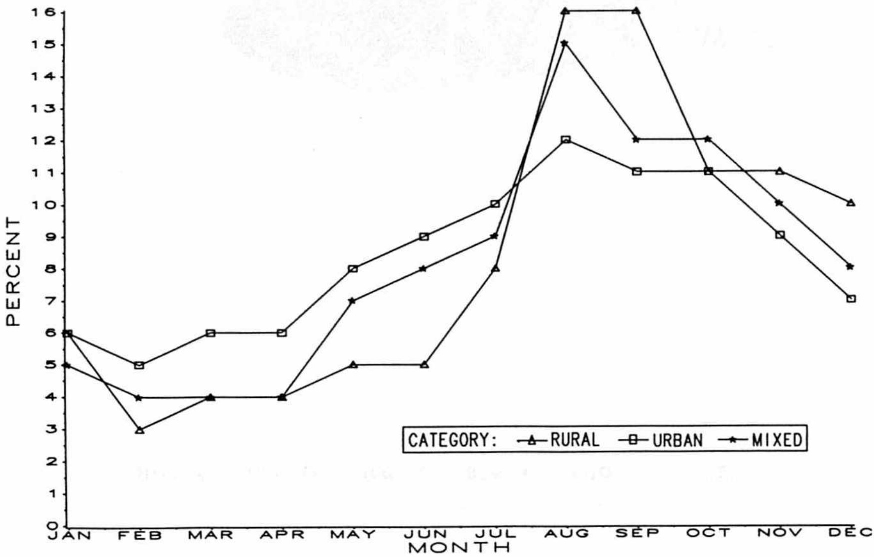
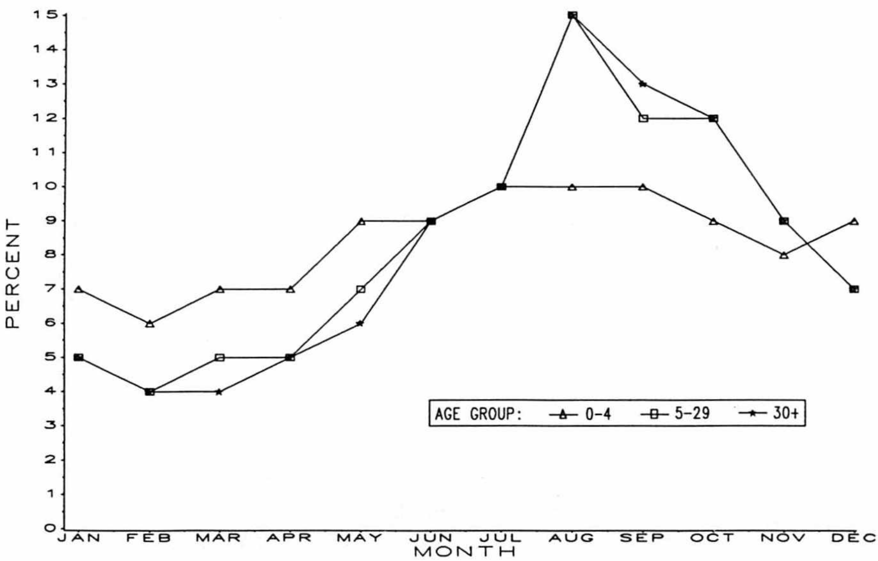


Figure 4. Percent of reported isolates, by age-group and month.



S. enteritidis

Figure 5. Median age of persons from whom isolates were reported, by year.

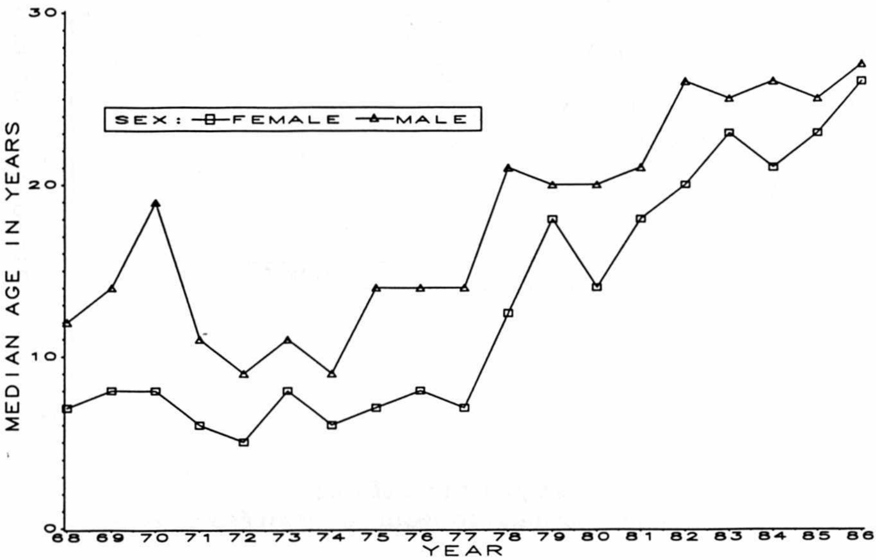


Figure 7. Reported nonhuman sources, by year.

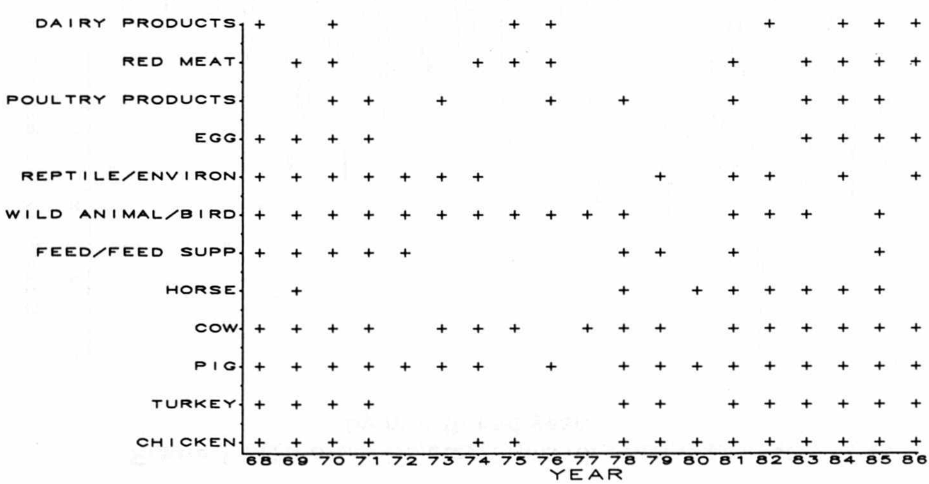


Figure 6. Percent of reported isolates, by age-group and sex.

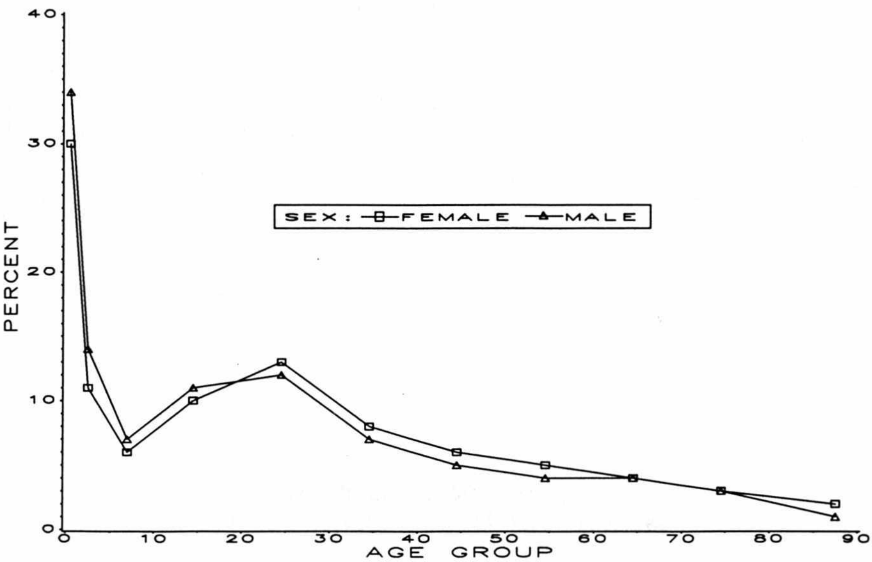


Figure 8. Age-standardized rates of reported isolates, by state.

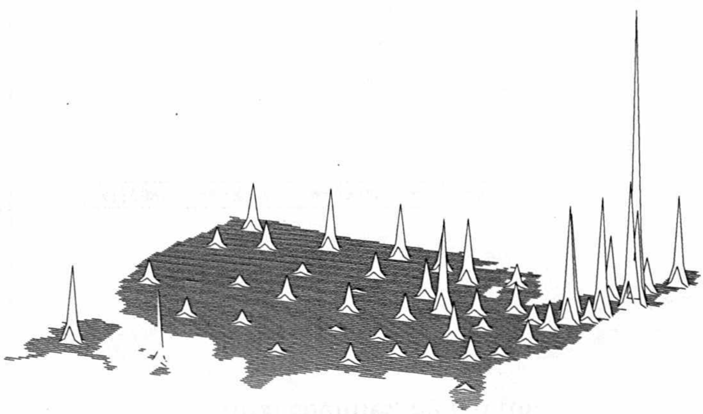


Figure 1. Reported isolates, 3-month moving average, by month and year.

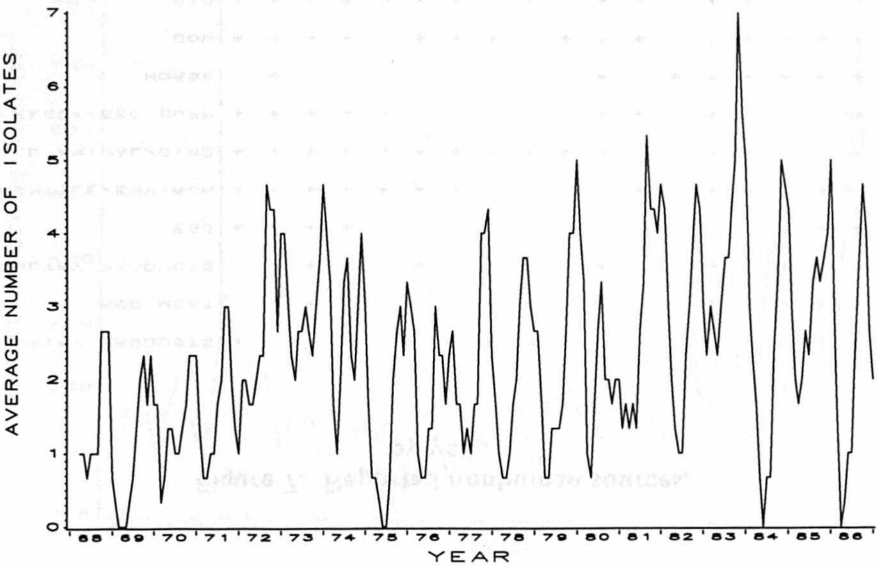
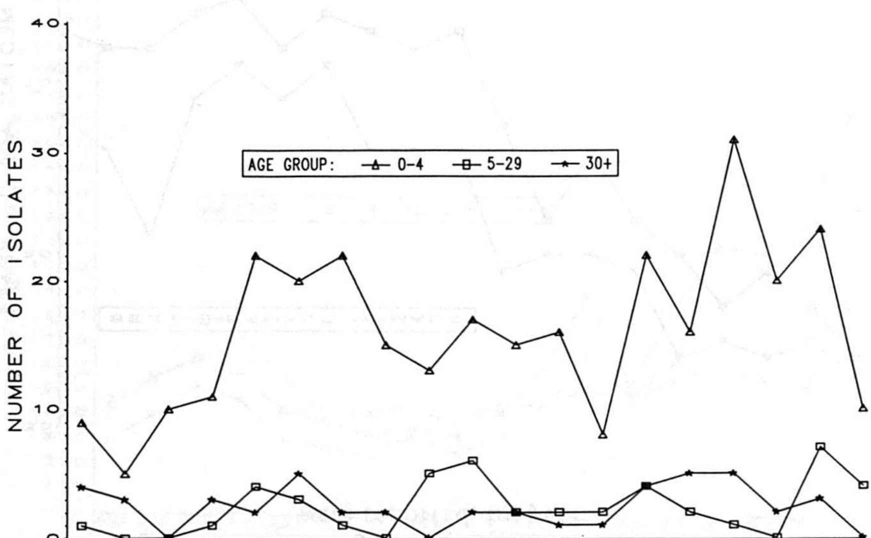


Figure 3. Number of reported isolates, by age-group and year.



S. gaminara

Figure 2. Percent of reported isolates from urban and rural counties, by month.

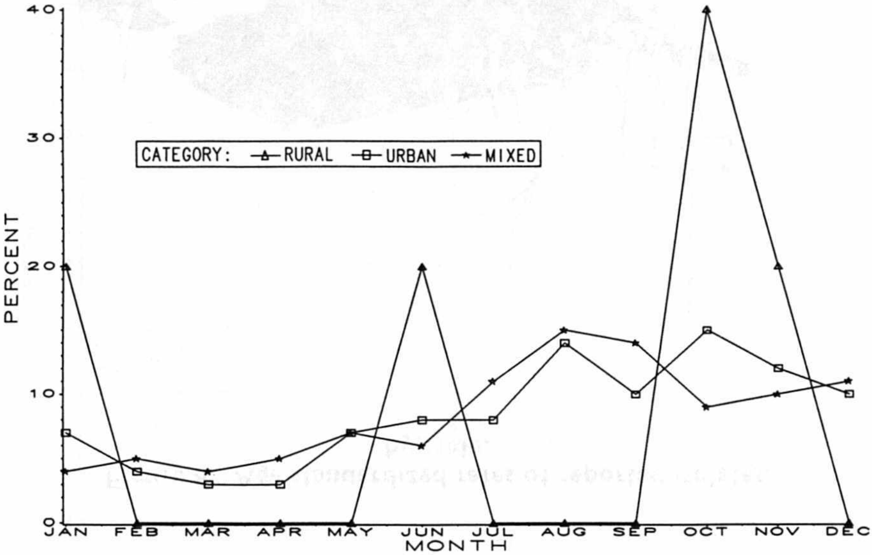


Figure 4. Percent of reported isolates, by age-group and month.

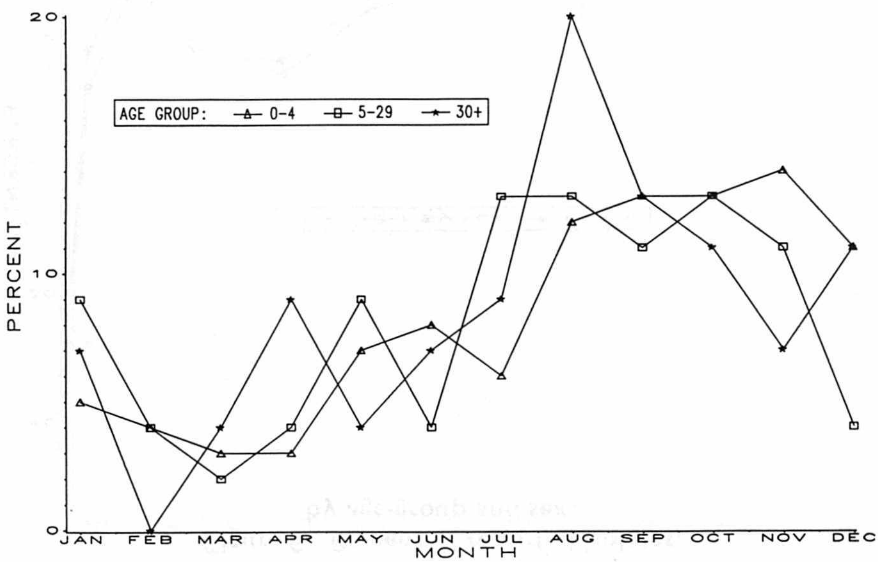


Figure 5. Median age of persons from whom isolates were reported, by year.

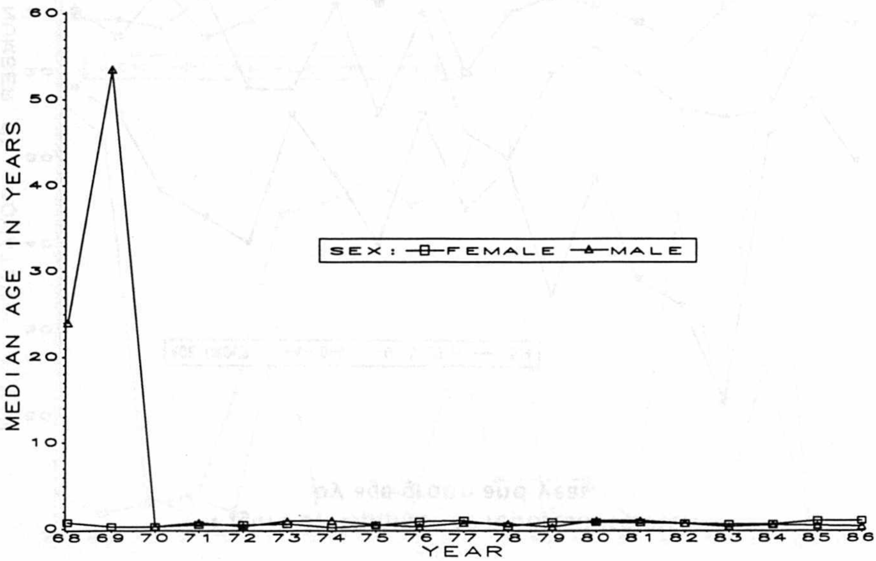


Figure 7. Reported nonhuman sources, by year.

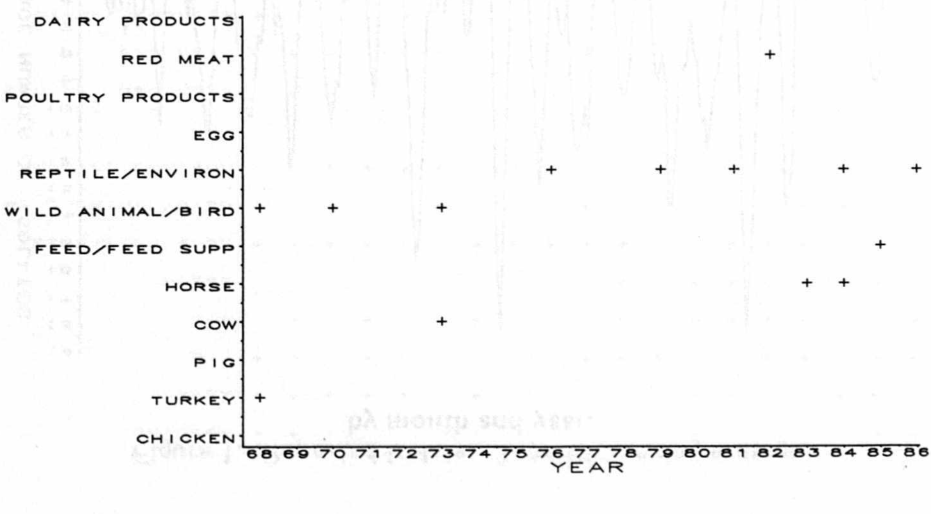


Figure 6. Percent of reported isolates, by age-group and sex.

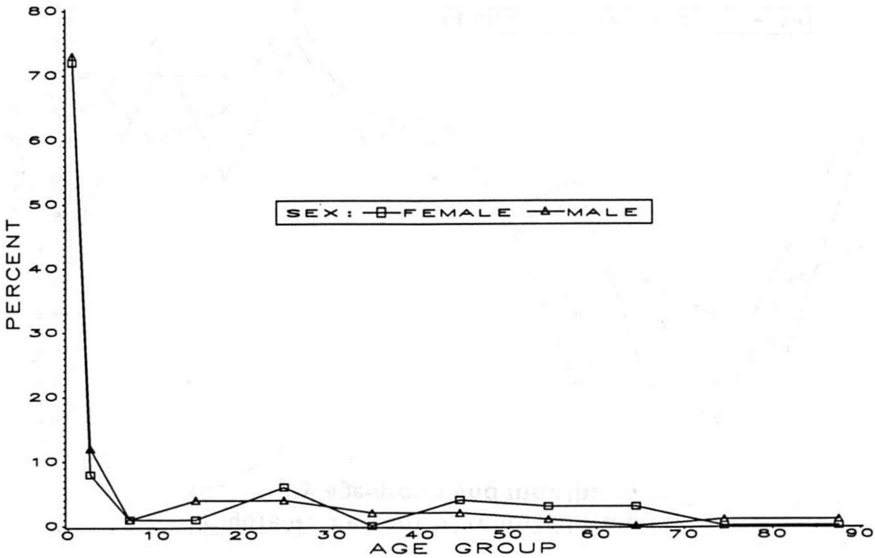
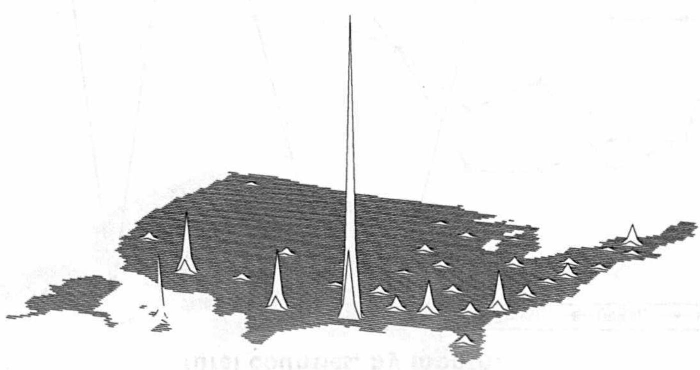


Figure 8. Age-standardized rates of reported isolates, by state.



S. gaminara

Figure 1. Reported isolates, 3-month moving average, by month and year.

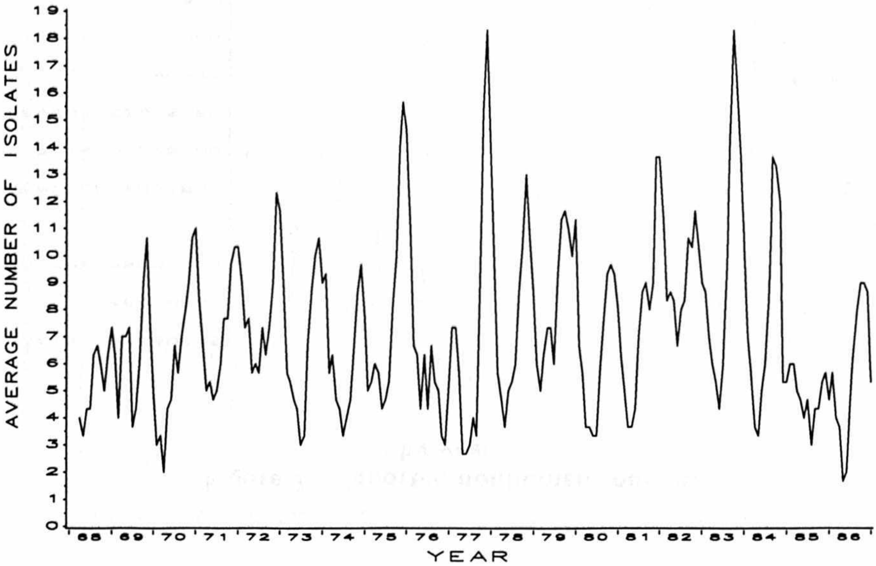


Figure 3. Number of reported isolates, by age-group and year.

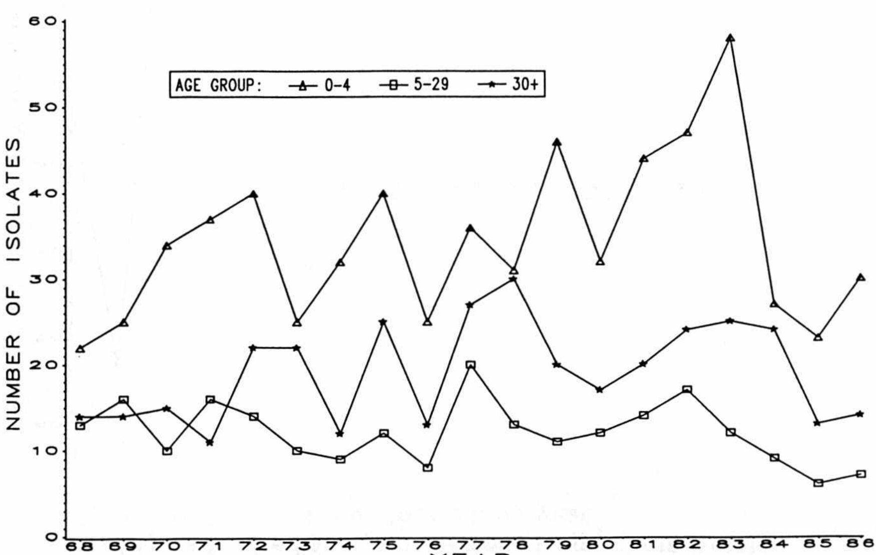


Figure 2. Percent of reported isolates from urban and rural counties, by month.

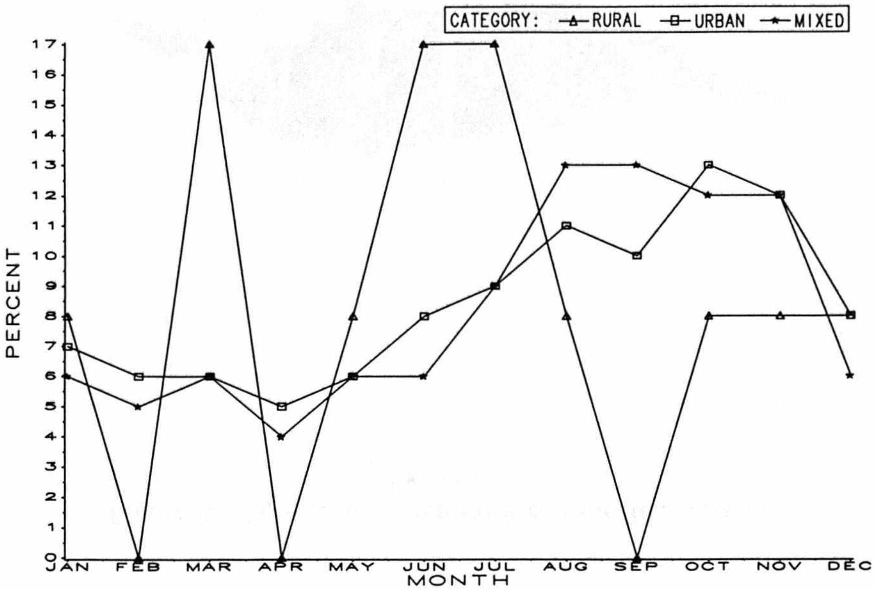


Figure 4. Percent of reported isolates, by age-group and month.

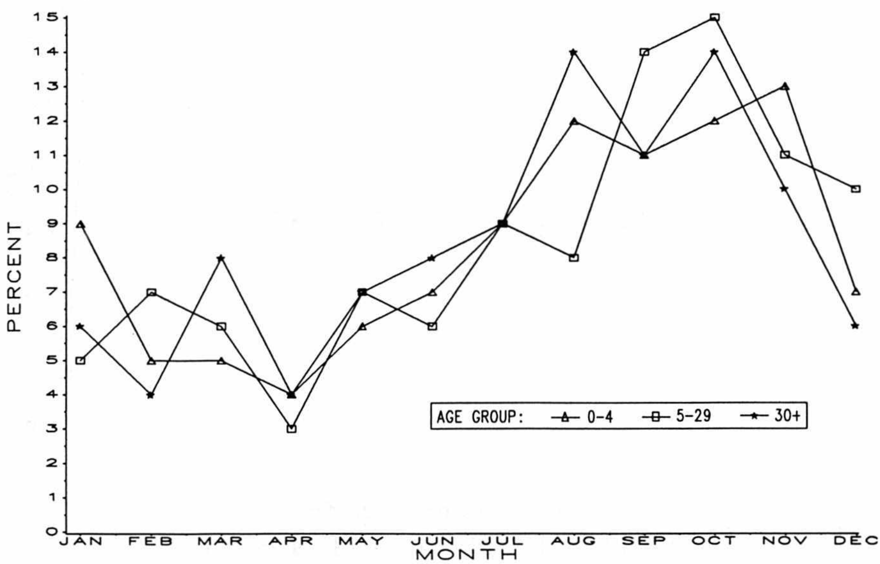


Figure 5. Median age of persons from whom isolates were reported, by year.

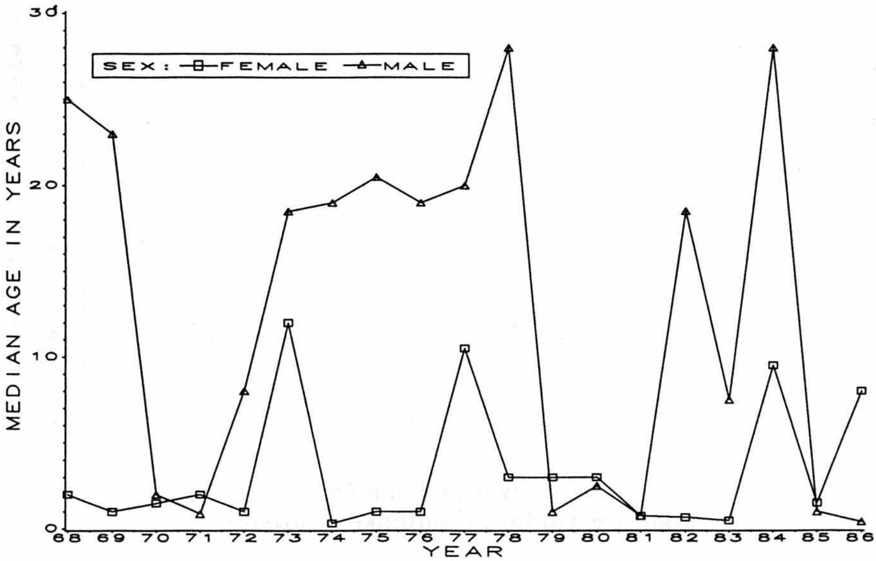


Figure 7. Reported nonhuman sources, by year.

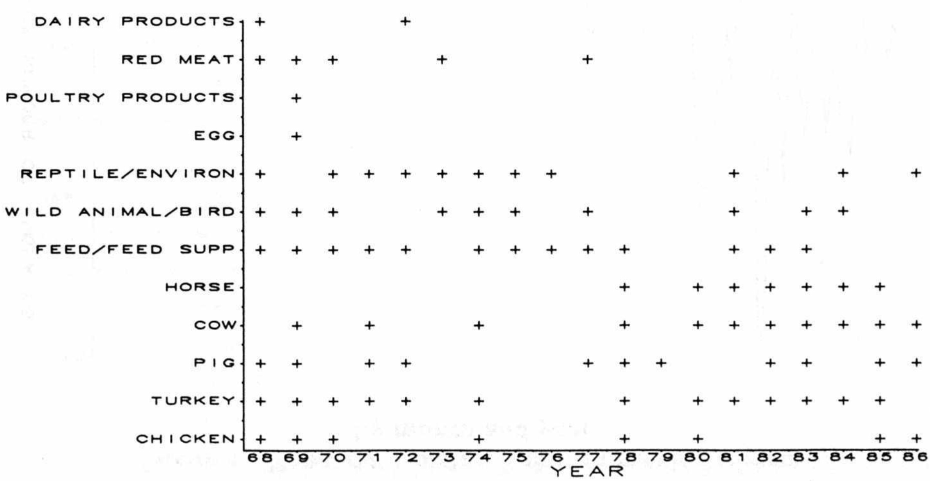
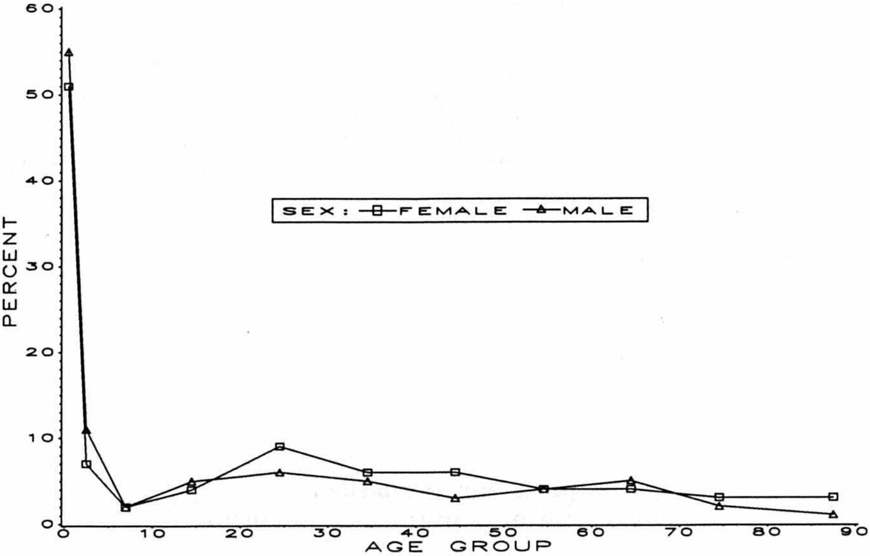


Figure 6. Percent of reported isolates, by age-group and sex.



S. give

Figure 8. Age-standardized rates of reported isolates, by state.

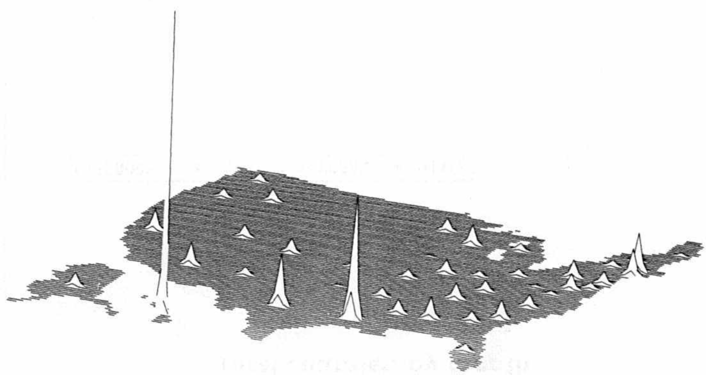


Figure 1. Reported isolates, 3-month moving average, by month and year.

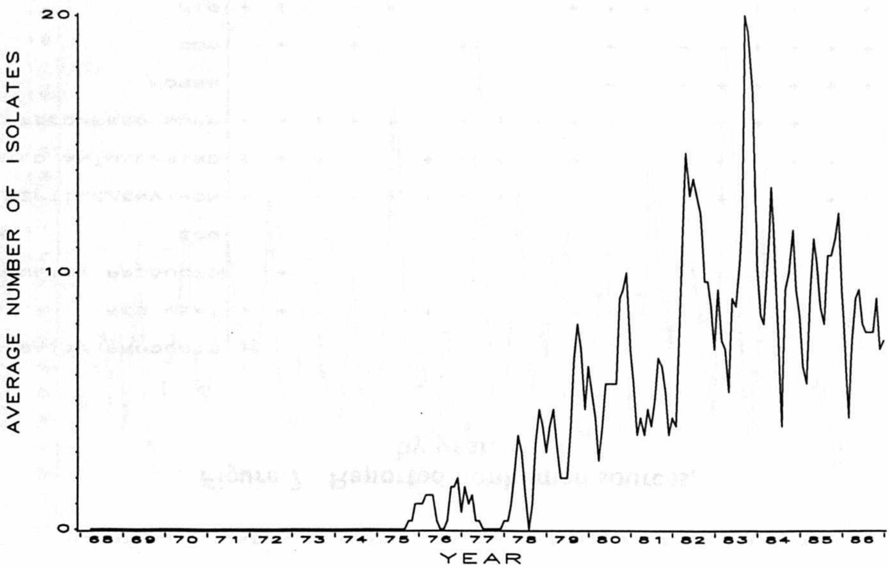


Figure 3. Number of reported isolates, by age-group and year.

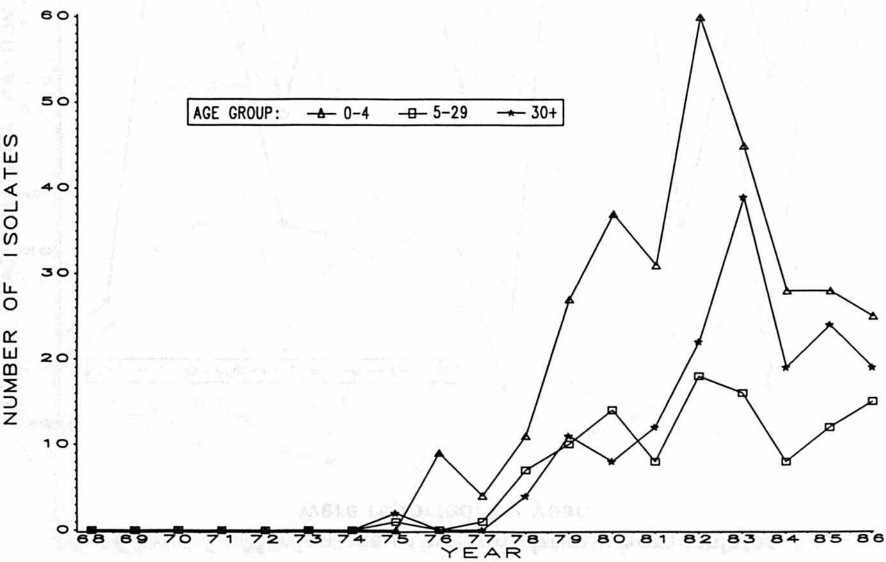


Figure 2. Percent of reported isolates from urban and rural counties, by month.

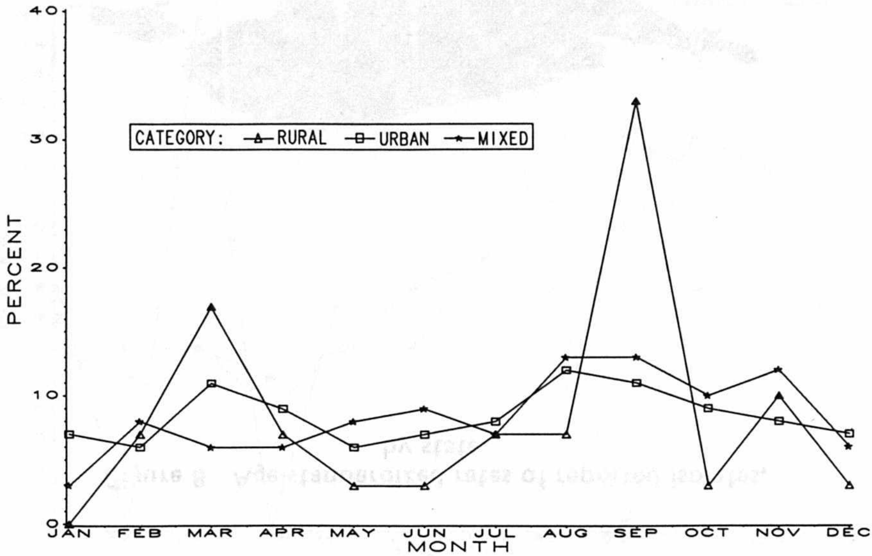
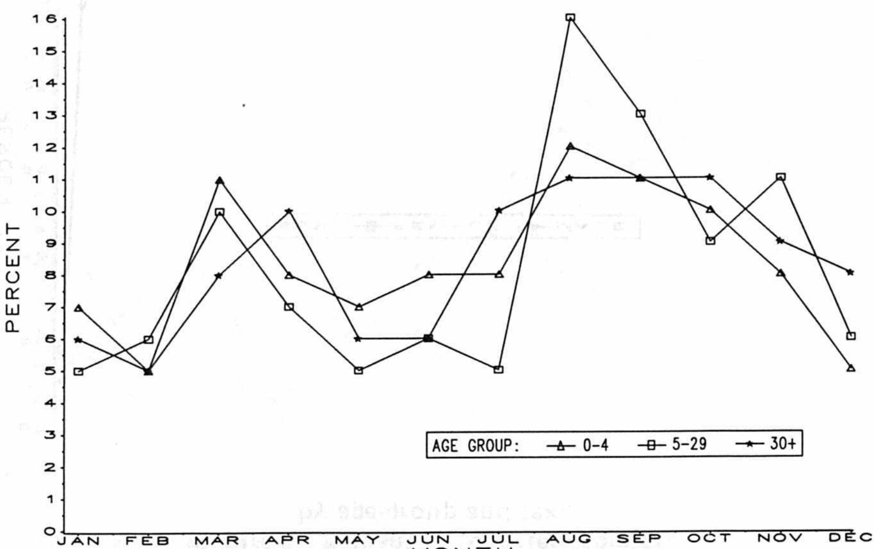


Figure 4. Percent of reported isolates, by age-group and month.



S. hardt

Figure 5. Median age of persons from whom isolates were reported, by year.

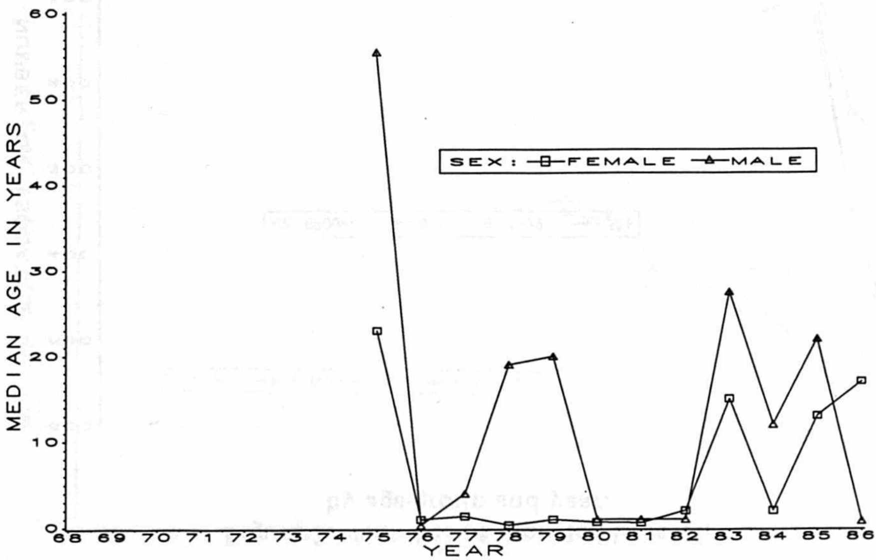


Figure 7. Reported nonhuman sources, by year.

S. haardt

Figure 6. Percent of reported isolates, by age-group and sex.

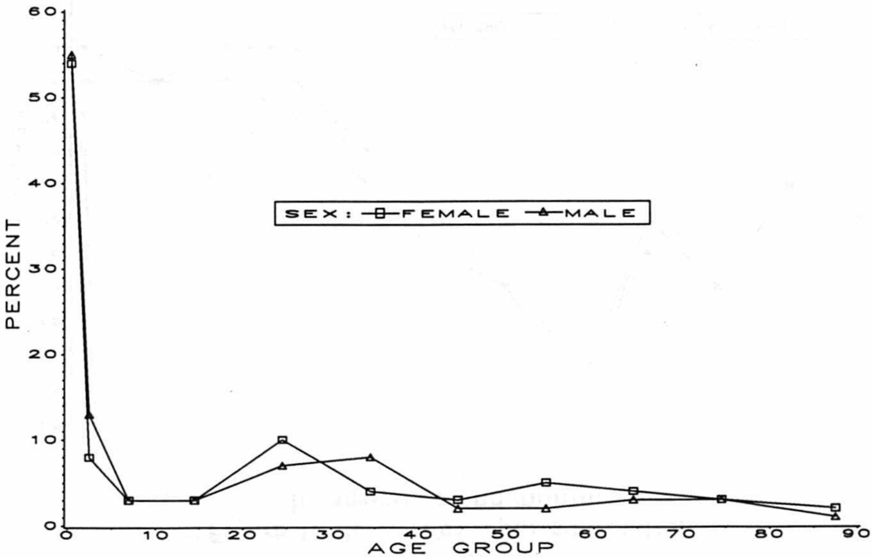


Figure 8. Age-standardized rates of reported isolates, by state.

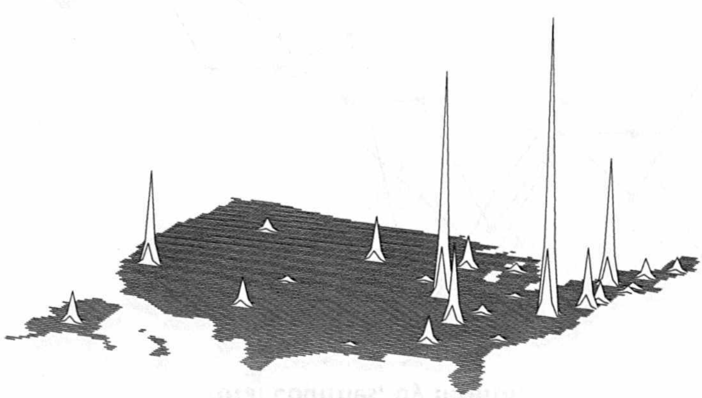


Figure 1. Reported isolates, 3-month moving average, by month and year.

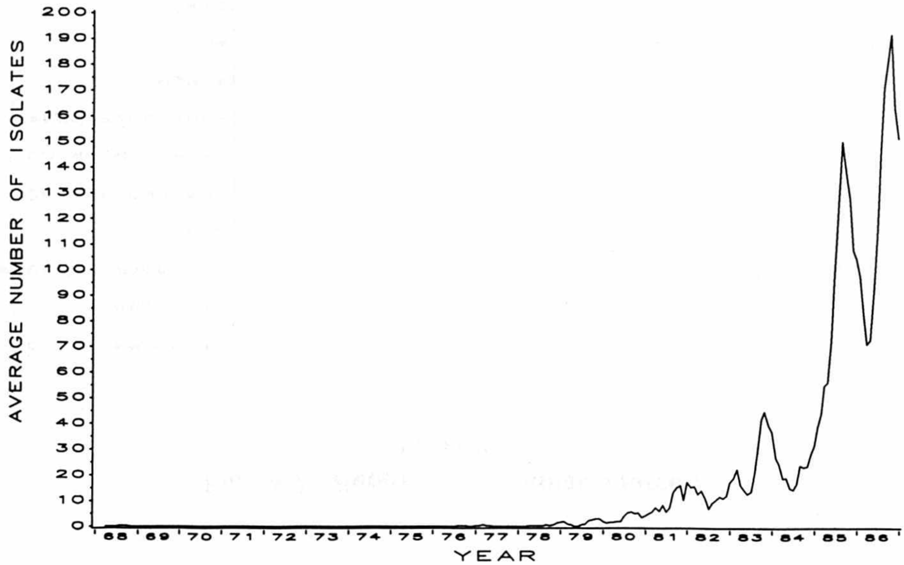


Figure 3. Number of reported isolates, by age-group and year.

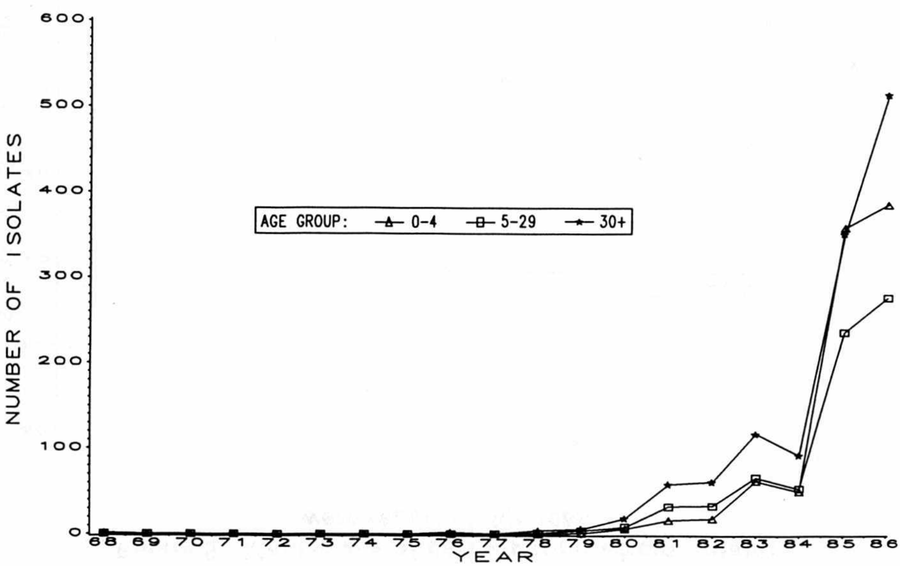
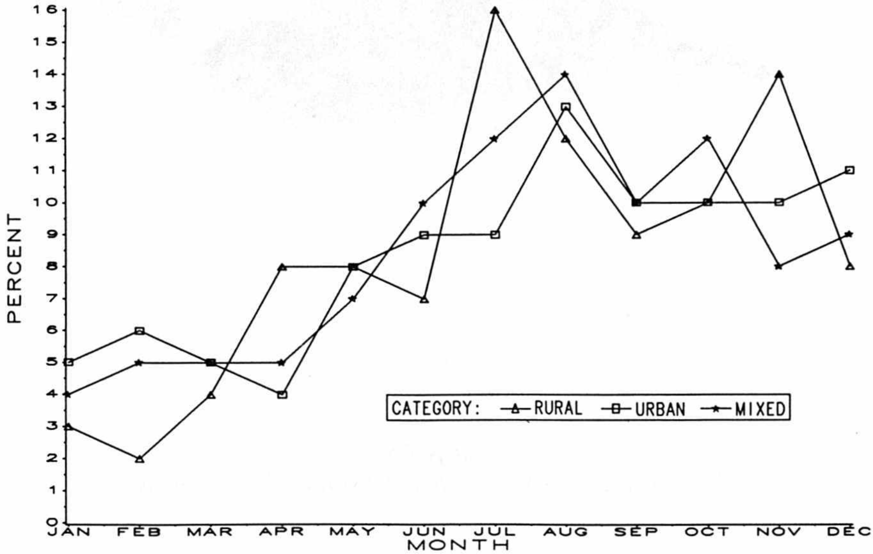
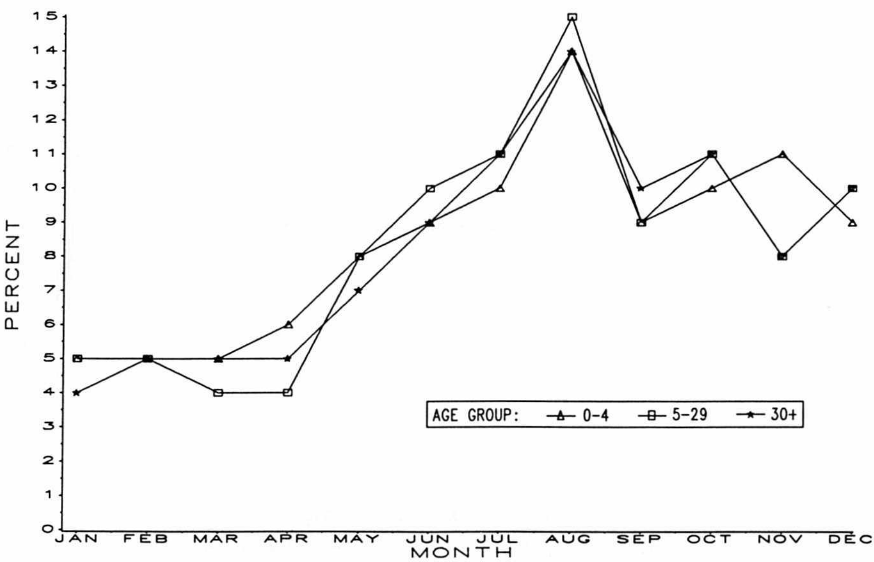


Figure 2. Percent of reported isolates from urban and rural counties, by month.



S. hadar

Figure 4. Percent of reported isolates, by age-group and month.



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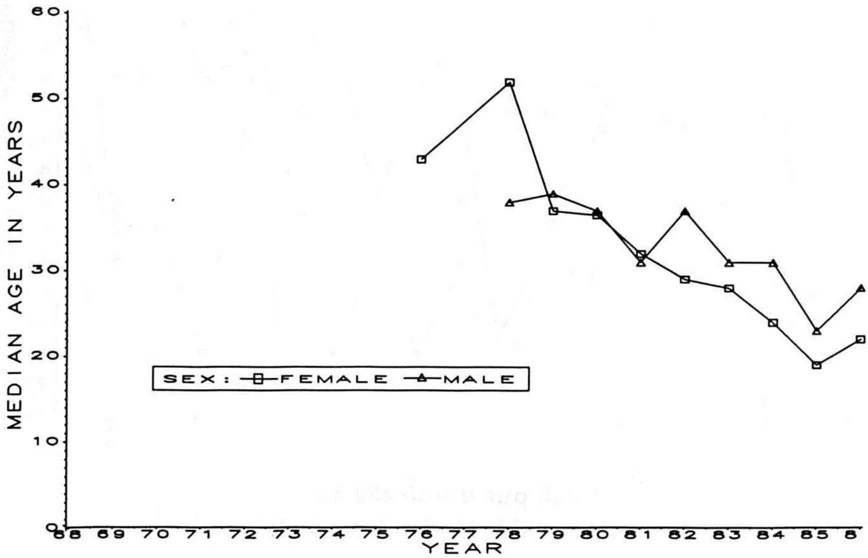
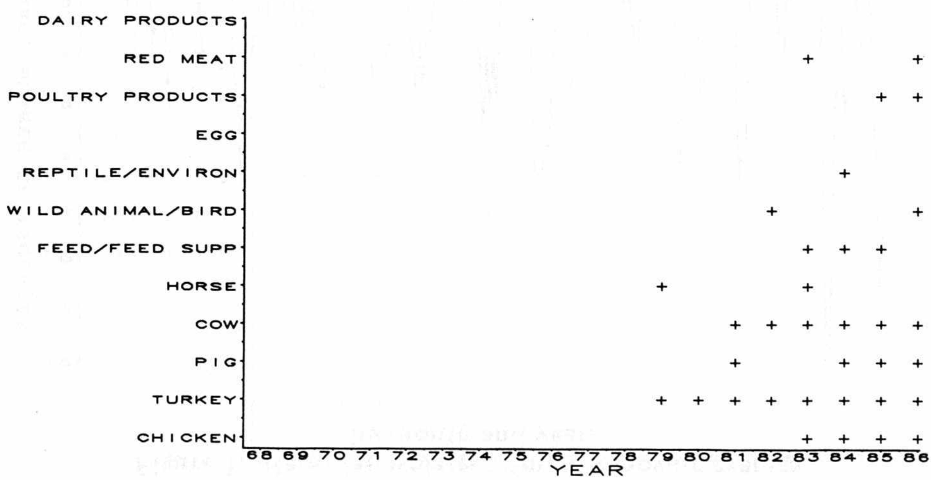


Figure 7. Reported nonhuman sources, by year.



S. hadar

Figure 6. Percent of reported isolates, by age-group and sex.

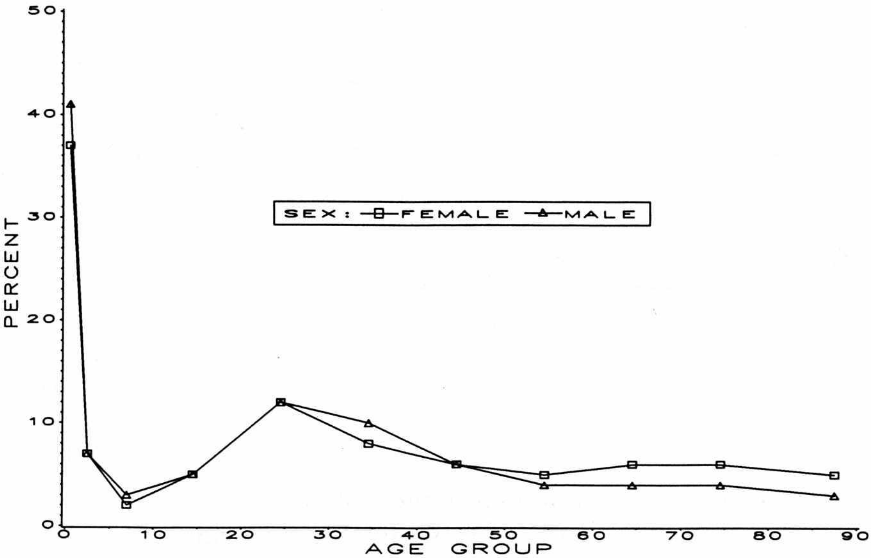


Figure 8. Age-standardized rates of reported isolates, by state.

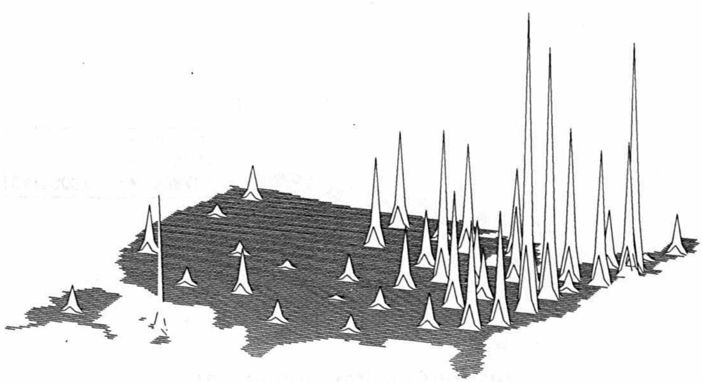


Figure 1. Reported isolates, 3-month moving average, by month and year.

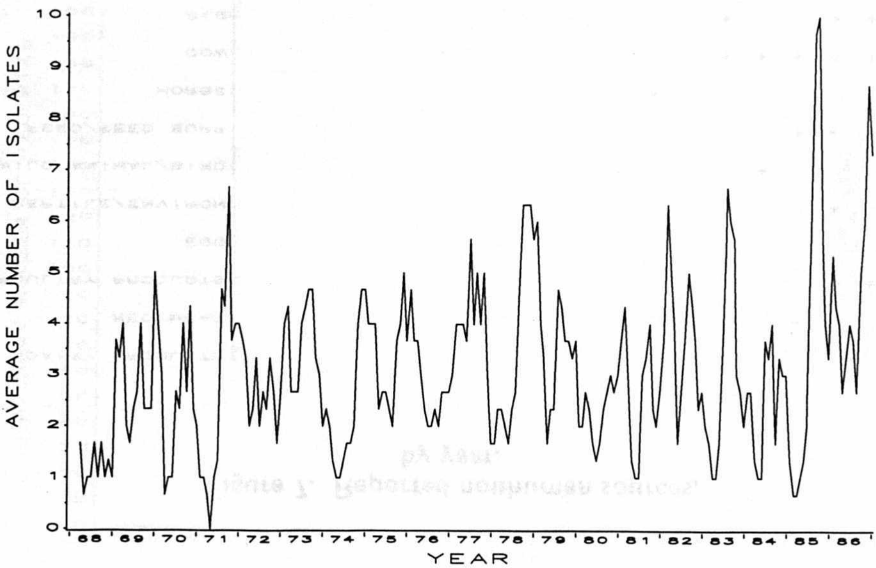


Figure 3. Number of reported isolates, by age-group and year.

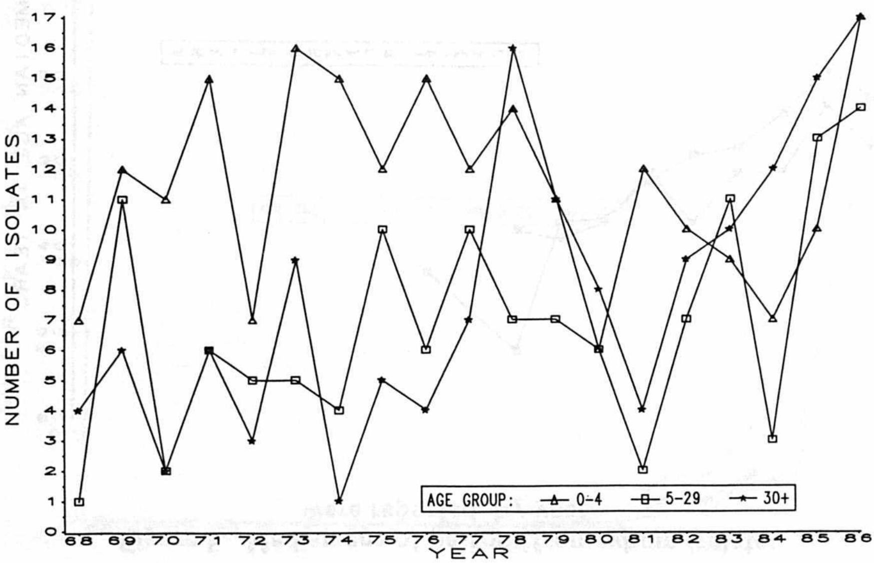
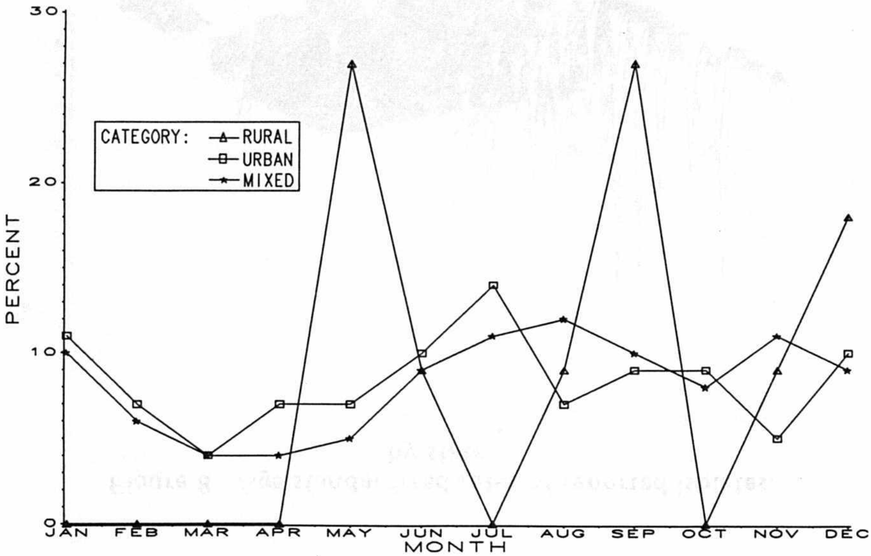


Figure 2. Percent of reported isolates from urban and rural counties, by month.



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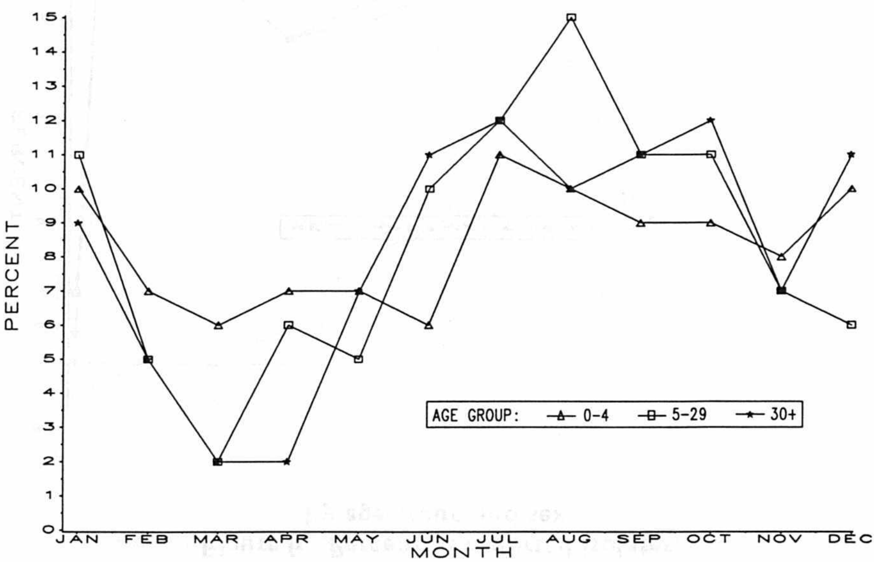


S.hartford

Figure 5. Median age of persons from whom isolates were reported, by year.

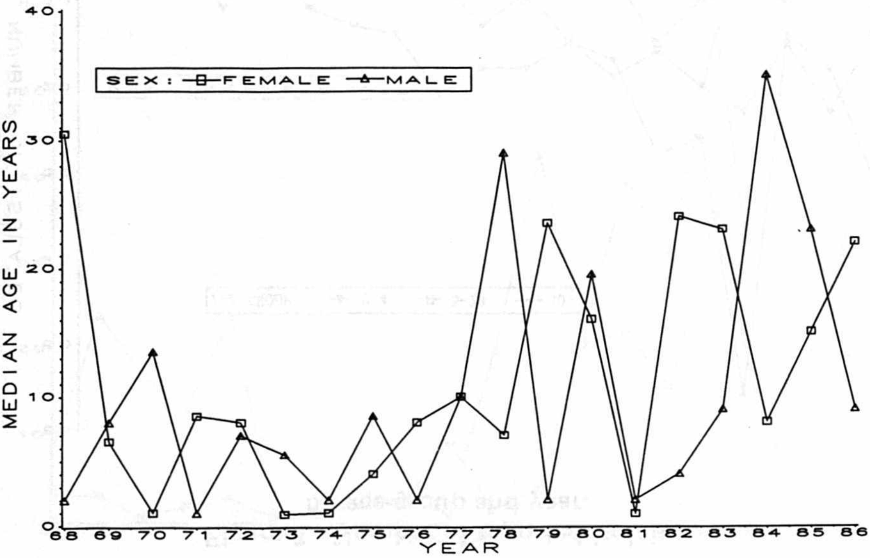


Figure 7. Reported nonhuman sources, by year.

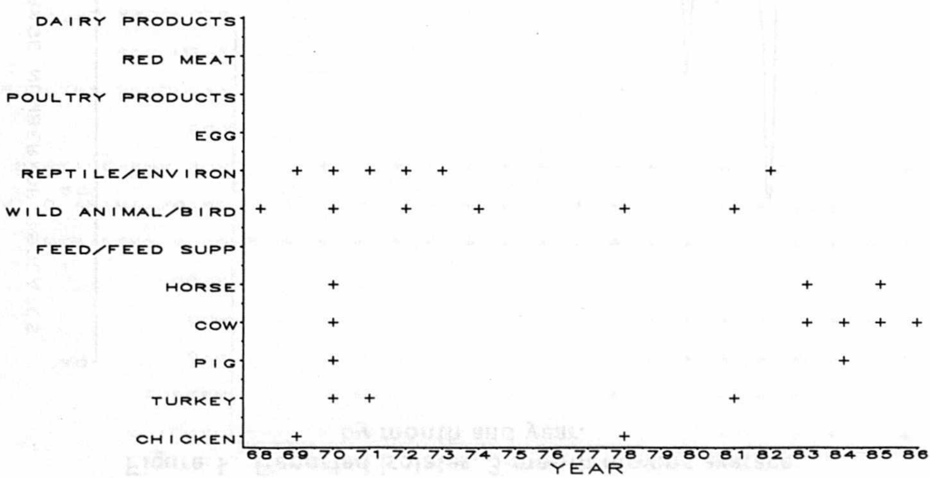


Figure 6. Percent of reported isolates, by age-group and sex.

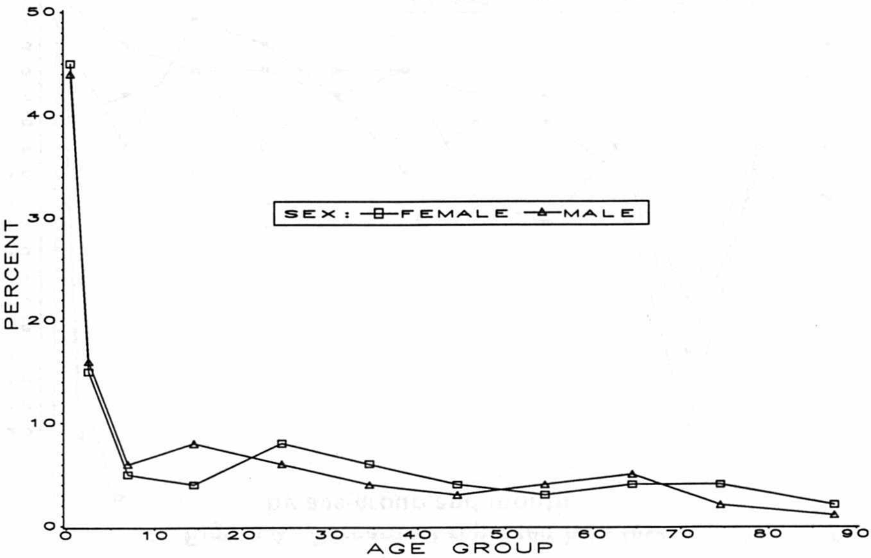
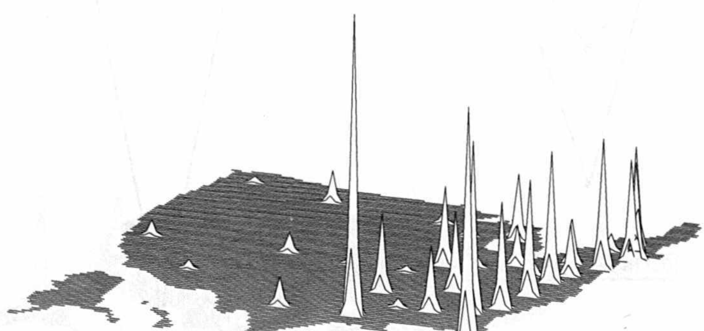


Figure 8. Age-standardized rates of reported isolates, by state.



S. hartford

Figure 1. Reported isolates, 3-month moving average, by month and year.

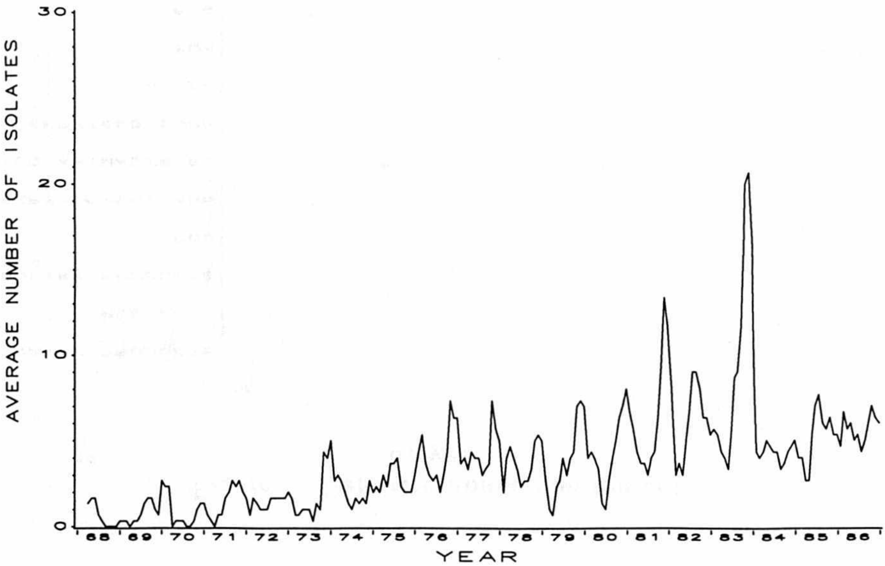


Figure 3. Number of reported isolates, by age-group and year.

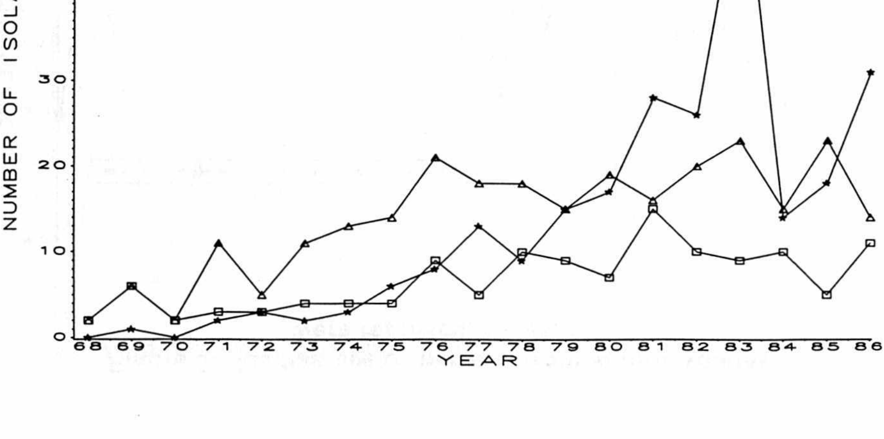


Figure 2. Percent of reported isolates from urban and rural counties, by month.

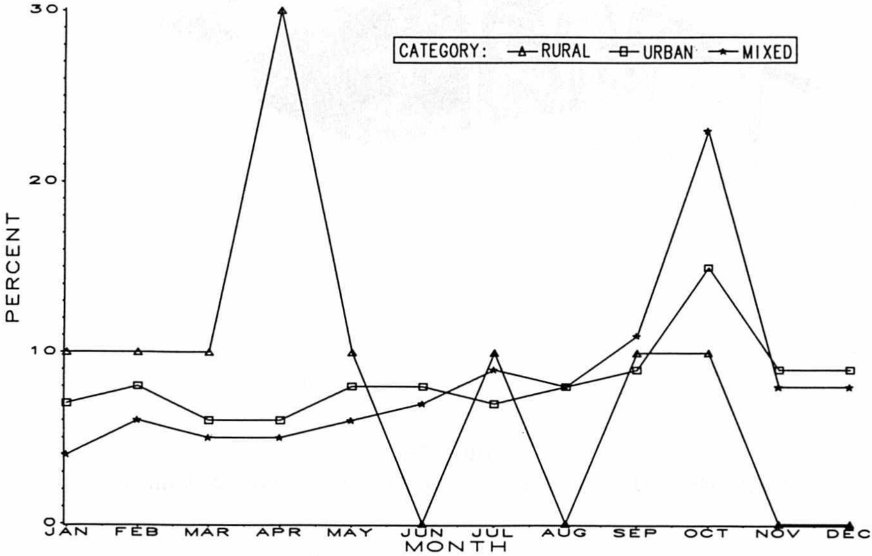


Figure 4. Percent of reported isolates, by age-group and month.

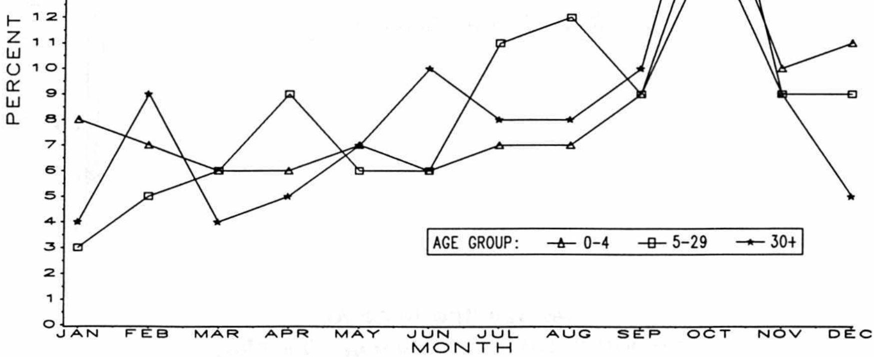


Figure 5. Median age of persons from whom isolates were reported, by year.

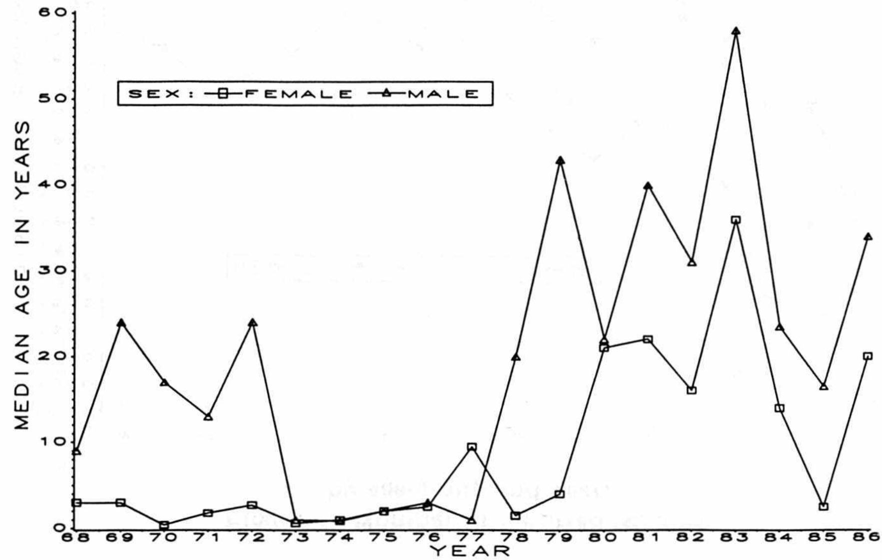


Figure 7. Reported nonhuman sources, by year.

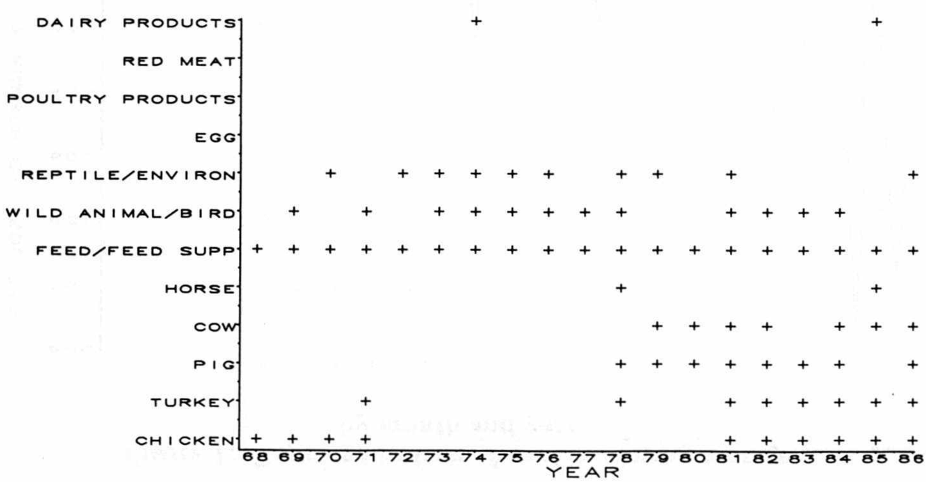
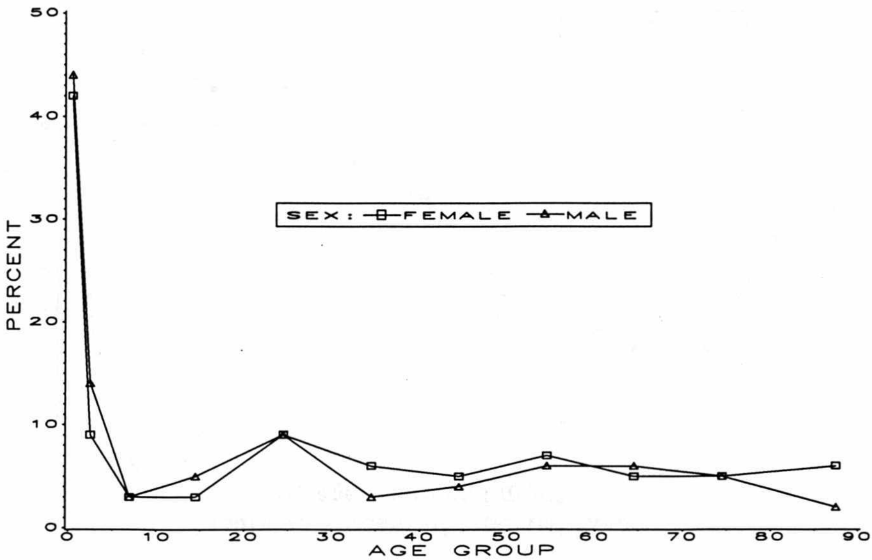


Figure 6. Percent of reported isolates, by age-group and sex.



S. havana

Figure 8. Age-standardized rates of reported isolates, by state.

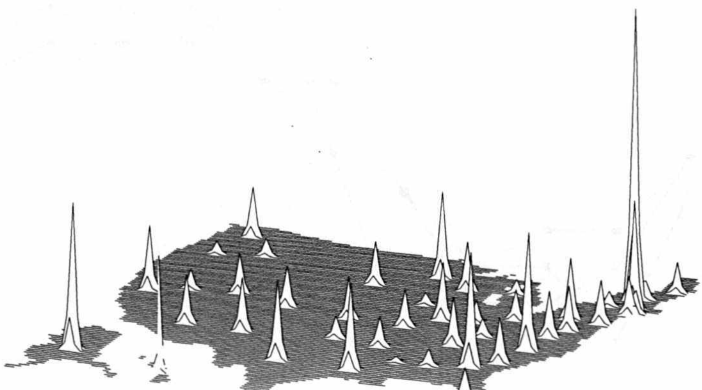


Figure 1. Reported isolates, 3-month moving average, by month and year.

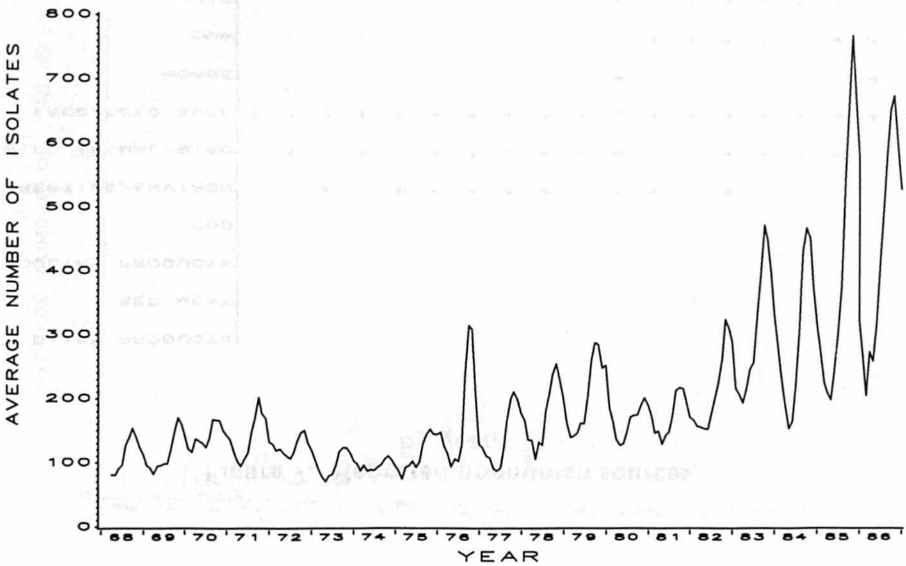
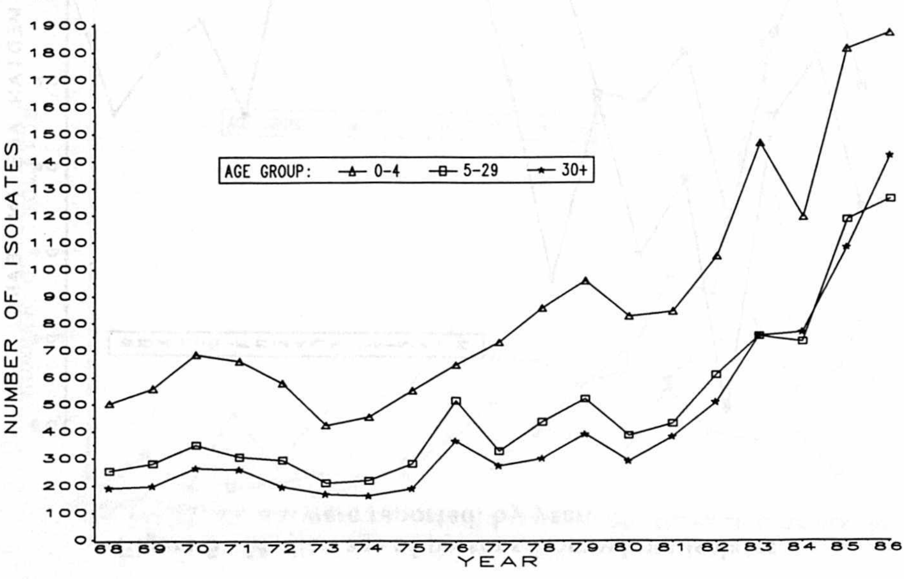


Figure 3. Number of reported isolates, by age-group and year.



S. heidelberg

Figure 2. Percent of reported isolates from urban and rural counties, by month.

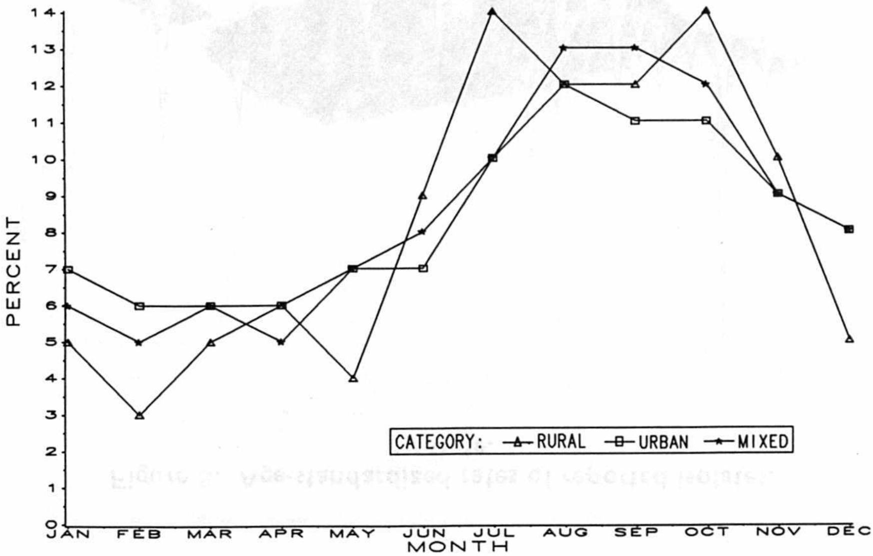


Figure 4. Percent of reported isolates, by age-group and month.

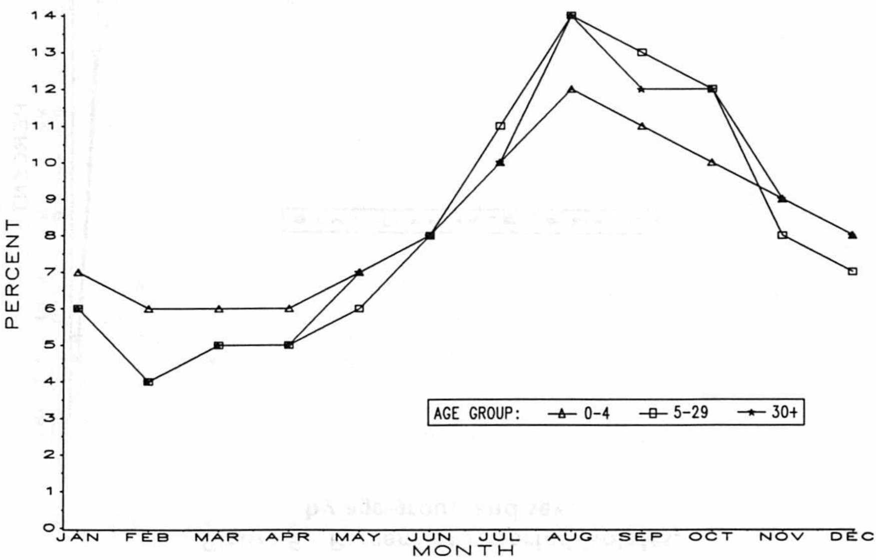


Figure 5. Median age of persons from whom isolates were reported, by year.

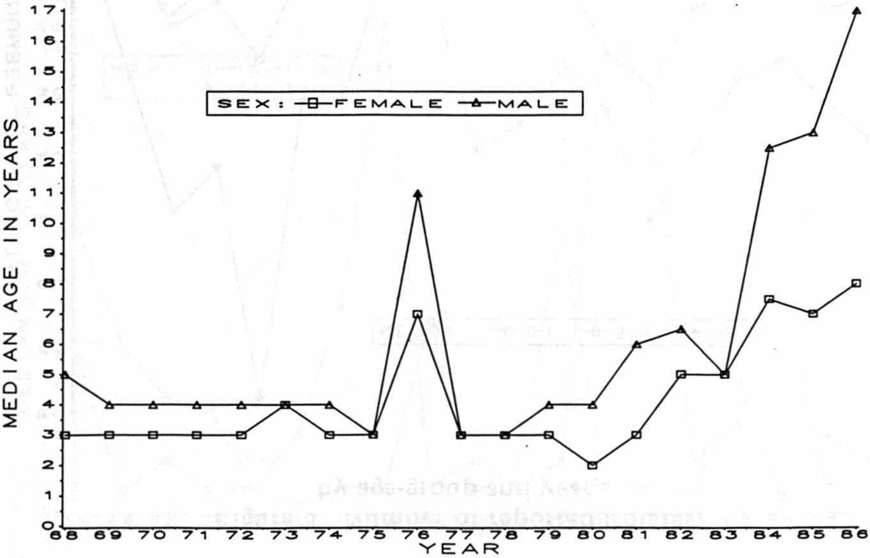


Figure 7. Reported nonhuman sources, by year.

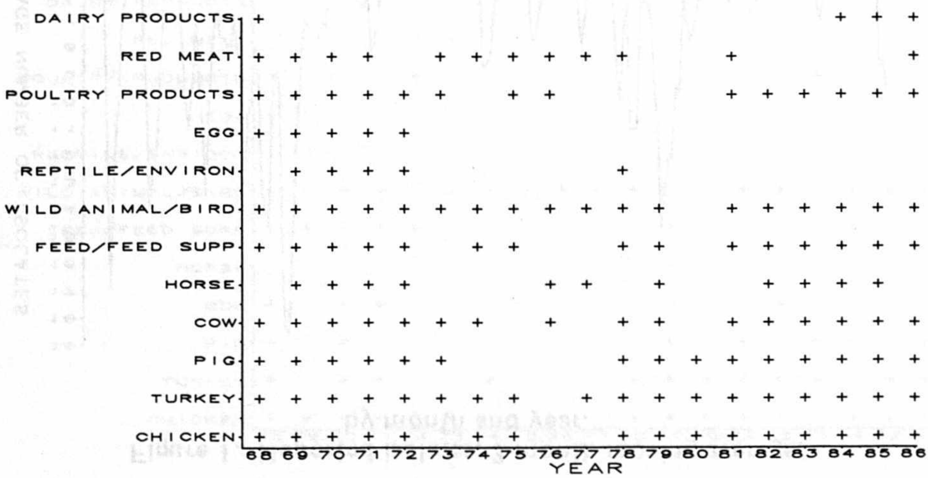


Figure 6. Percent of reported isolates, by age-group and sex.

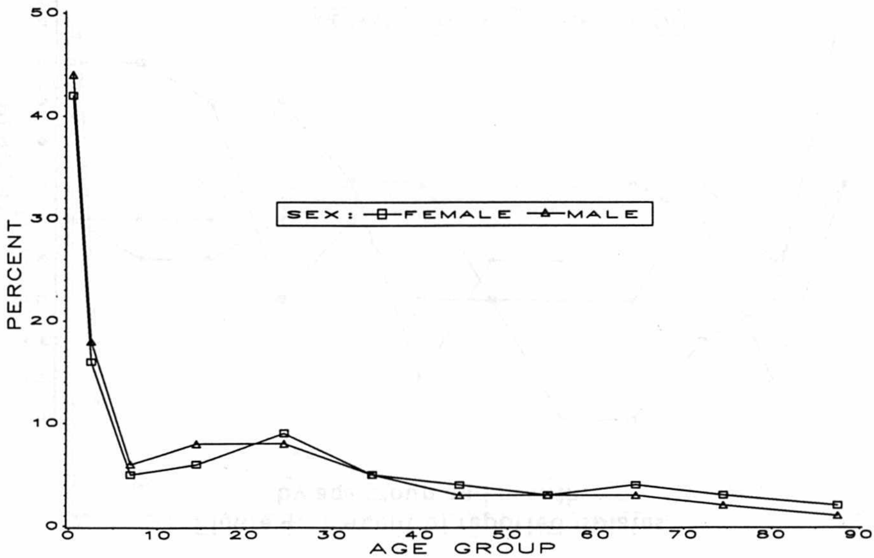
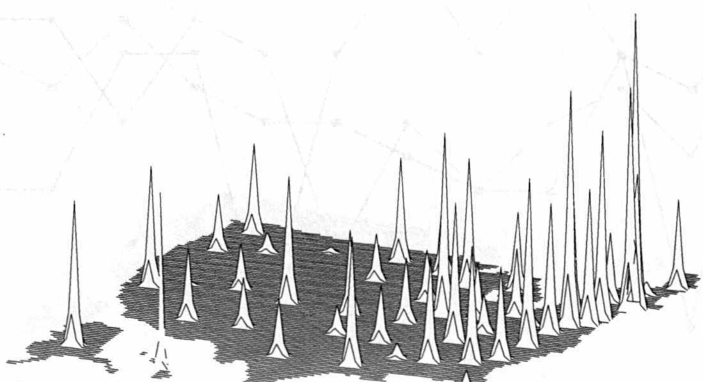


Figure 8. Age-standardized rates of reported isolates, by state.



S. heidelberg

Figure 1. Reported isolates, 3-month moving average, by month and year.

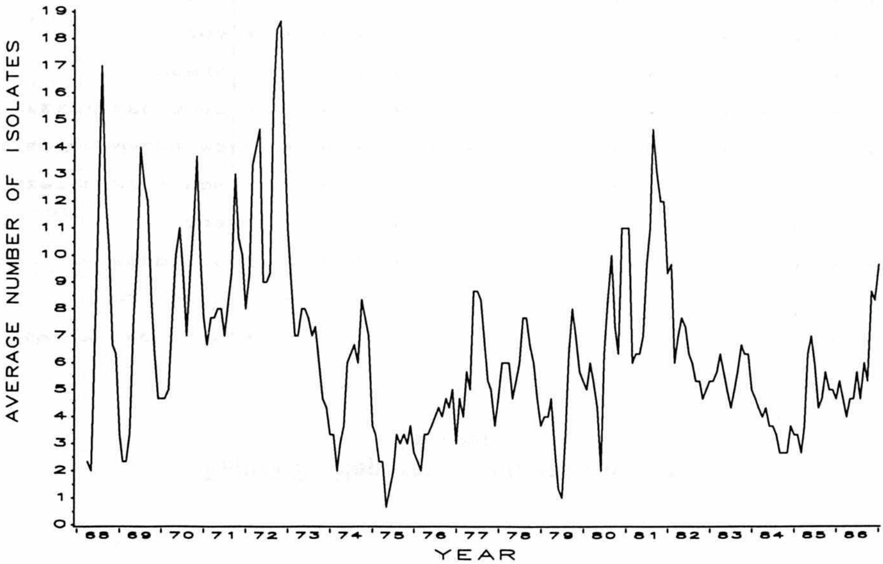


Figure 3. Number of reported isolates, by age-group and year.

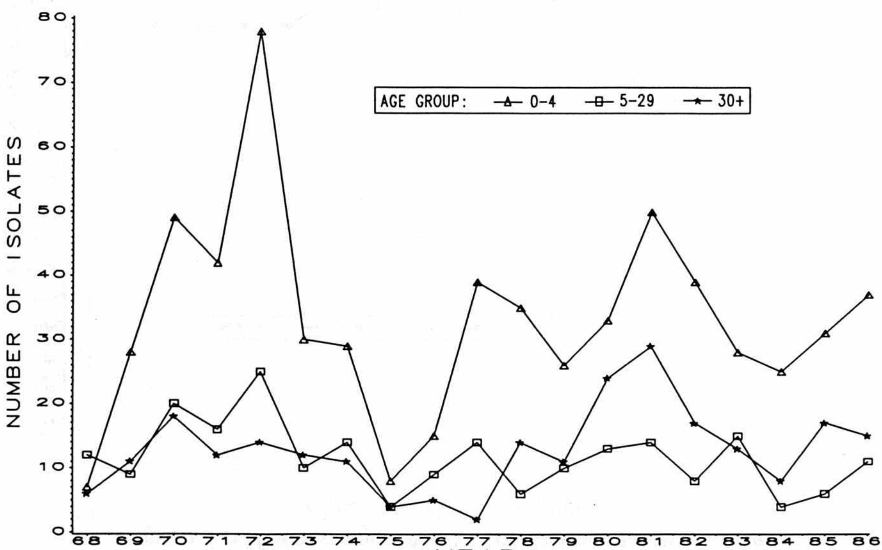
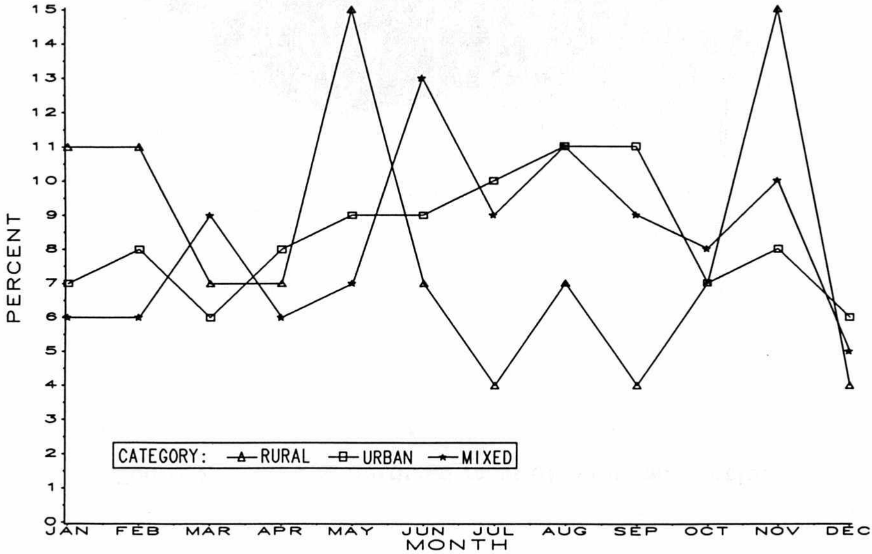
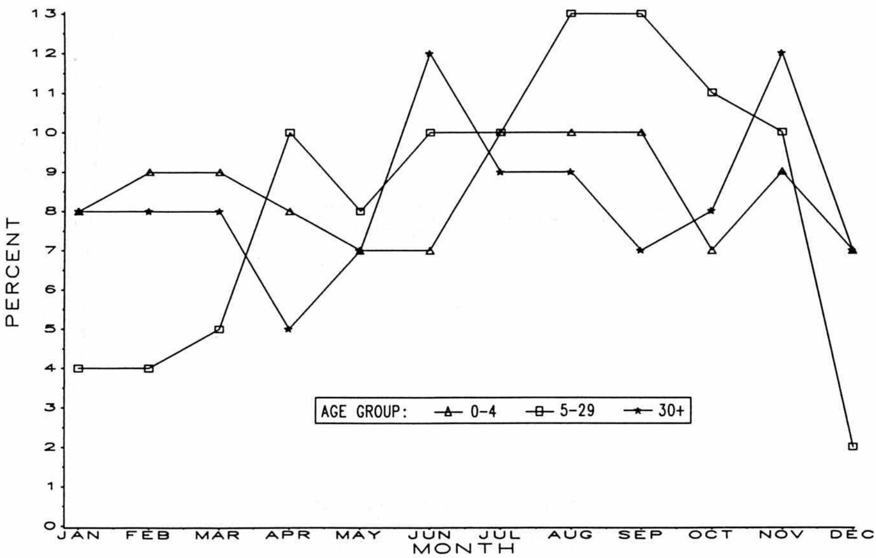


Figure 2. Percent of reported isolates from urban and rural counties, by month.



S.indiana

Figure 4. Percent of reported isolates, by age-group and month.



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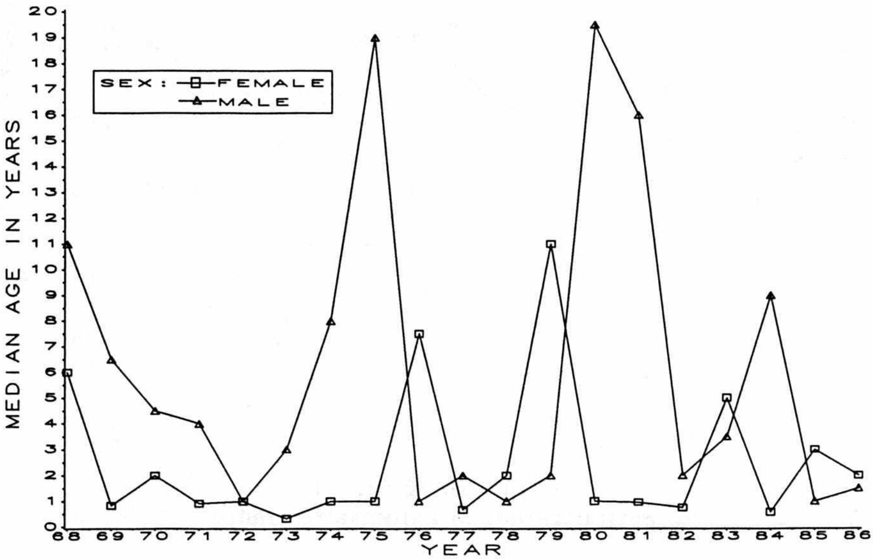


Figure 7. Reported nonhuman sources, by year.

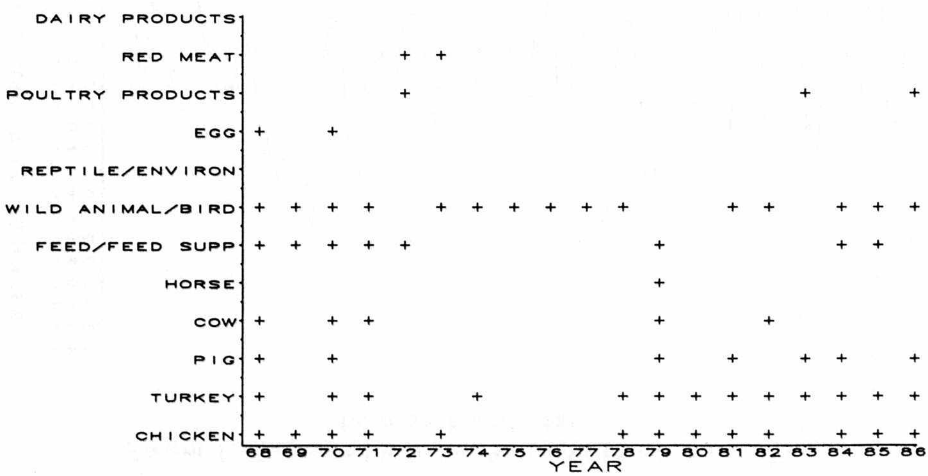
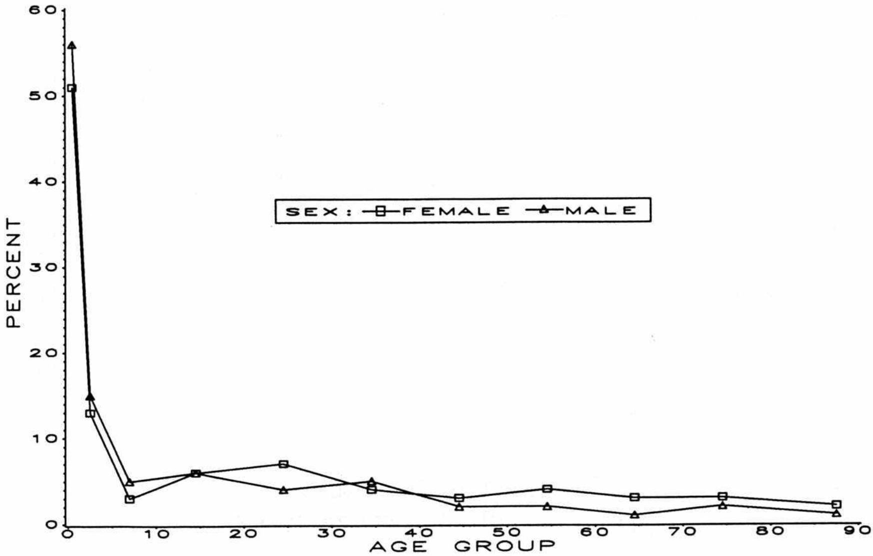


Figure 6. Percent of reported isolates, by age-group and sex.



S. indiana

Figure 8. Age-standardized rates of reported isolates, by state.

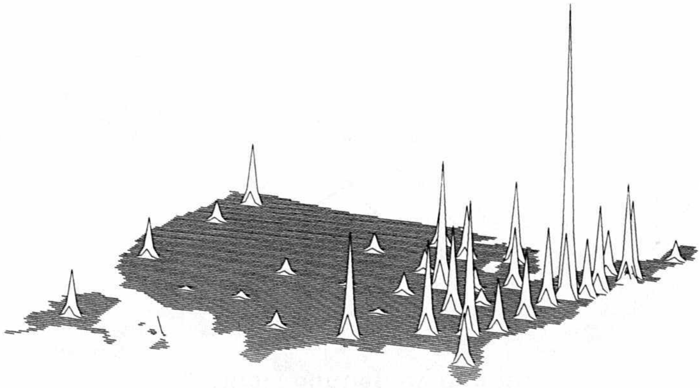


Figure 1. Reported isolates, 3-month moving average, by month and year.

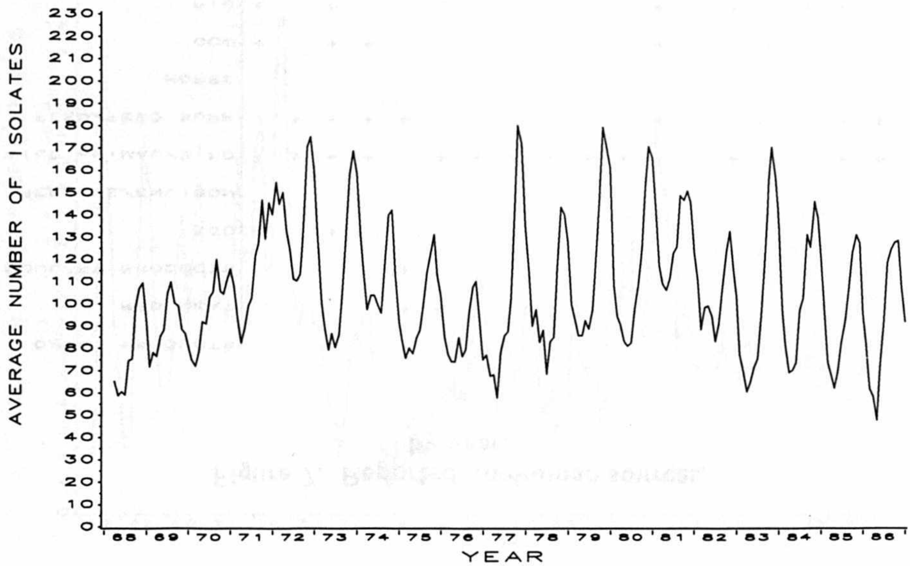


Figure 3. Number of reported isolates, by age-group and year.

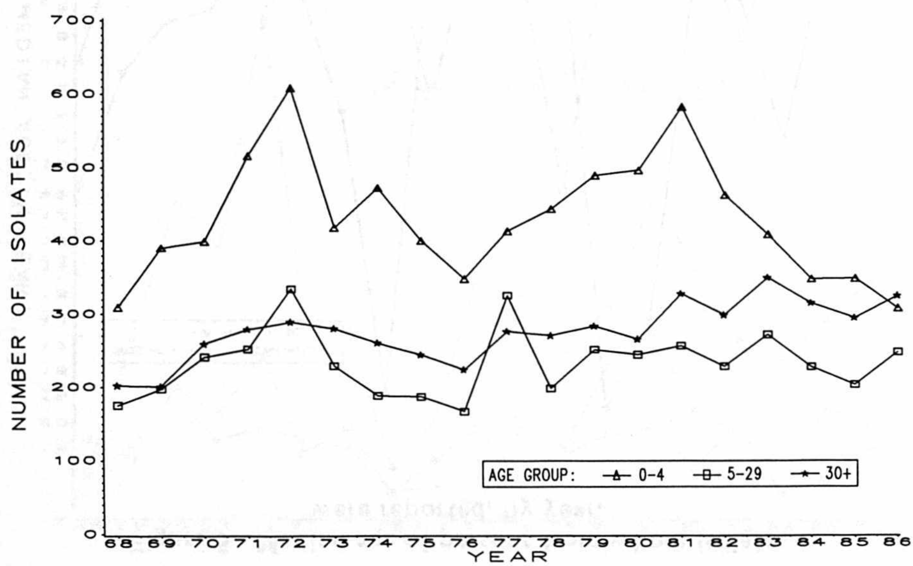


Figure 2. Percent of reported isolates from urban and rural counties, by month.

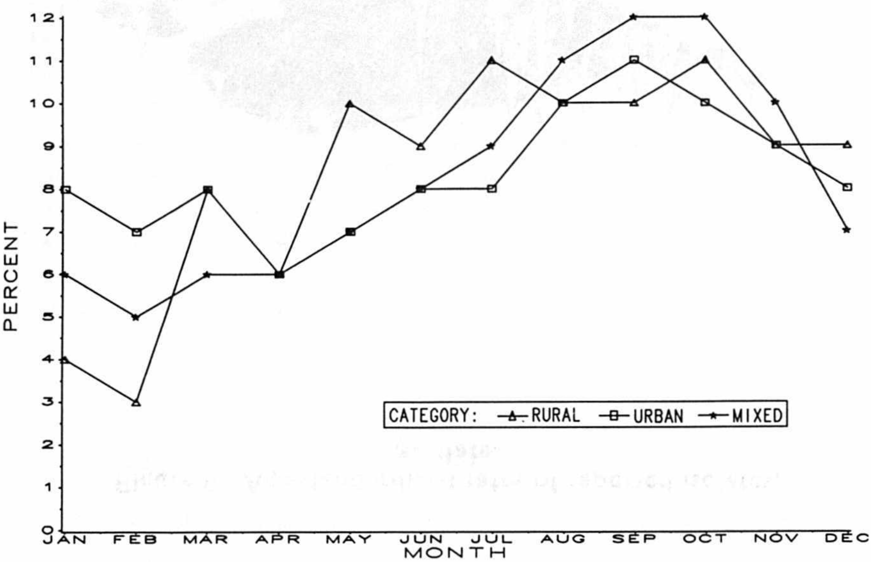


Figure 4. Percent of reported isolates, by age-group and month.

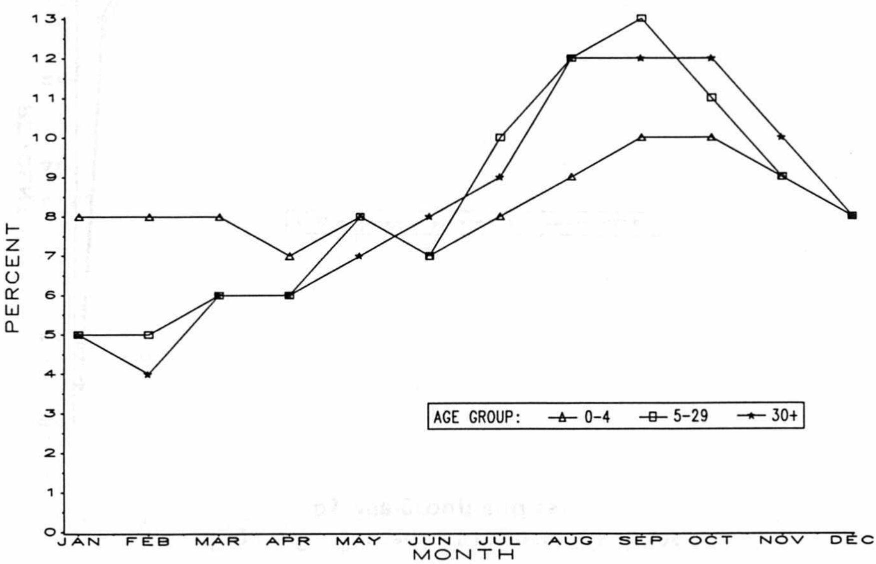


Figure 5. Median age of persons from whom isolates were reported, by year.

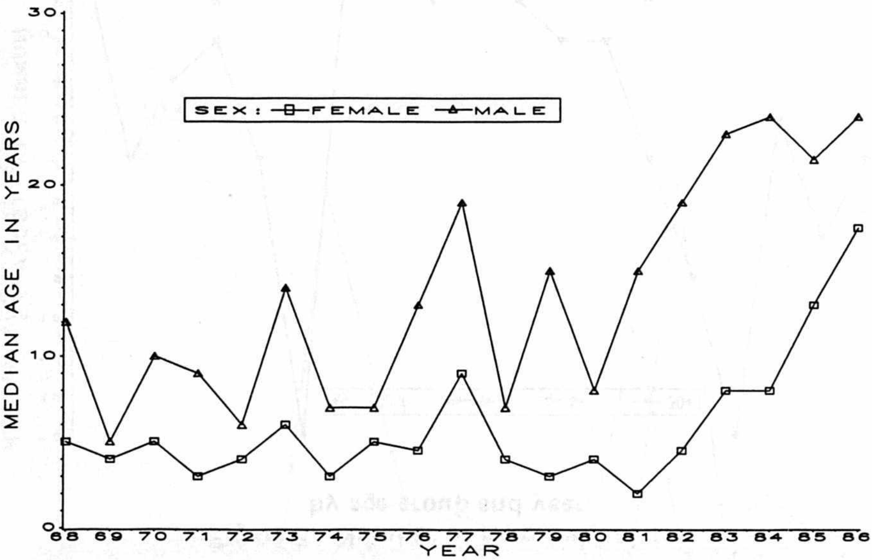


Figure 7. Reported nonhuman sources, by year.

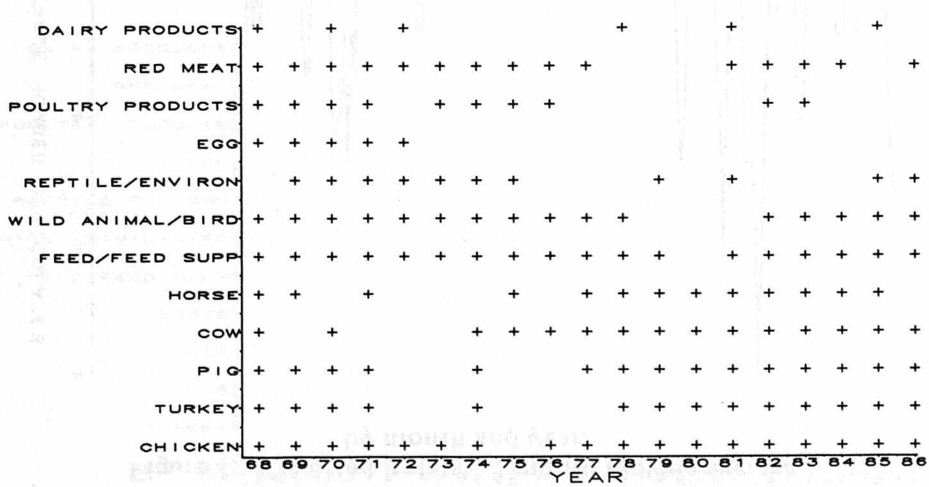


Figure 6. Percent of reported isolates, by age-group and sex.

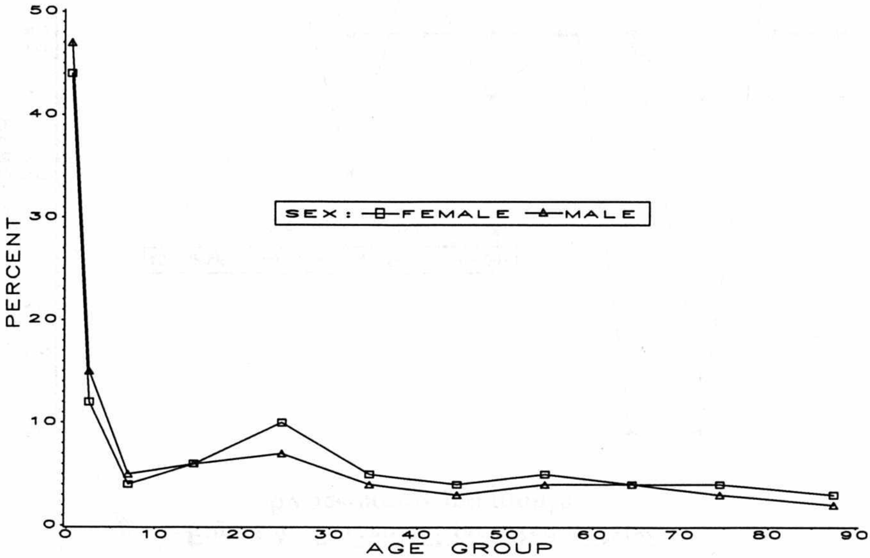
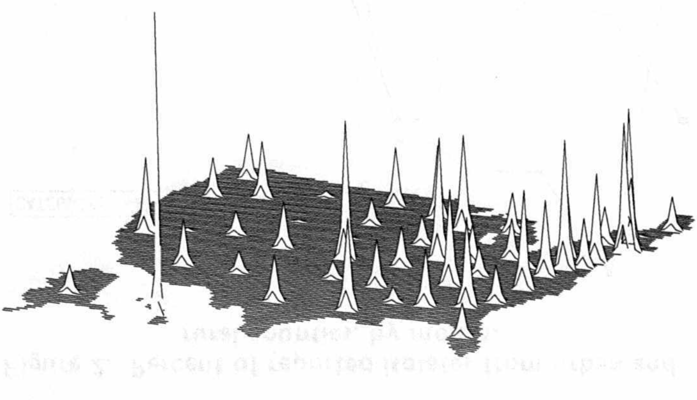


Figure 8. Age-standardized rates of reported isolates, by state.



S. infantis

Figure 1. Reported isolates, 3-month moving average, by month and year.

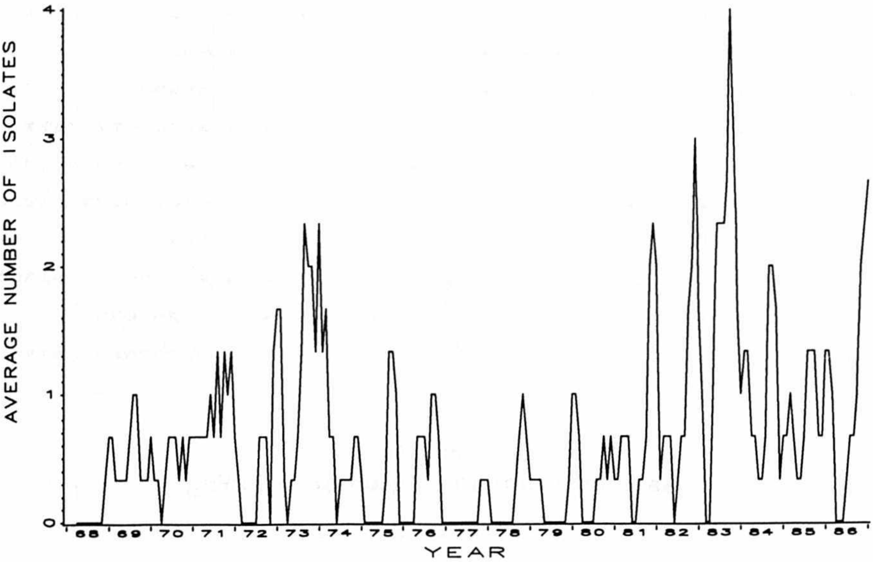
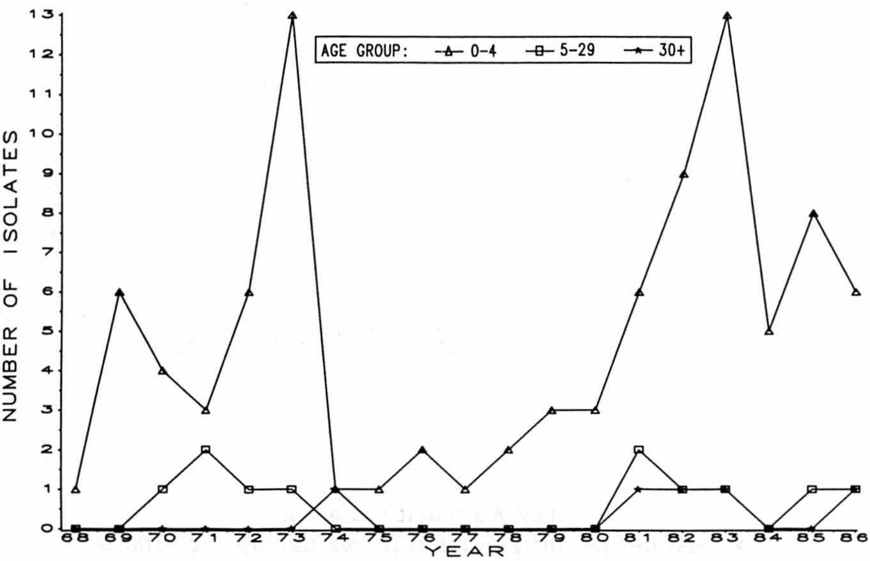


Figure 3. Number of reported isolates, by age-group and year.



S. inverness

Figure 2. Percent of reported isolates from urban and rural counties, by month.

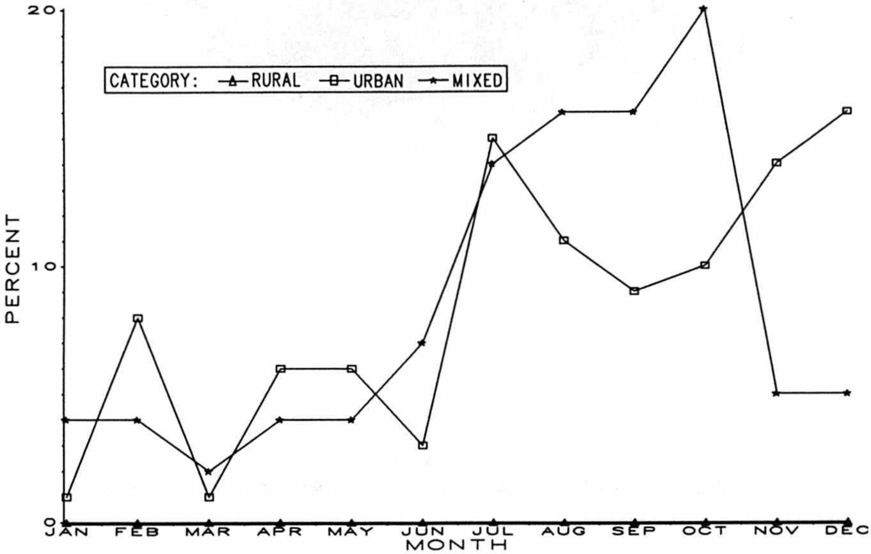


Figure 4. Percent of reported isolates, by age-group and month.

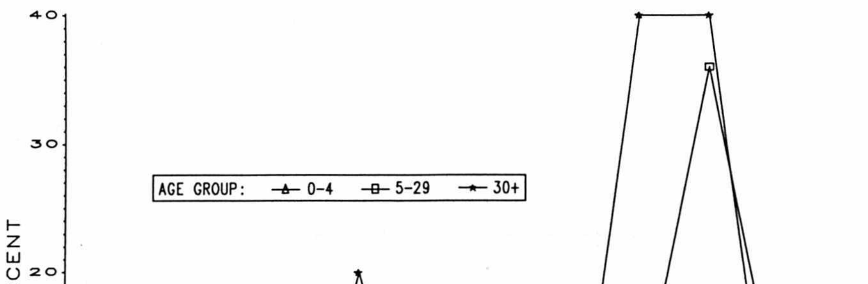


Figure 5. Median age of persons from whom isolates were reported, by year.

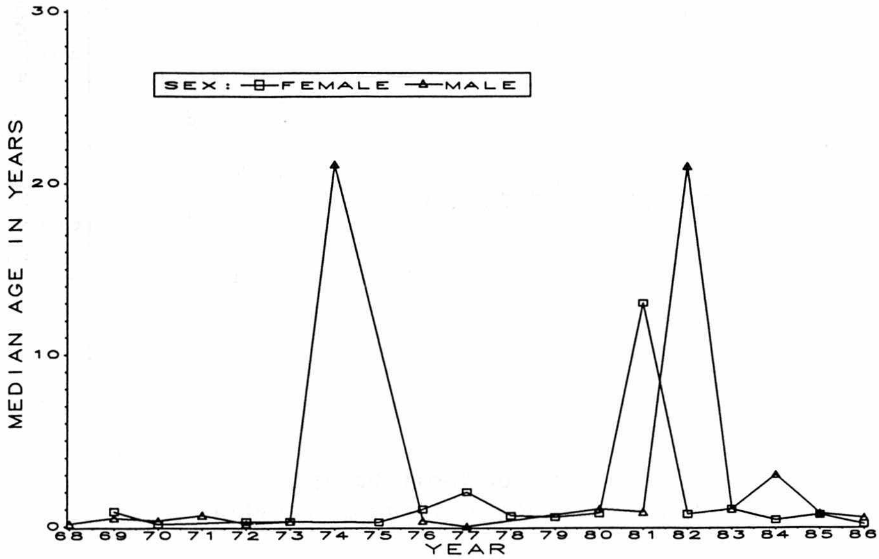


Figure 7. Reported nonhuman sources, by year.

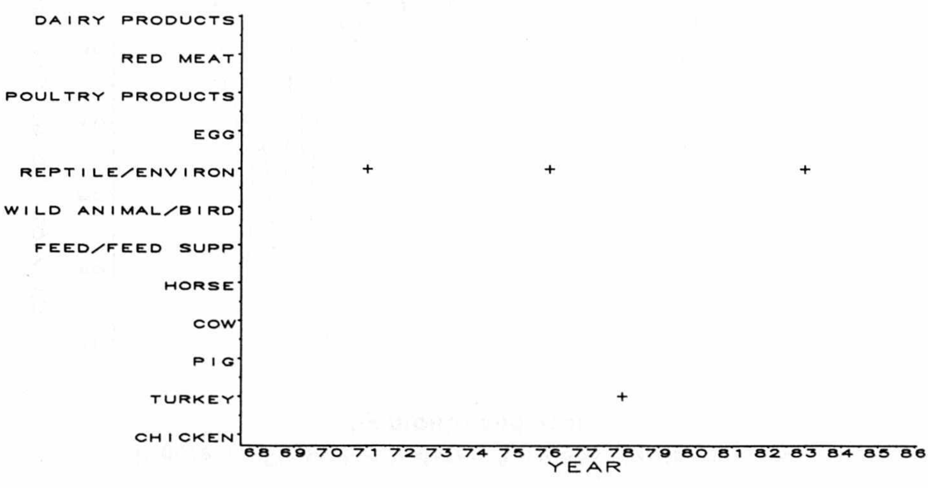
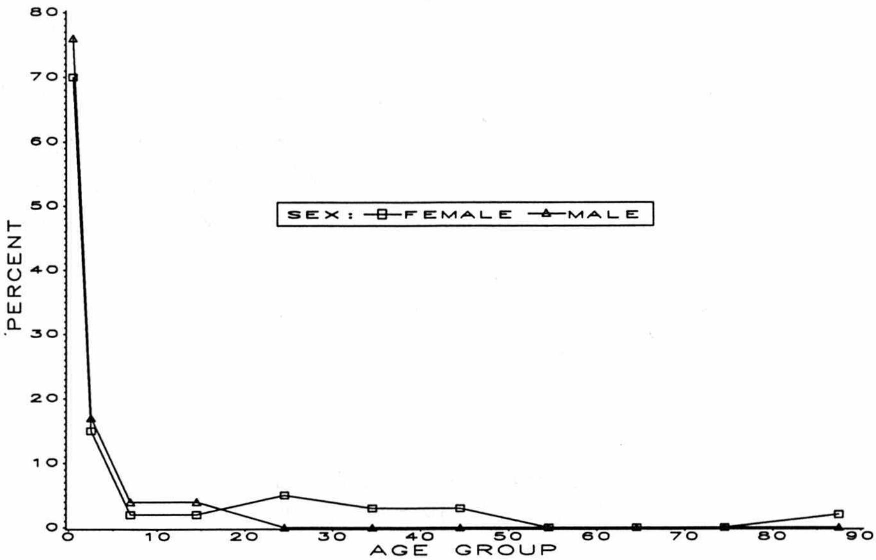


Figure 6. Percent of reported isolates, by age-group and sex.



S. inverness

Figure 8. Age-standardized rates of reported isolates, by state.

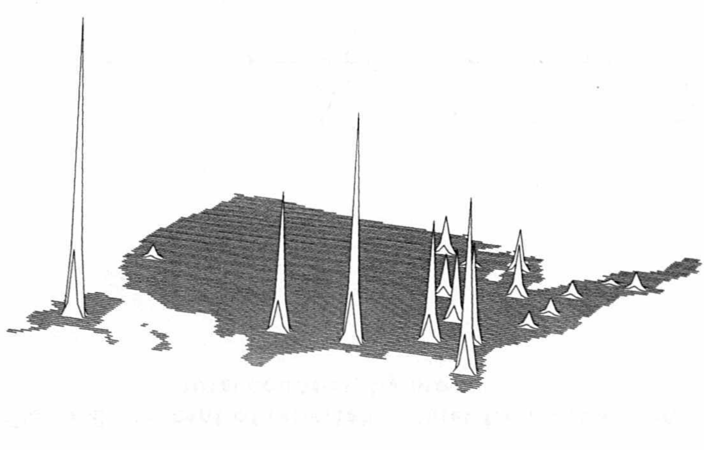


Figure 1. Reported isolates, 3-month moving average, by month and year.

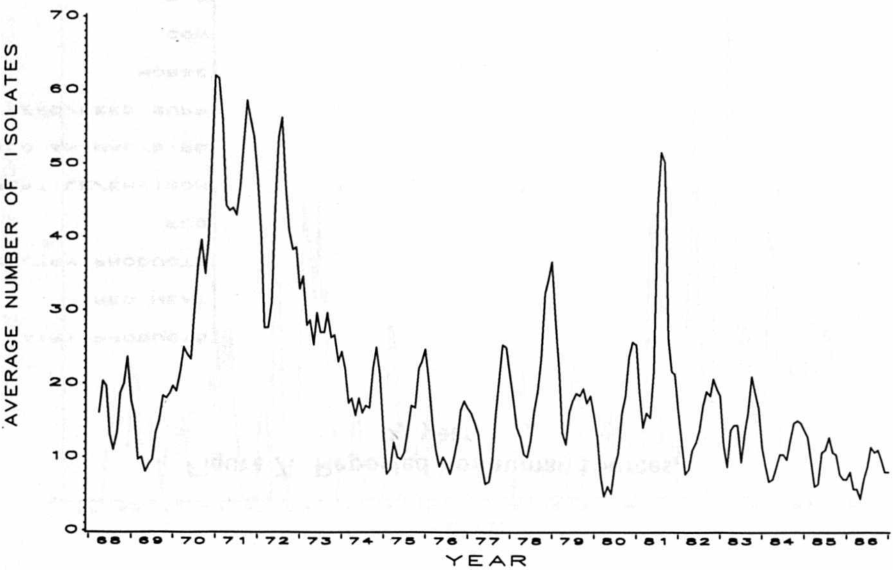


Figure 3. Number of reported isolates, by age-group and year.

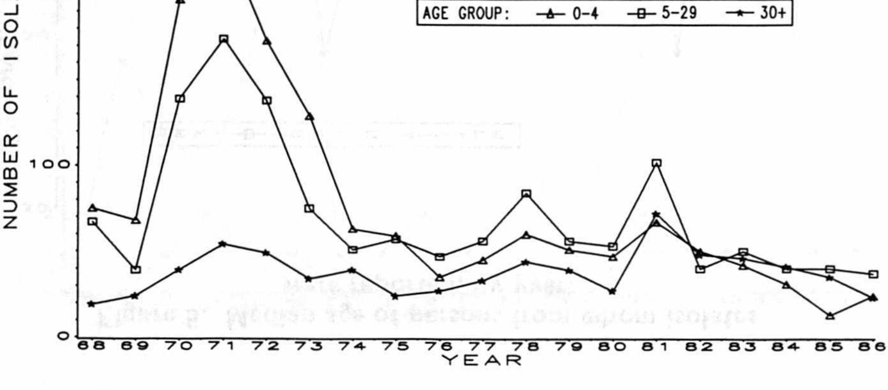


Figure 2. Percent of reported isolates from urban and rural counties, by month.

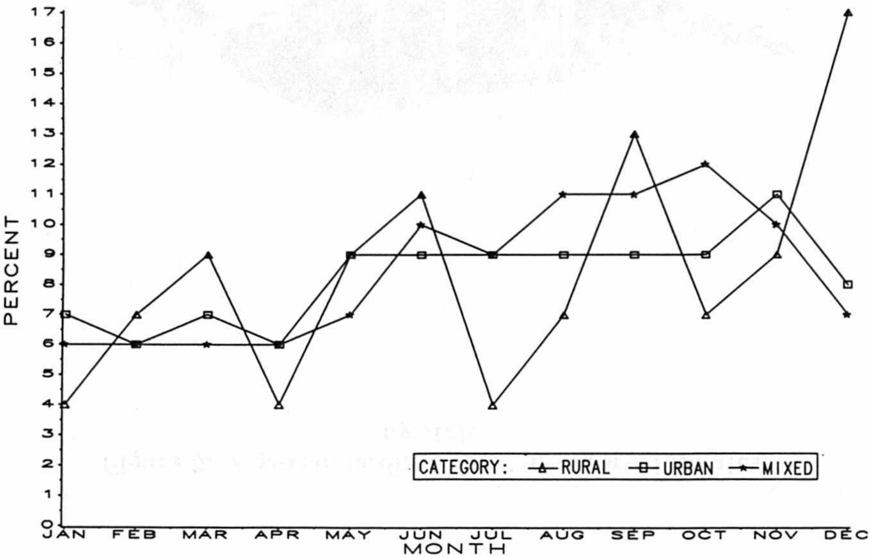


Figure 4. Percent of reported isolates, by age-group and month.

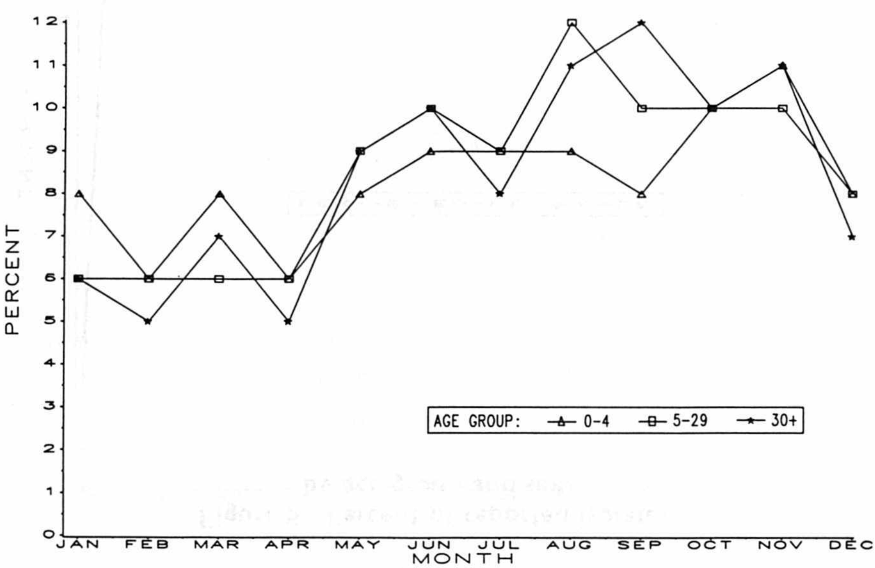


Figure 5. Median age of persons from whom isolates were reported, by year.

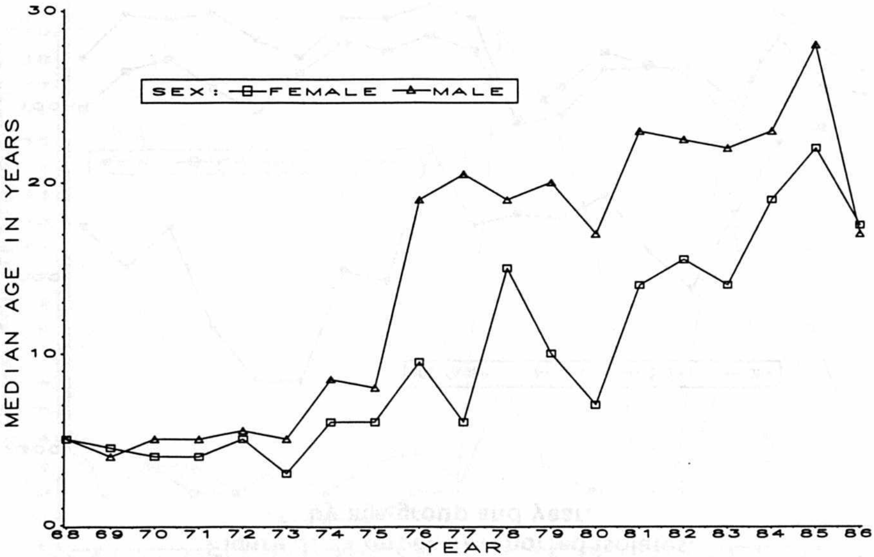


Figure 7. Reported nonhuman sources, by year.

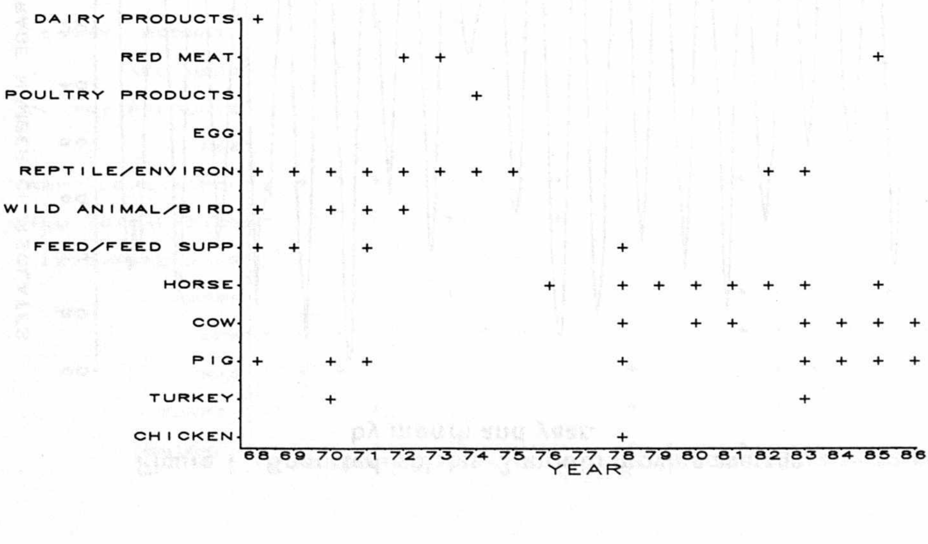
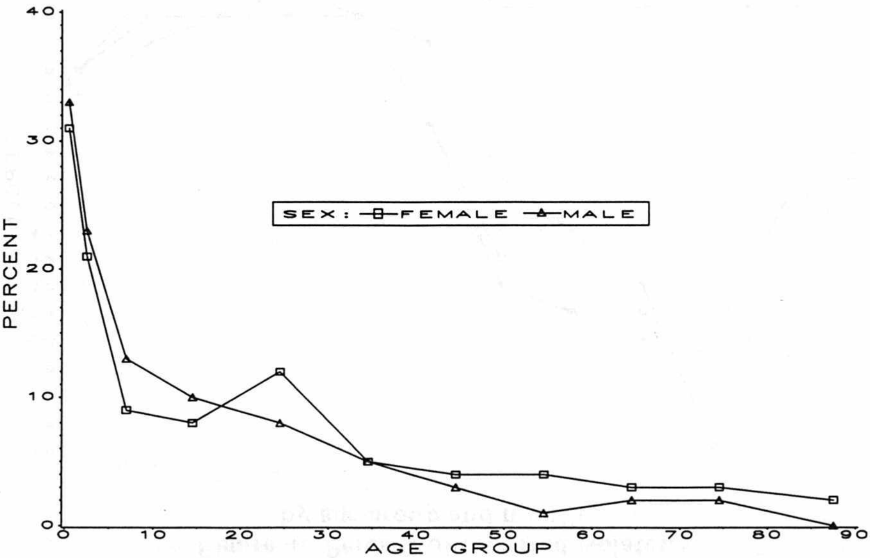


Figure 6. Percent of reported isolates, by age-group and sex.



S. java

Figure 8. Age-standardized rates of reported isolates, by state.

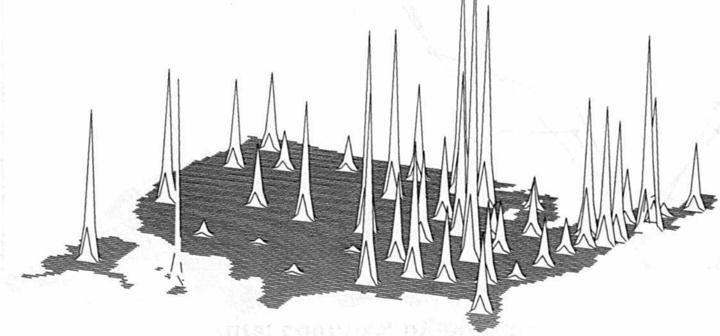


Figure 1. Reported isolates, 3-month moving average, by month and year.

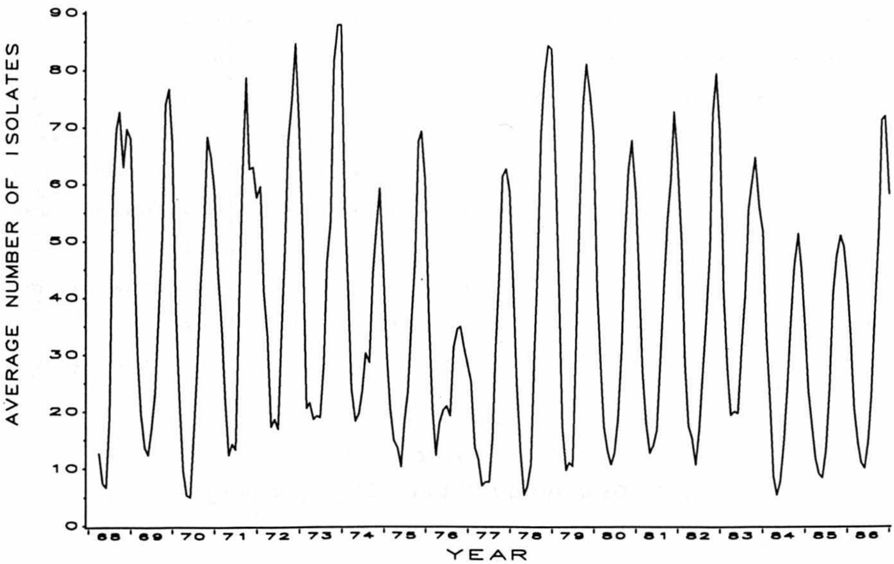


Figure 3. Number of reported isolates, by age-group and year.

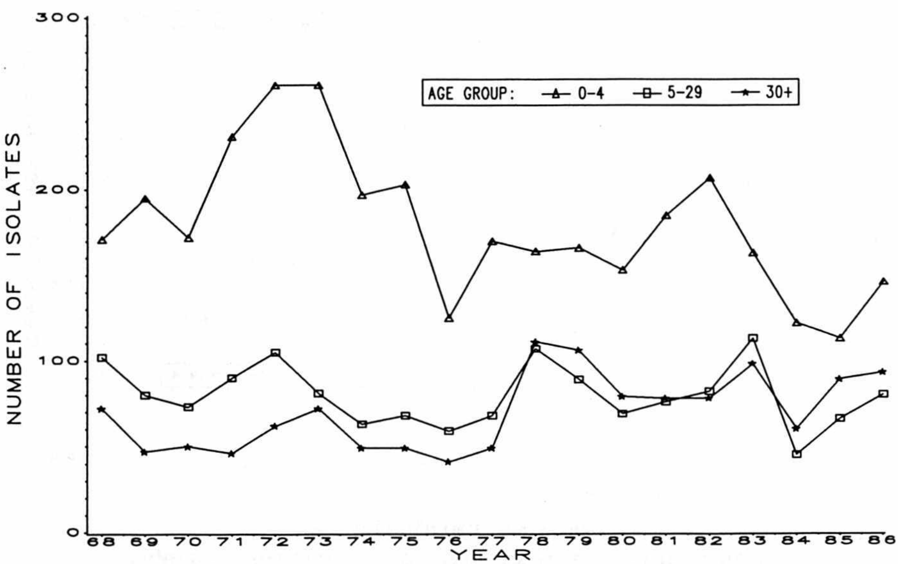


Figure 2. Percent of reported isolates from urban and rural counties, by month.

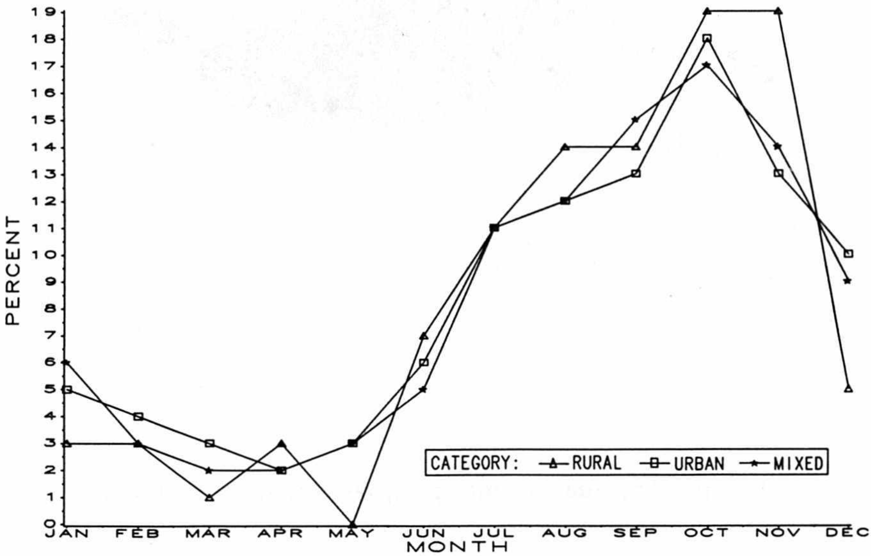
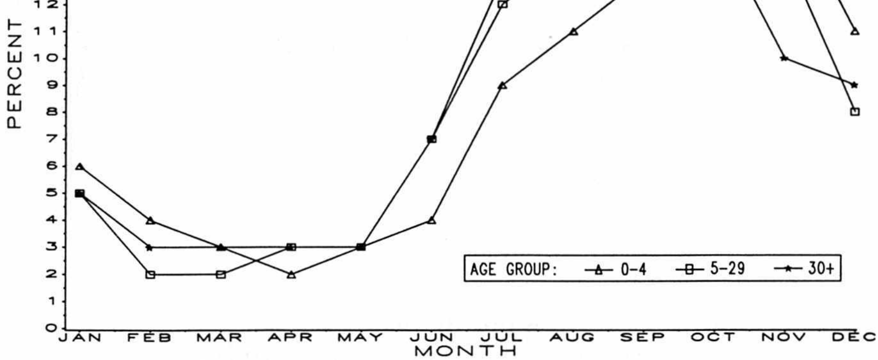


Figure 4. Percent of reported isolates, by age-group and month.



S. javiana

Figure 5. Median age of persons from whom isolates were reported, by year.

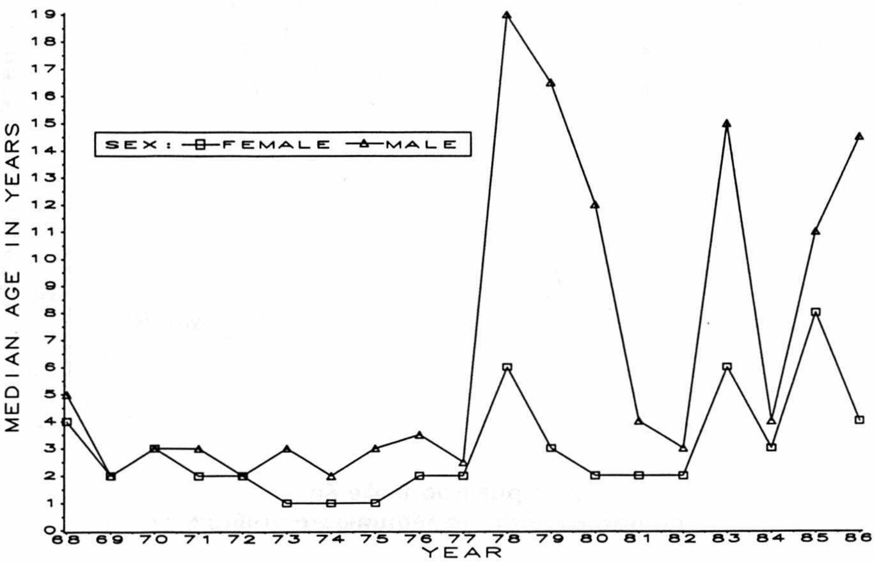


Figure 7. Reported nonhuman sources, by year.

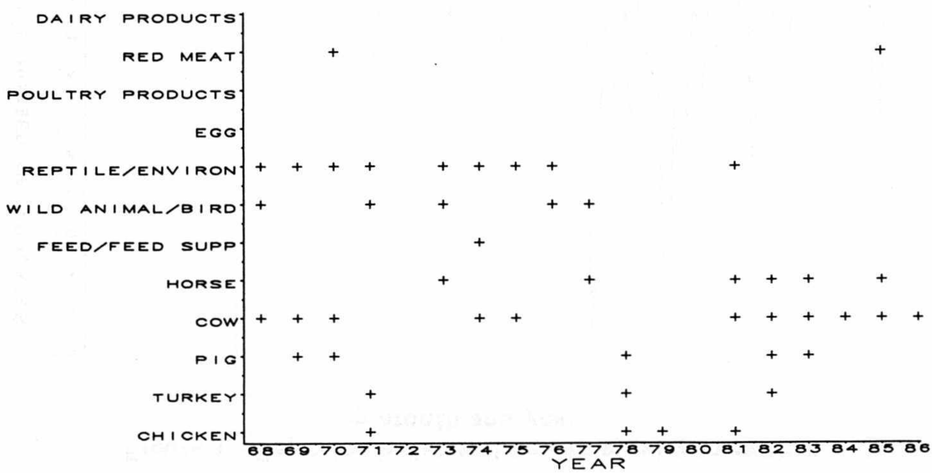
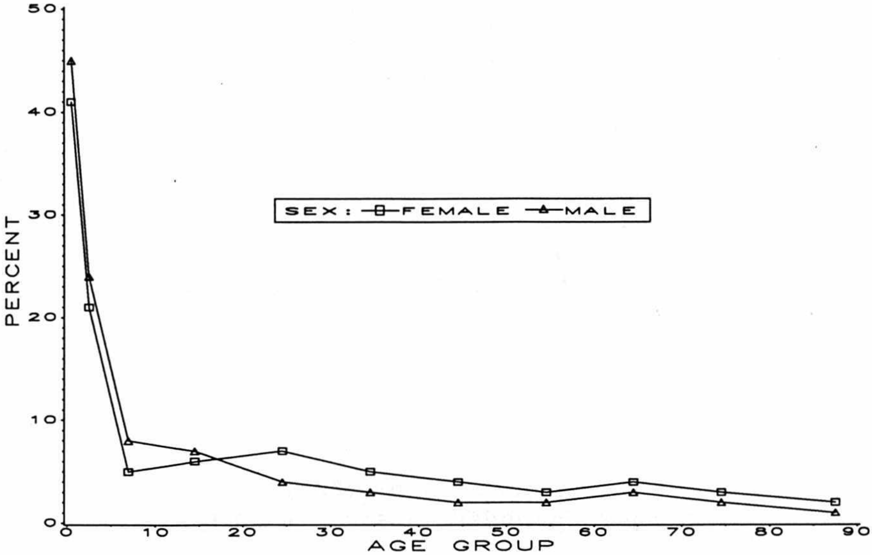


Figure 6. Percent of reported isolates, by age-group and sex.



S. javiana

Figure 8. Age-standardized rates of reported isolates, by state.

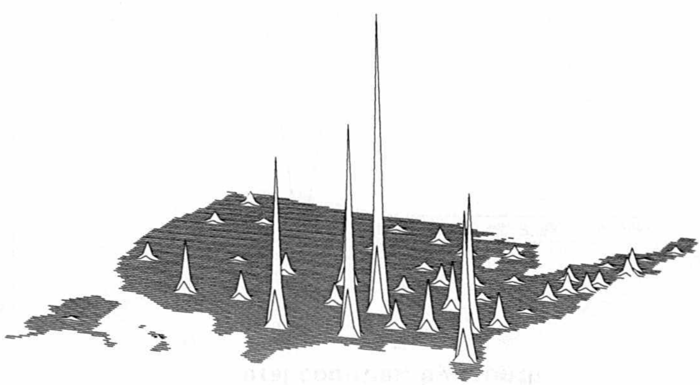


Figure 1. Reported isolates, 3-month moving average, by month and year.

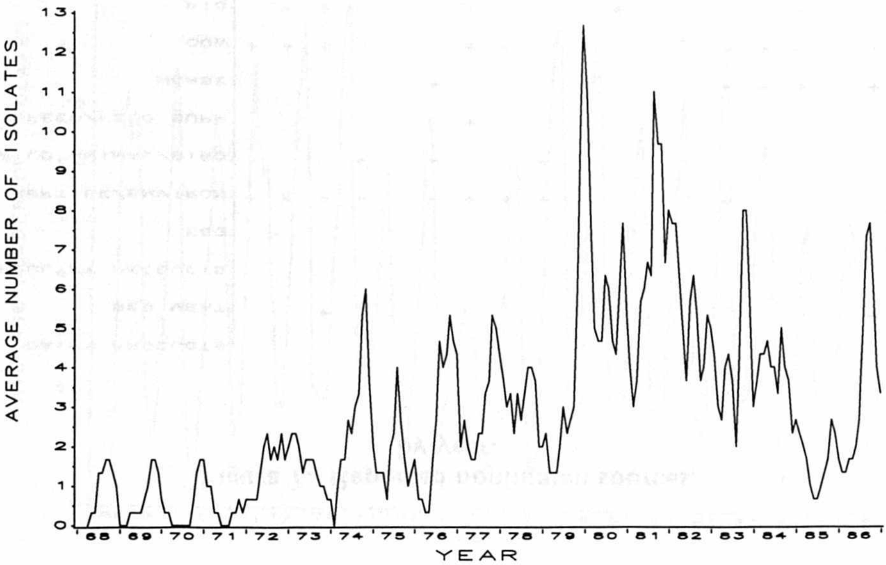
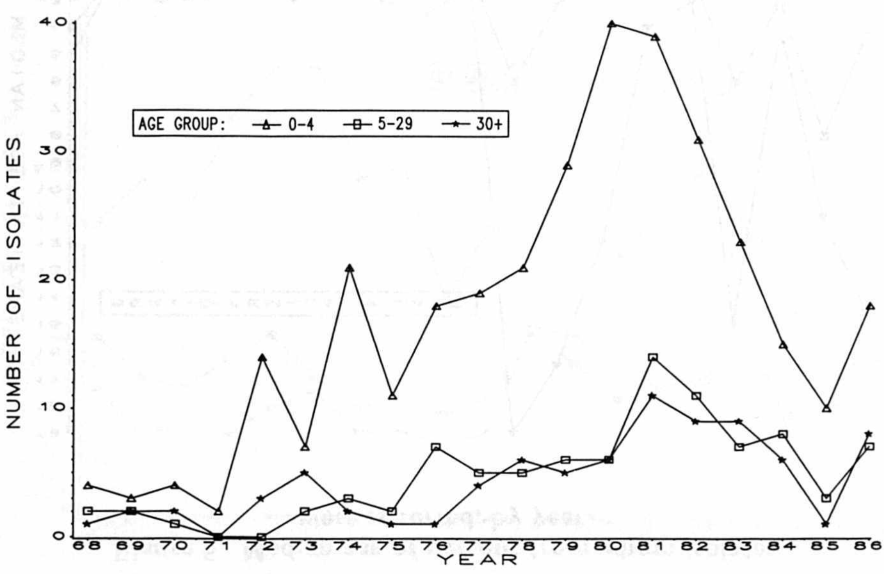


Figure 3. Number of reported isolates, by age-group and year.



S. johannesburg

Figure 2. Percent of reported isolates from urban and rural counties, by month.

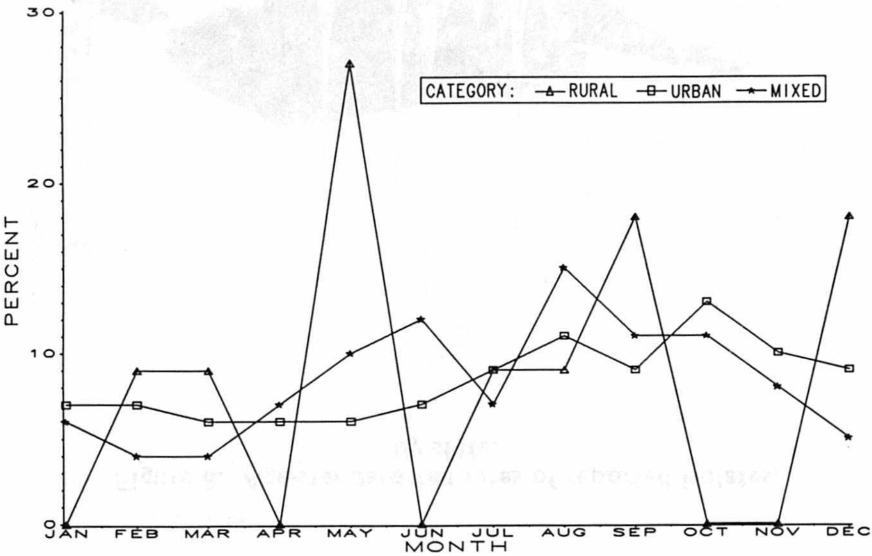


Figure 4. Percent of reported isolates, by age-group and month.

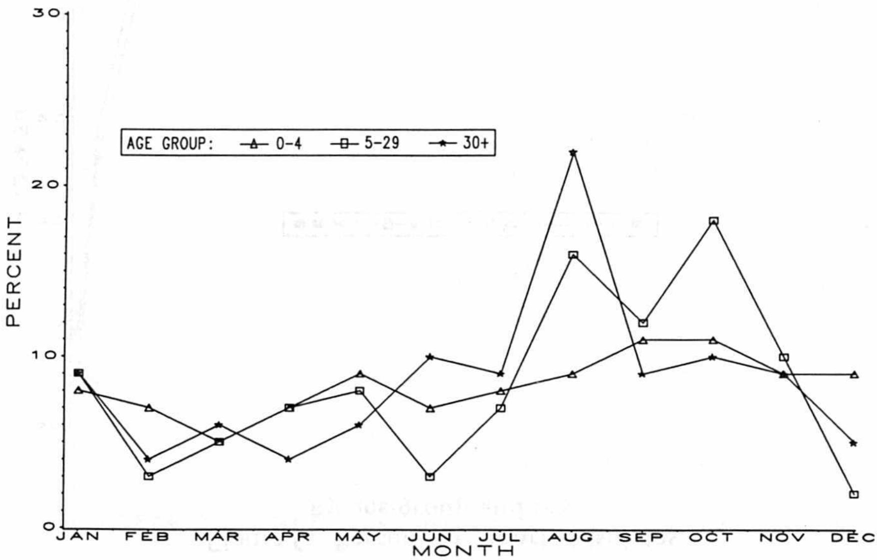


Figure 5. Median age of persons from whom isolates were reported, by year.

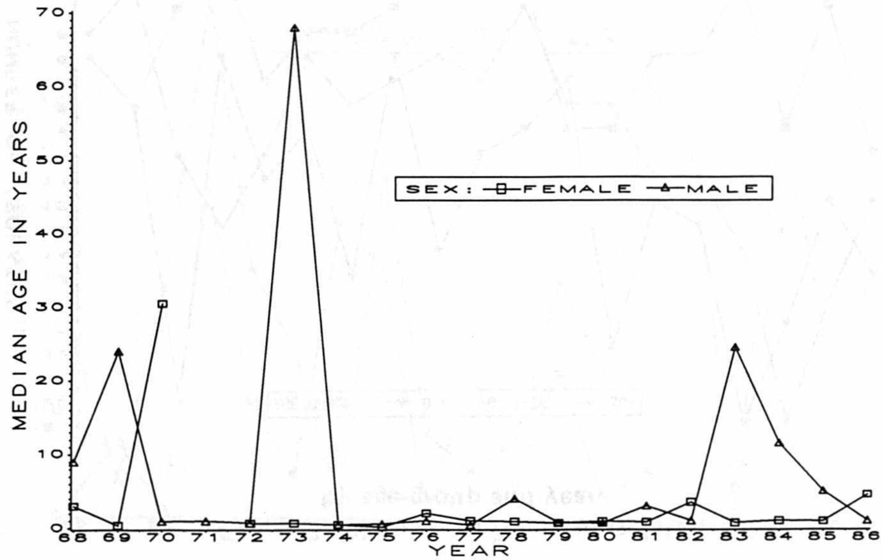


Figure 7. Reported nonhuman sources, by year.

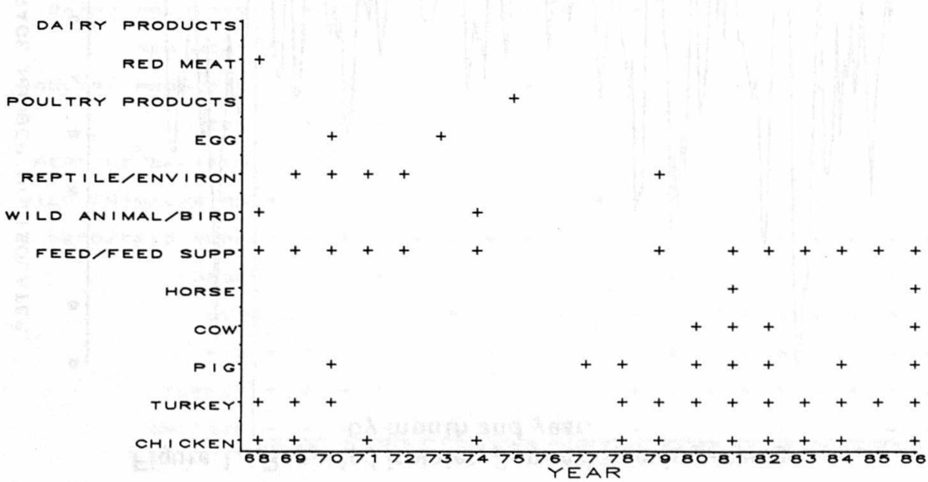


Figure 6. Percent of reported isolates, by age-group and sex.

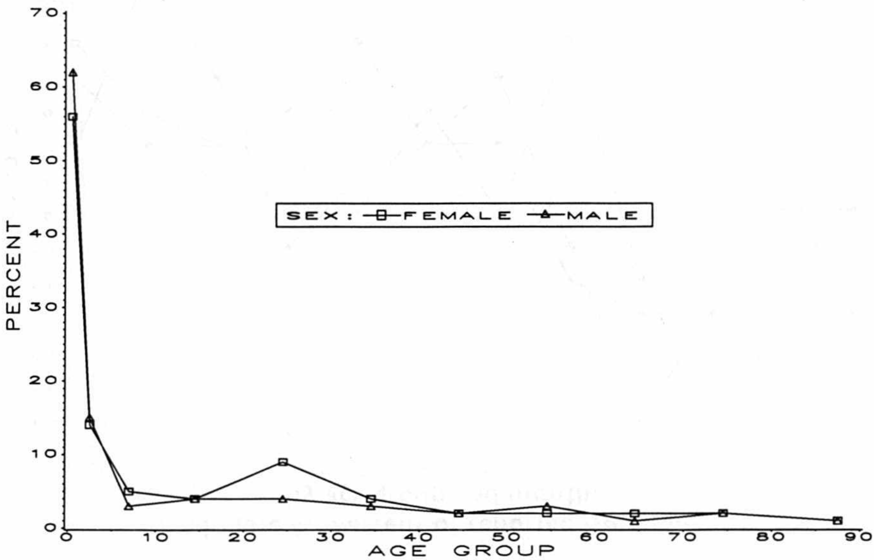


Figure 8. Age-standardized rates of reported isolates, by state.

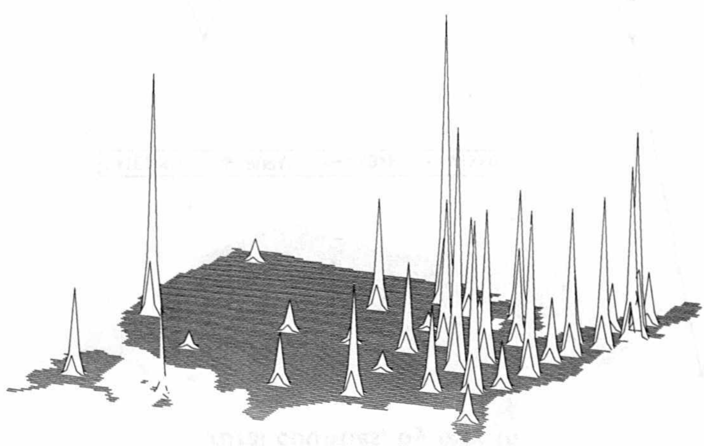


Figure 1. Reported isolates, 3-month moving average, by month and year.

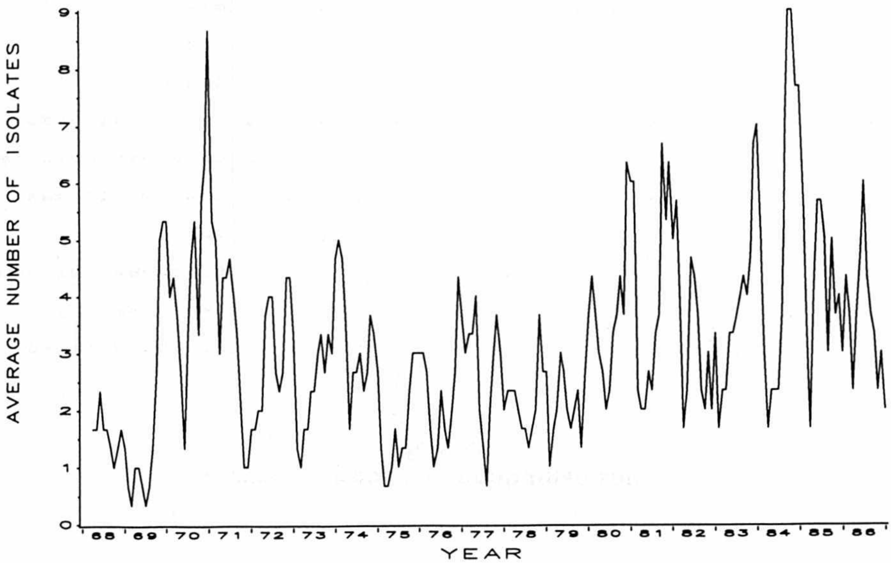


Figure 3. Number of reported isolates, by age-group and year.

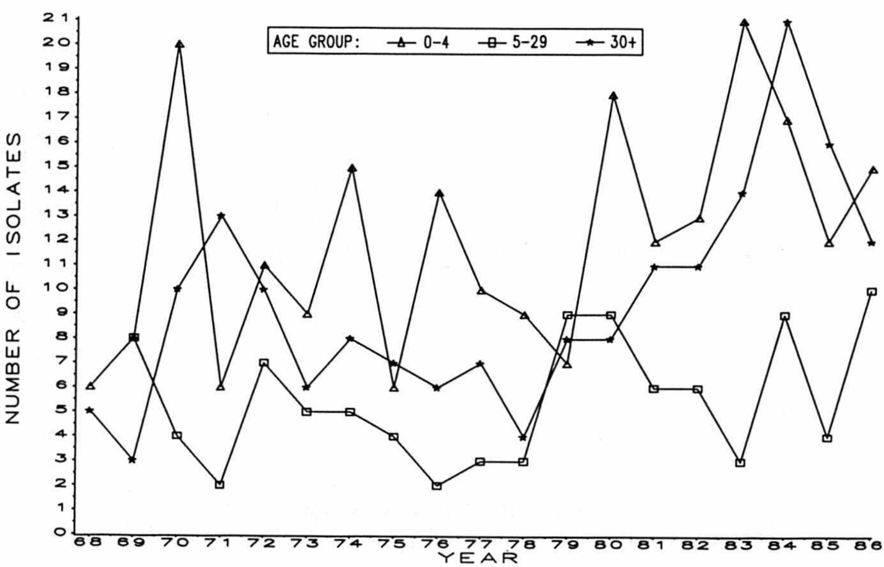


Figure 2. Percent of reported isolates from urban and rural counties, by month.

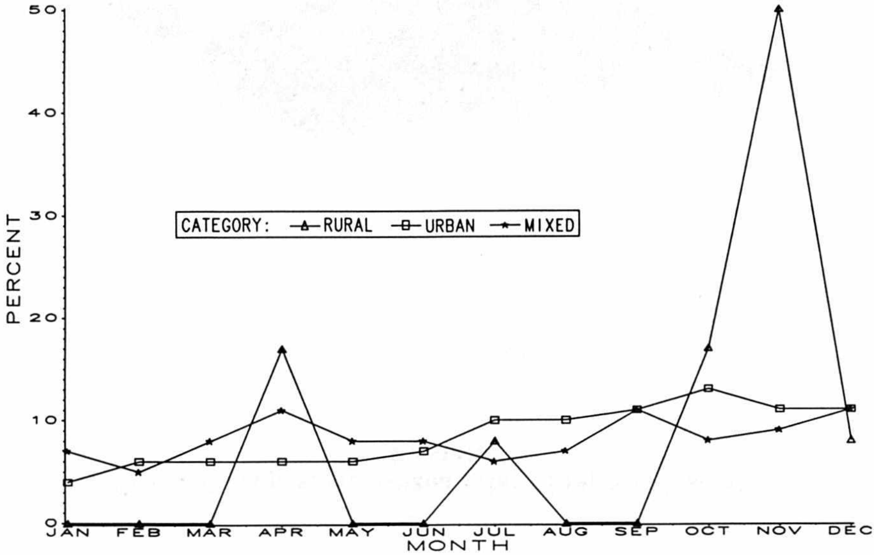
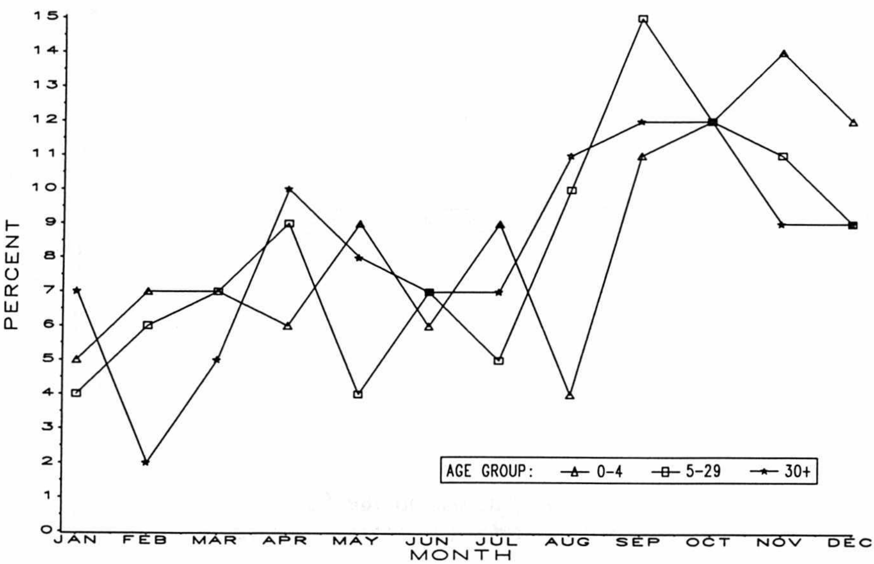


Figure 4. Percent of reported isolates, by age-group and month.



S. kentucky

Figure 5. Median age of persons from whom isolates were reported, by year.

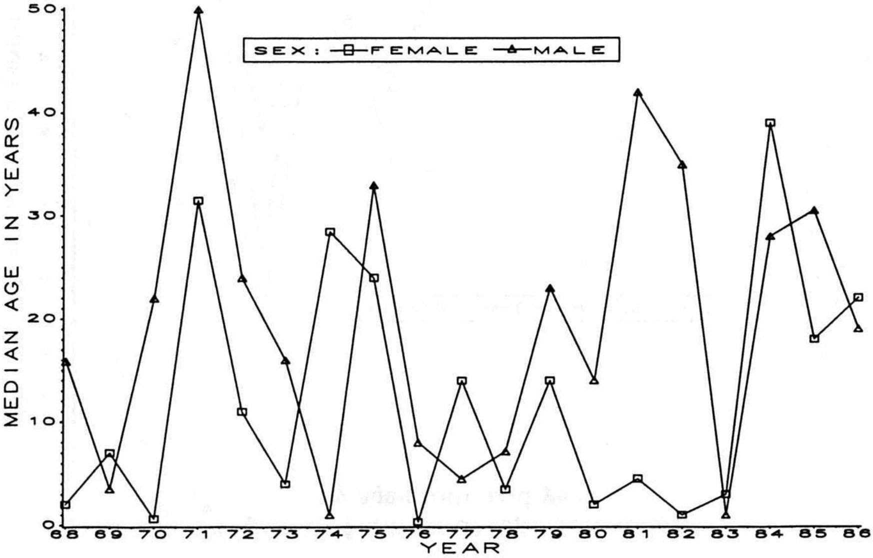


Figure 7. Reported nonhuman sources, by year.

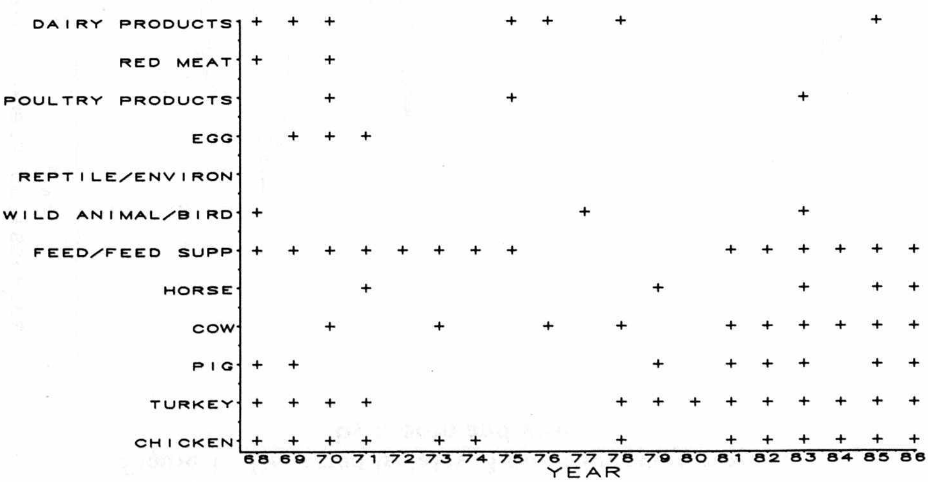


Figure 6. Percent of reported isolates, by age-group and sex.

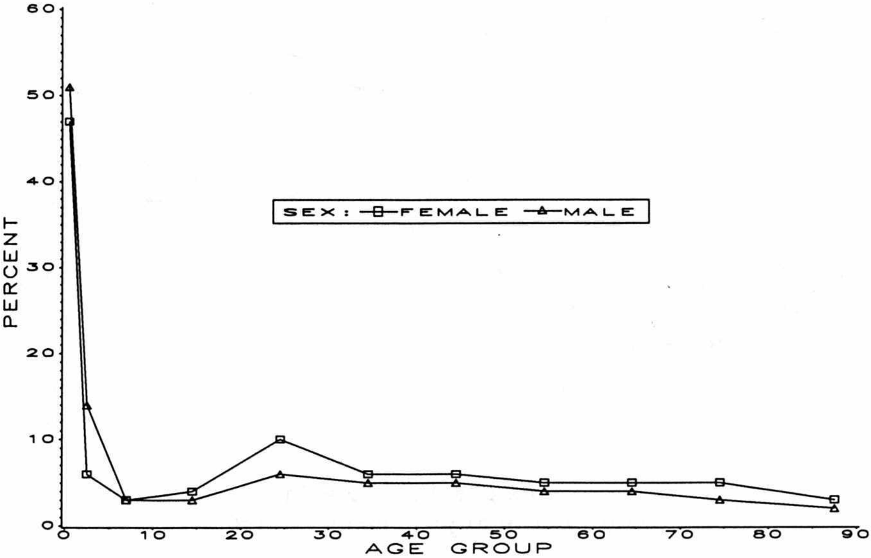
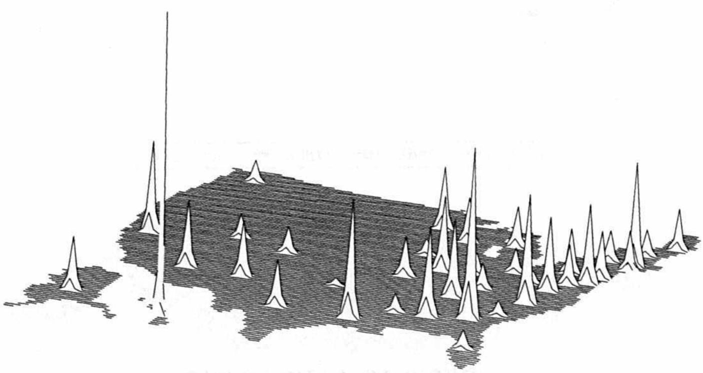


Figure 8. Age-standardized rates of reported isolates, by state.



S. kentucky

Figure 1. Reported isolates, 3-month moving average, by month and year.

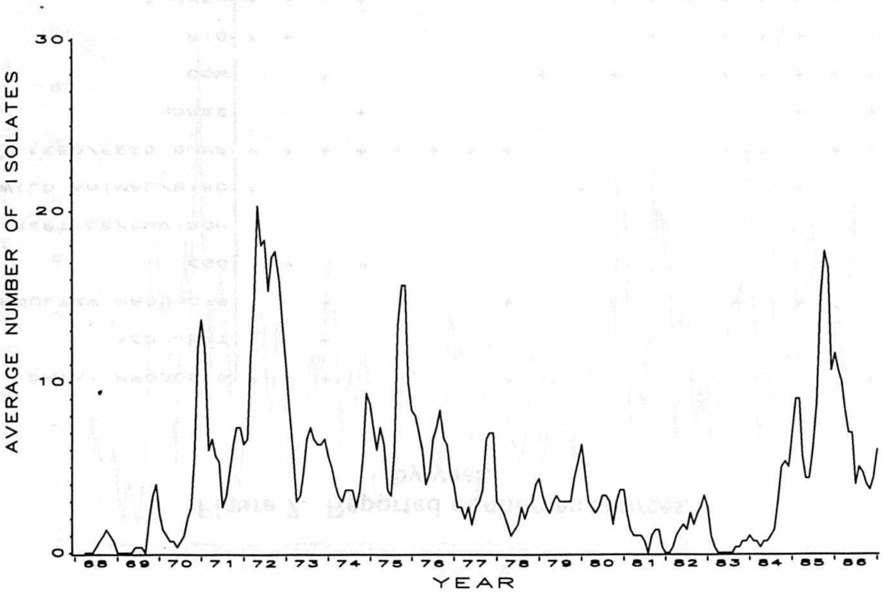


Figure 3. Number of reported isolates, by age-group and year.

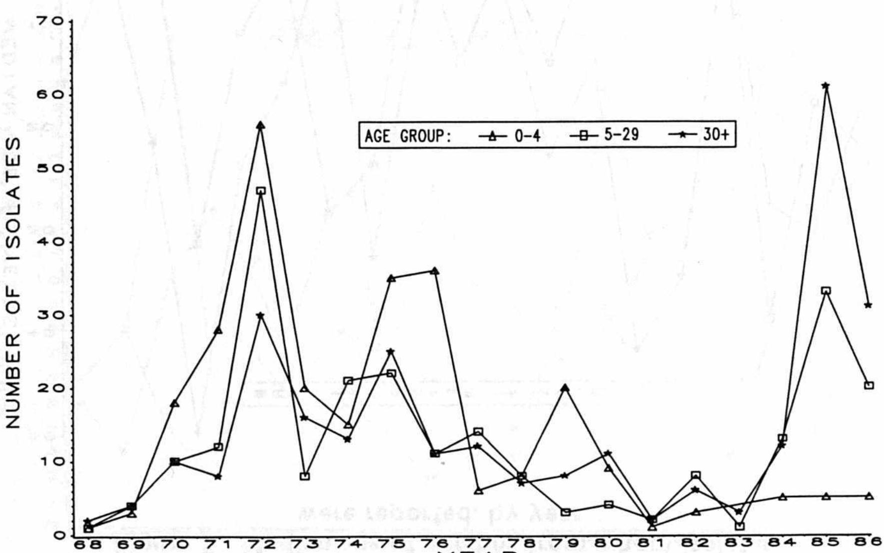
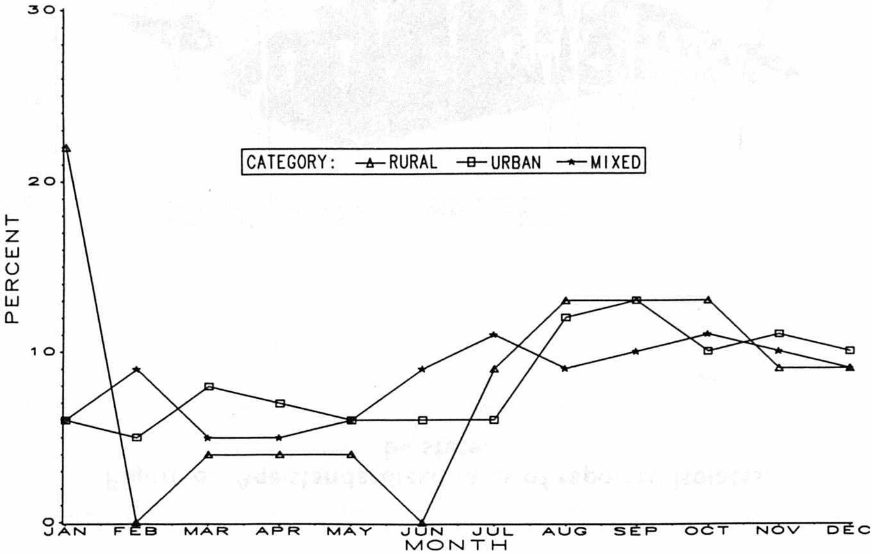


Figure 2. Percent of reported isolates from urban and rural counties, by month.



S. kottbus

Figure 4. Percent of reported isolates, by age-group and month.

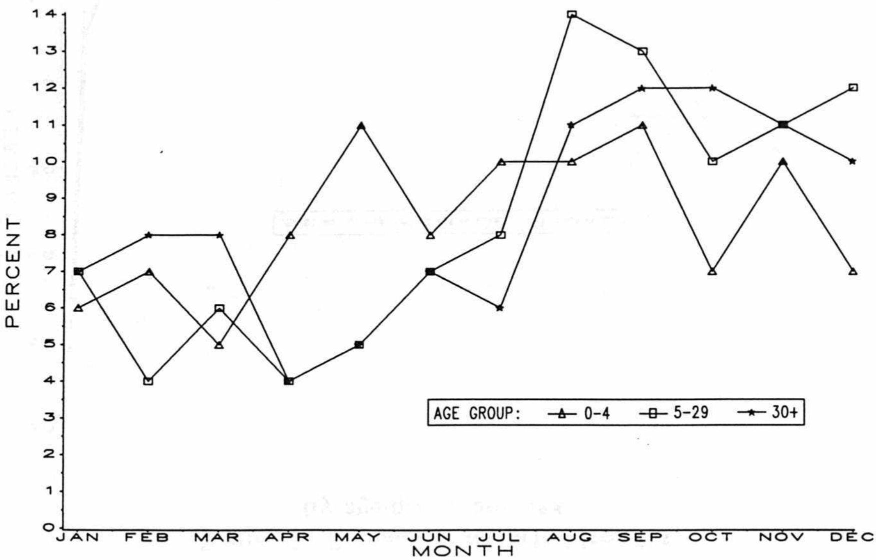


Figure 5. Median age of persons from whom isolates were reported, by year.

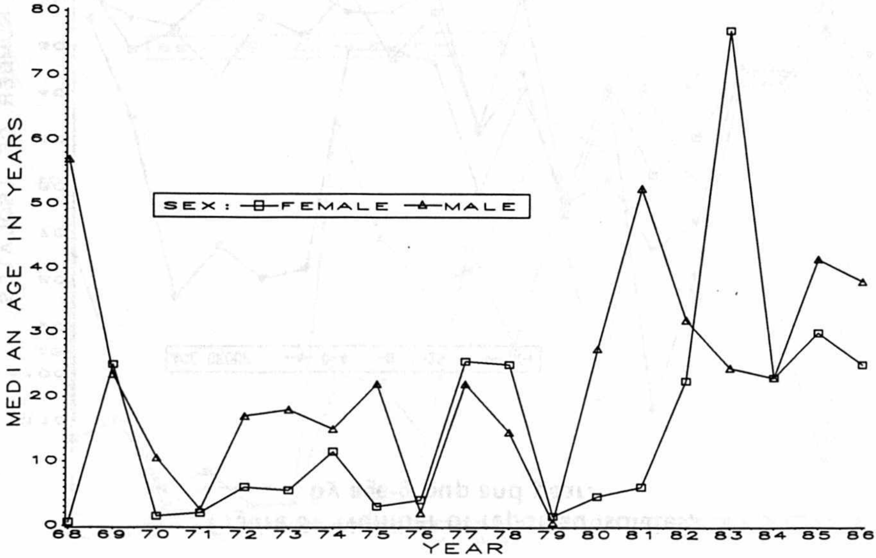


Figure 7. Reported nonhuman sources, by year.

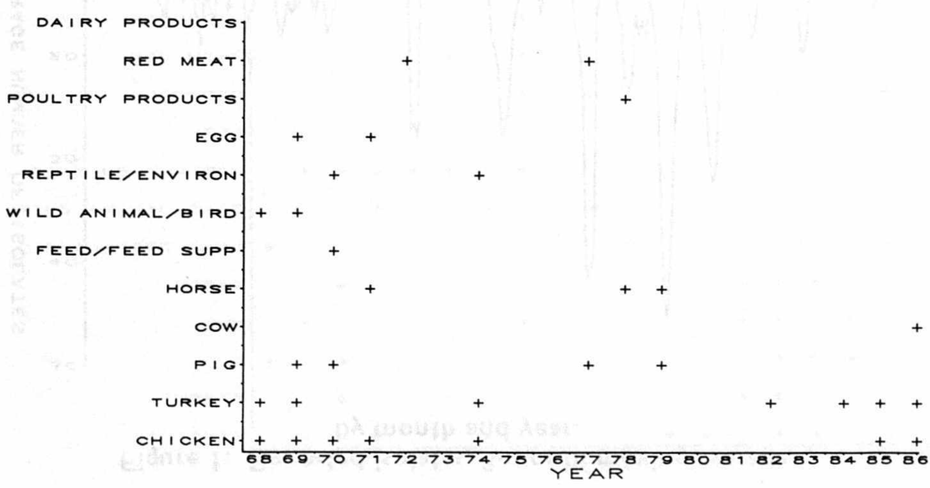


Figure 6. Percent of reported isolates, by age-group and sex.

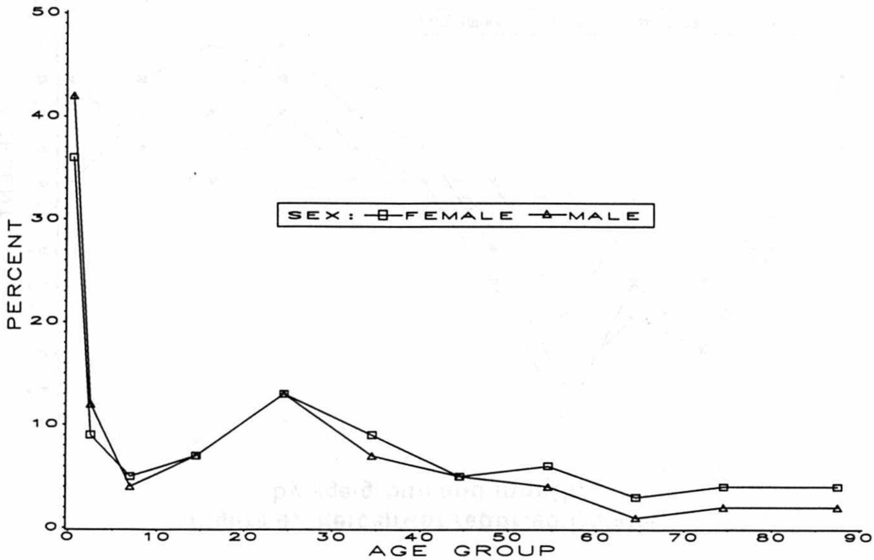
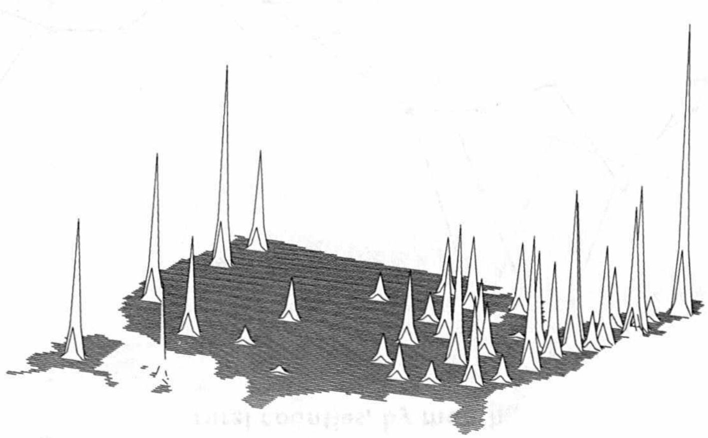


Figure 8. Age-standardized rates of reported isolates, by state.



S. kottbus

Figure 1. Reported isolates, 3-month moving average, by month and year.

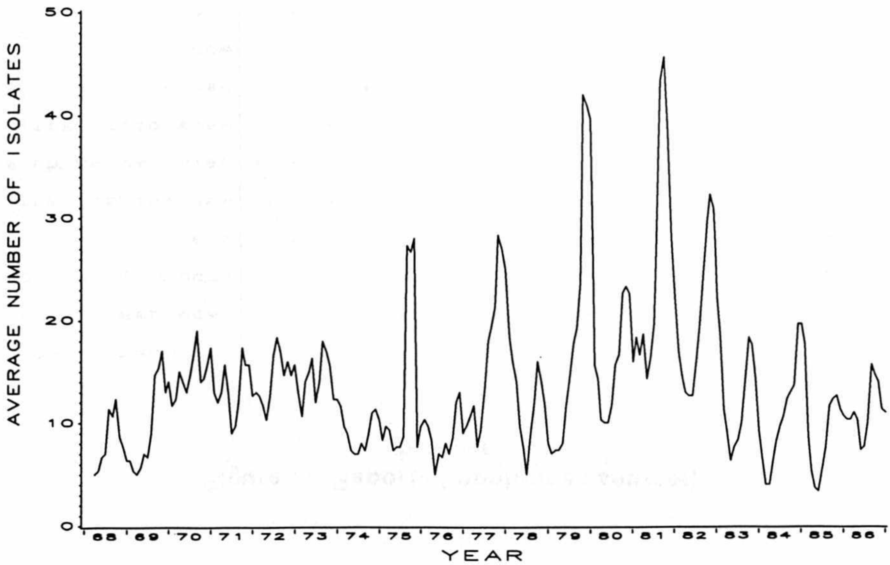


Figure 3. Number of reported isolates, by age-group and year.

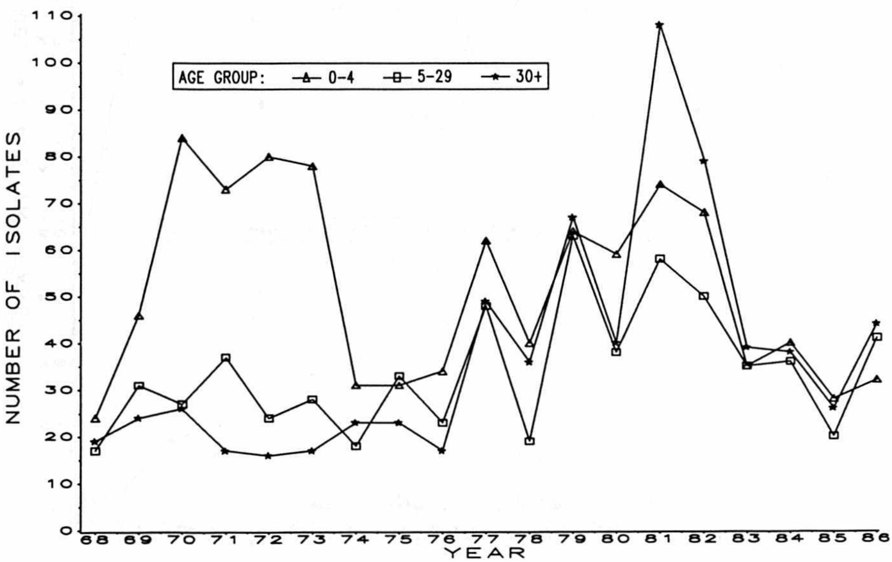
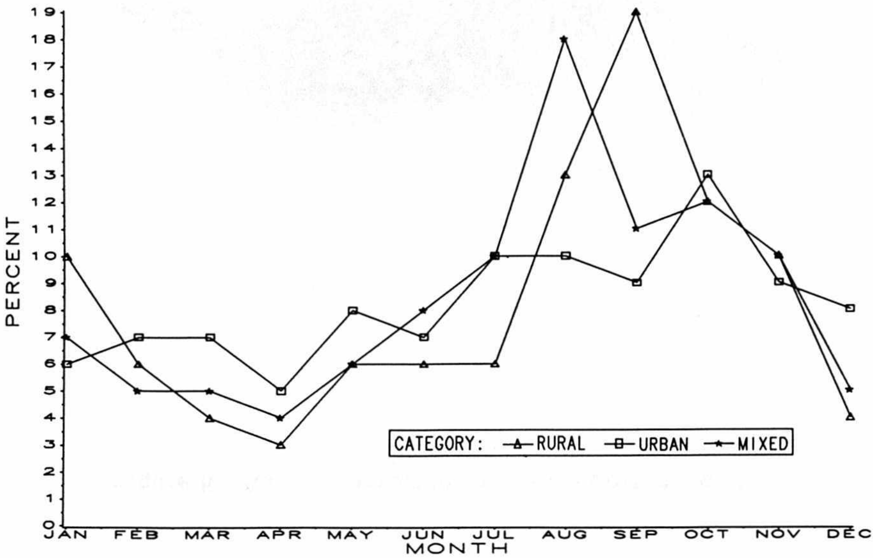


Figure 2. Percent of reported isolates from urban and rural counties, by month.



S. litchfield

Figure 4. Percent of reported isolates, by age-group and month.

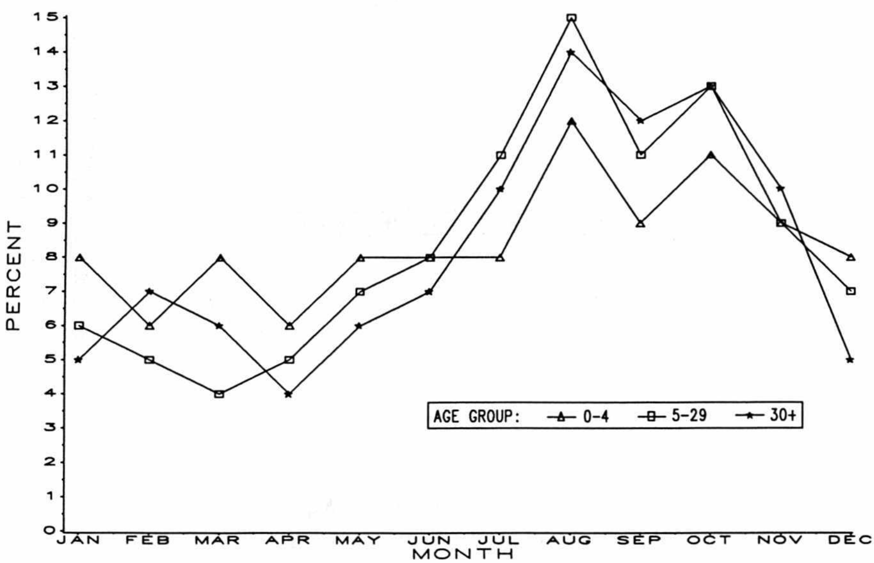


Figure 5. Median age of persons from whom isolates were reported, by year.

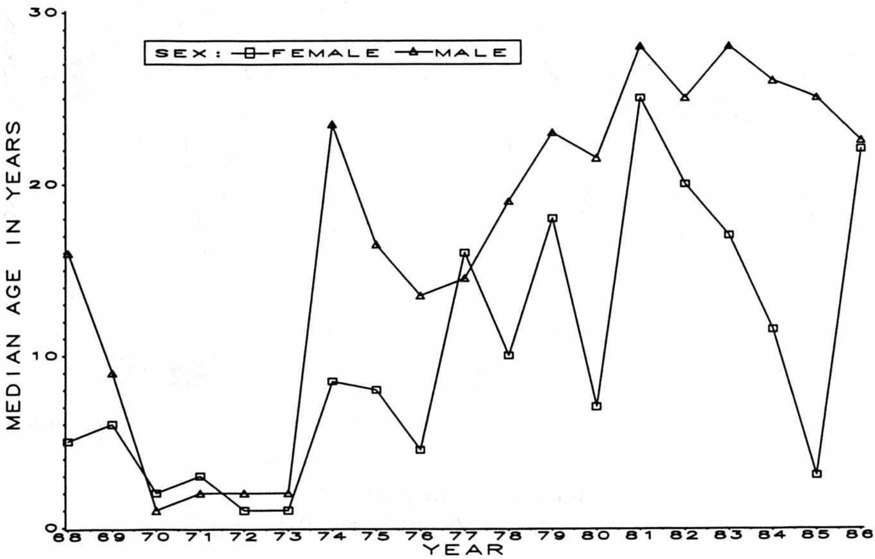


Figure 7. Reported nonhuman sources, by year.

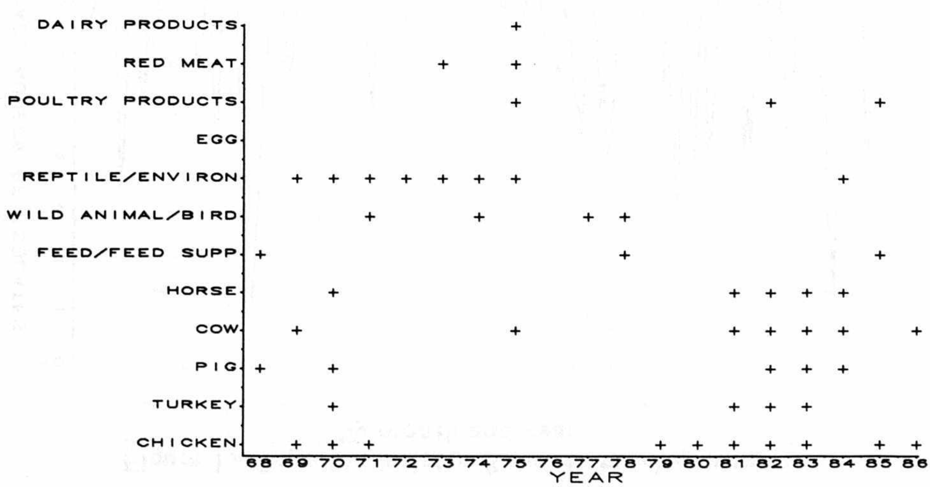
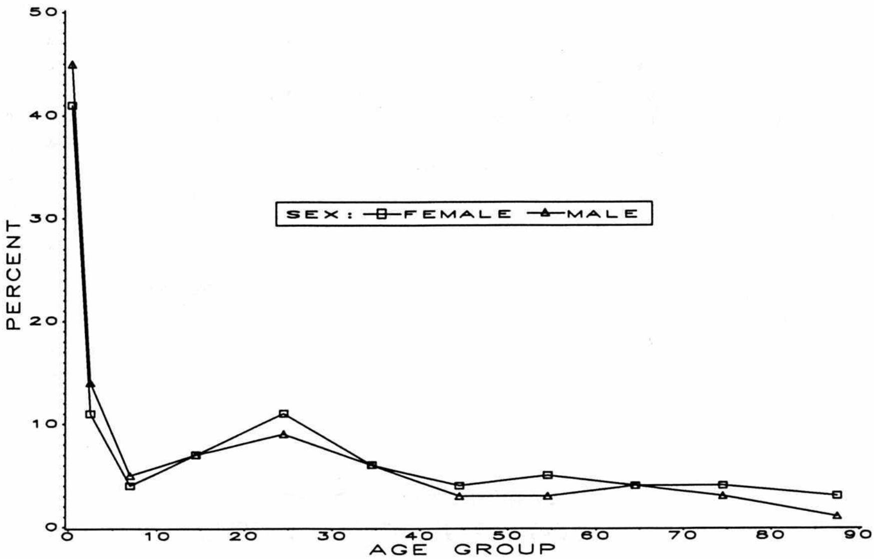


Figure 6. Percent of reported isolates, by age-group and sex.



S. litchfield

Figure 8. Age-standardized rates of reported isolates, by state.

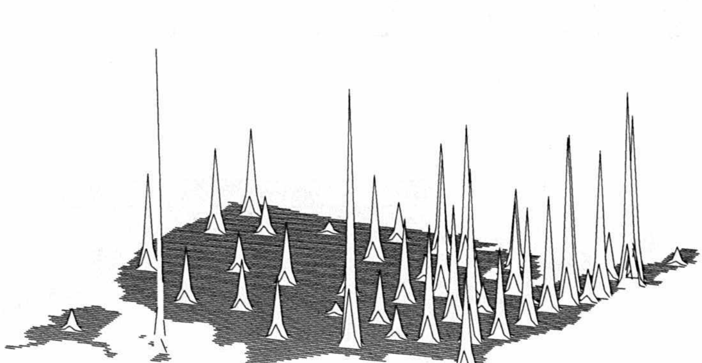


Figure 1. Reported isolates, 3-month moving average, by month and year.

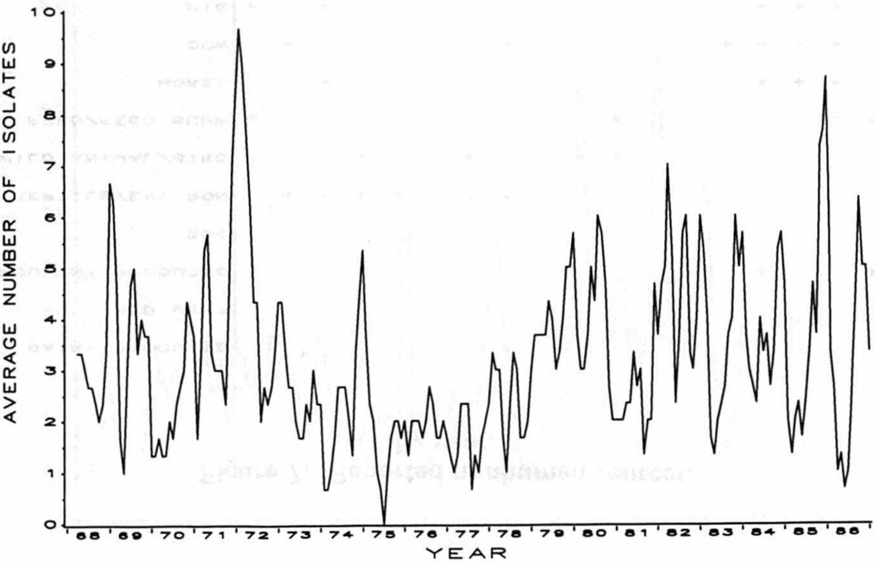


Figure 3. Number of reported isolates, by age-group and year.

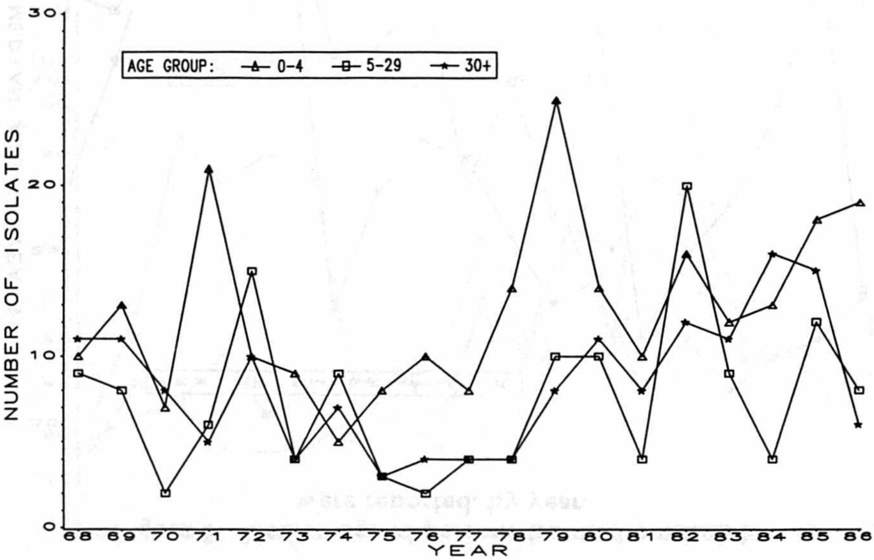


Figure 2. Percent of reported isolates from urban and rural counties, by month.

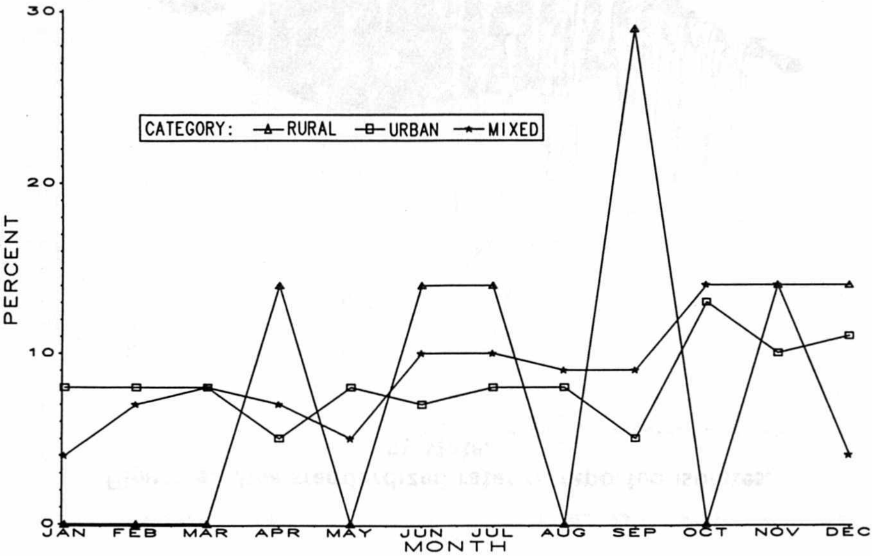
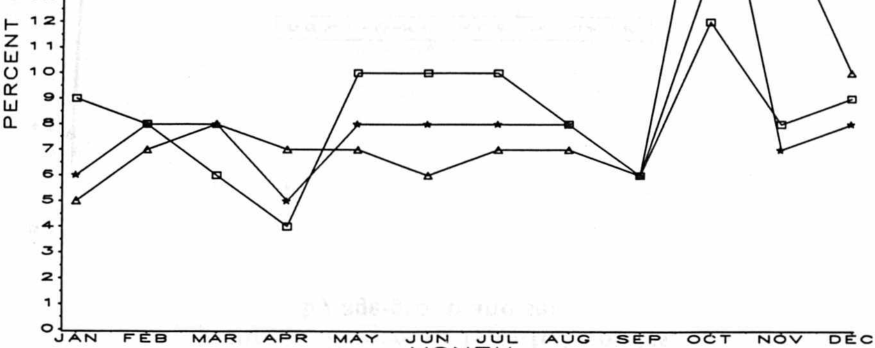


Figure 4. Percent of reported isolates, by age-group and month.



S. livingstone

Figure 5. Median age of persons from whom isolates were reported, by year.

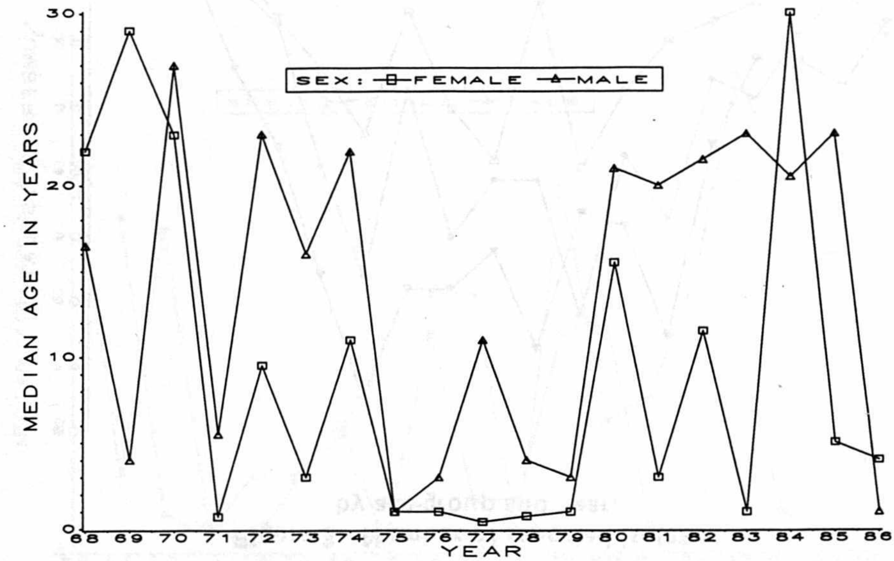


Figure 7. Reported nonhuman sources, by year.

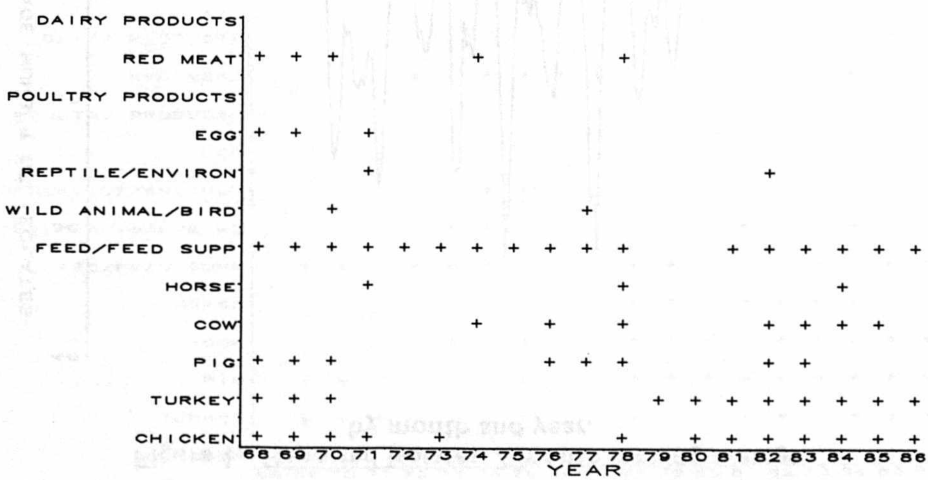


Figure 6. Percent of reported isolates, by age-group and sex.

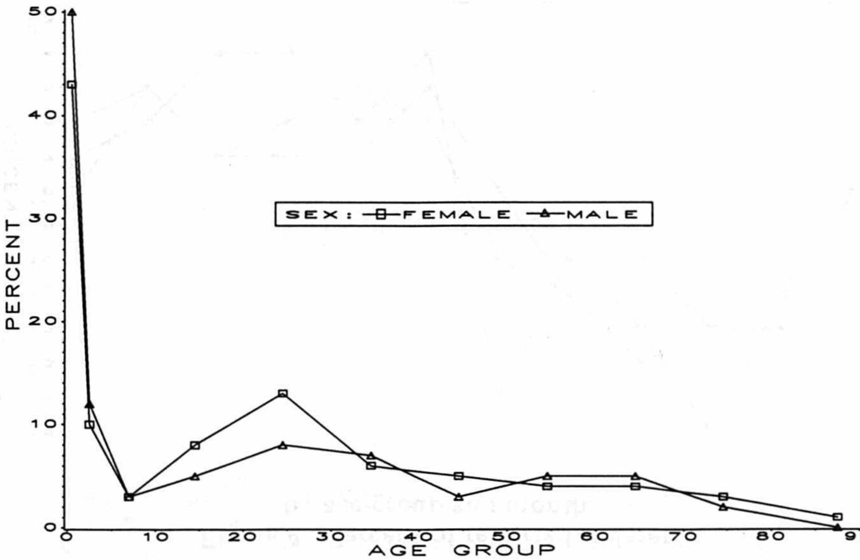
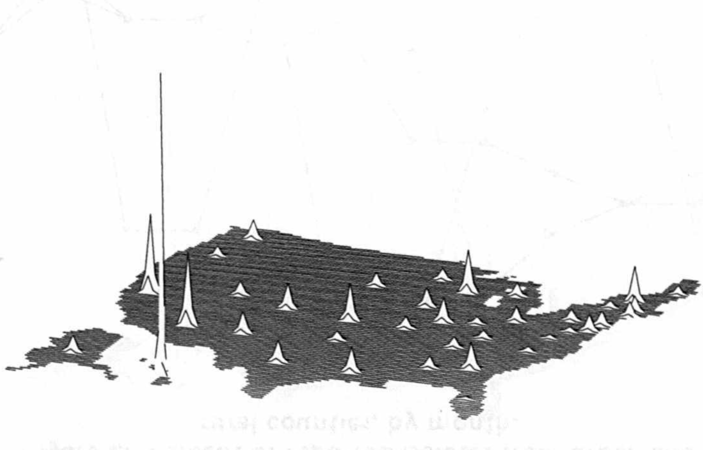


Figure 8. Age-standardized rates of reported isolates, by state.



S. livingstone

Figure 1. Reported isolates, 3-month moving average, by month and year.

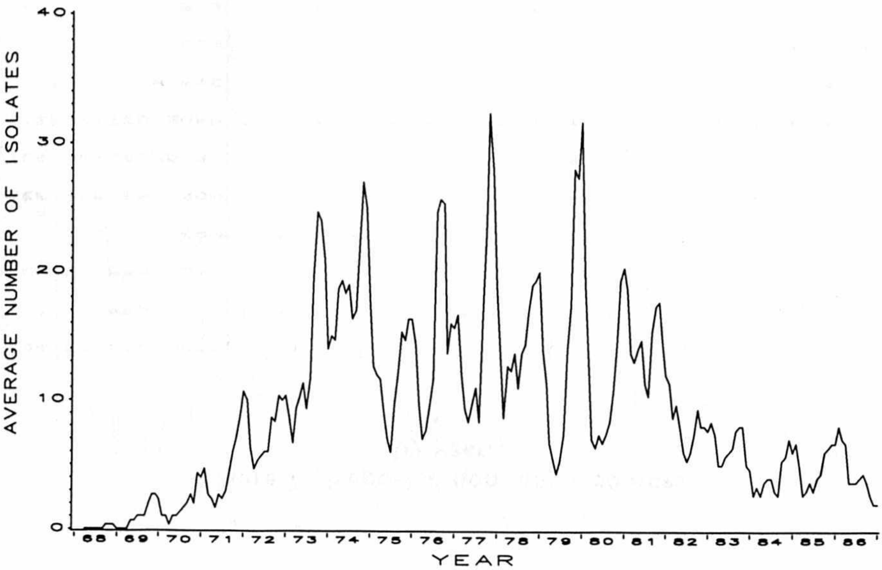
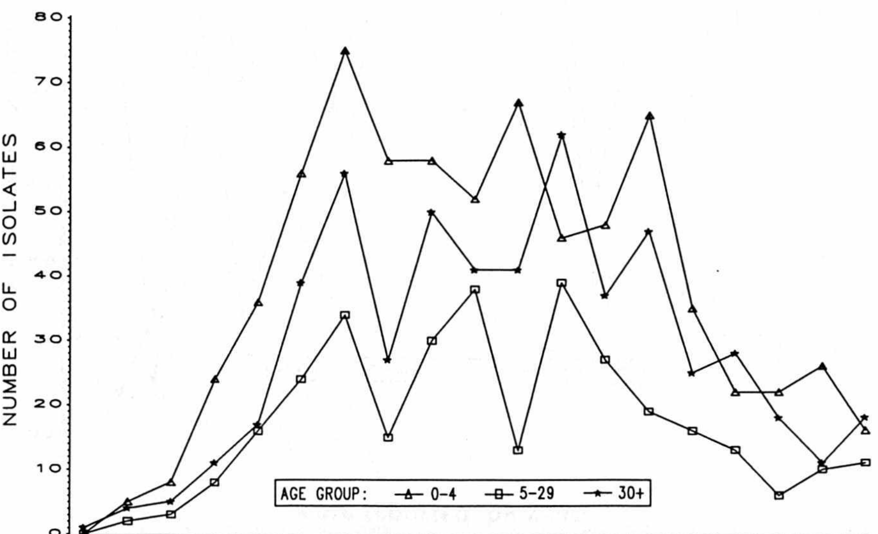


Figure 3. Number of reported isolates, by age-group and year.



S. london

Figure 2. Percent of reported isolates from urban and rural counties, by month.

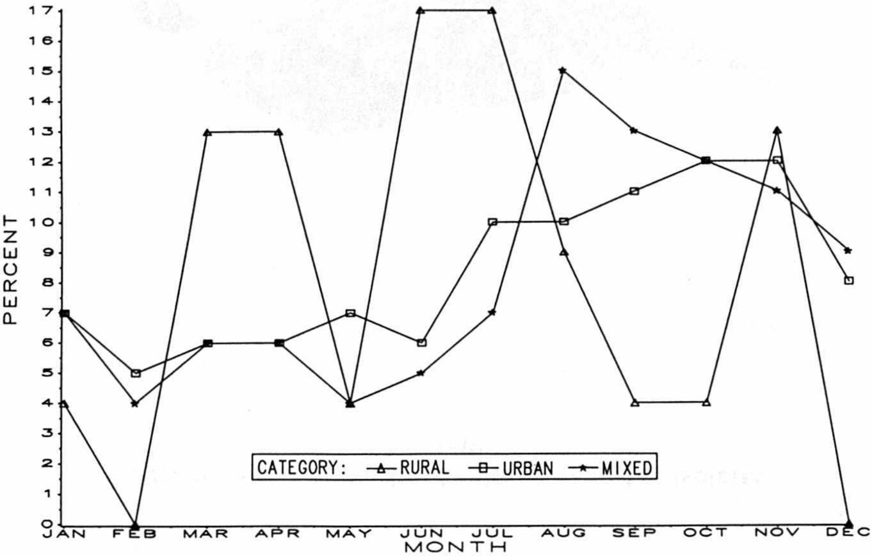


Figure 4. Percent of reported isolates, by age-group and month.

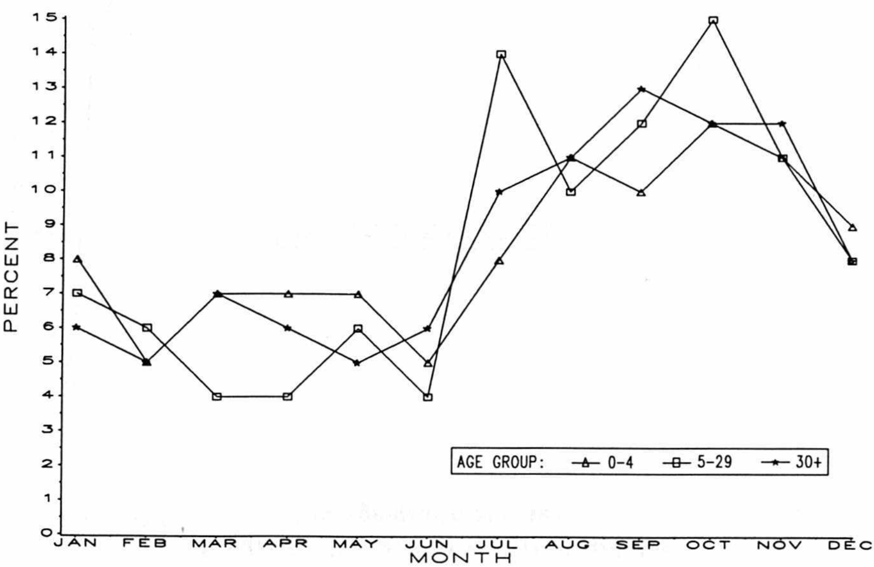


Figure 5. Median age of persons from whom isolates were reported, by year.

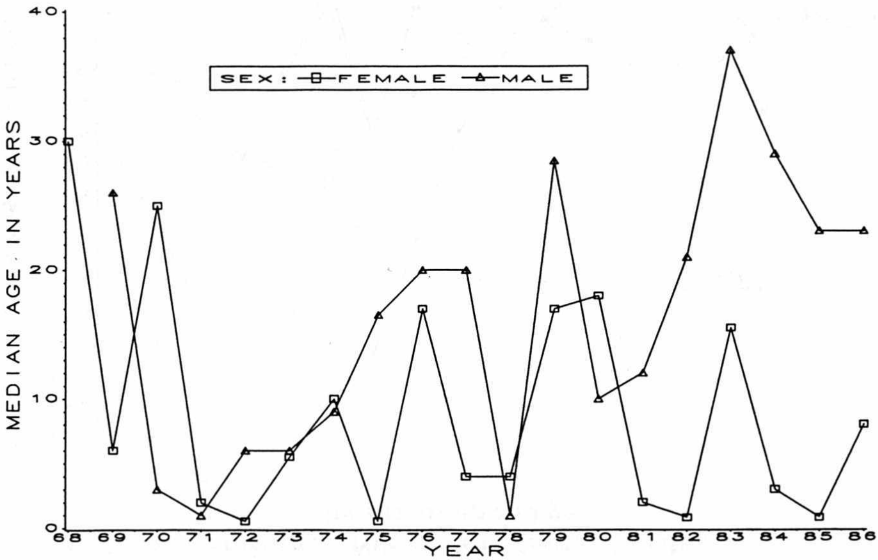


Figure 7. Reported nonhuman sources, by year.

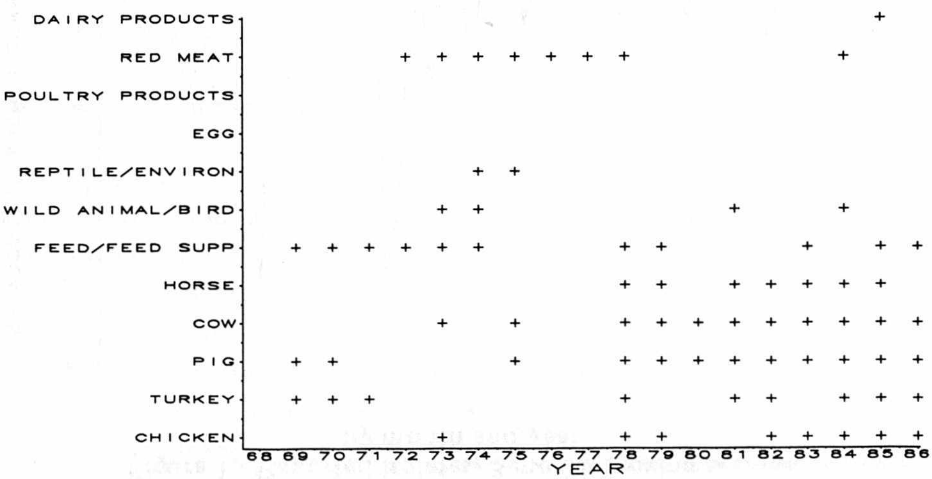


Figure 6. Percent of reported isolates, by age-group and sex.

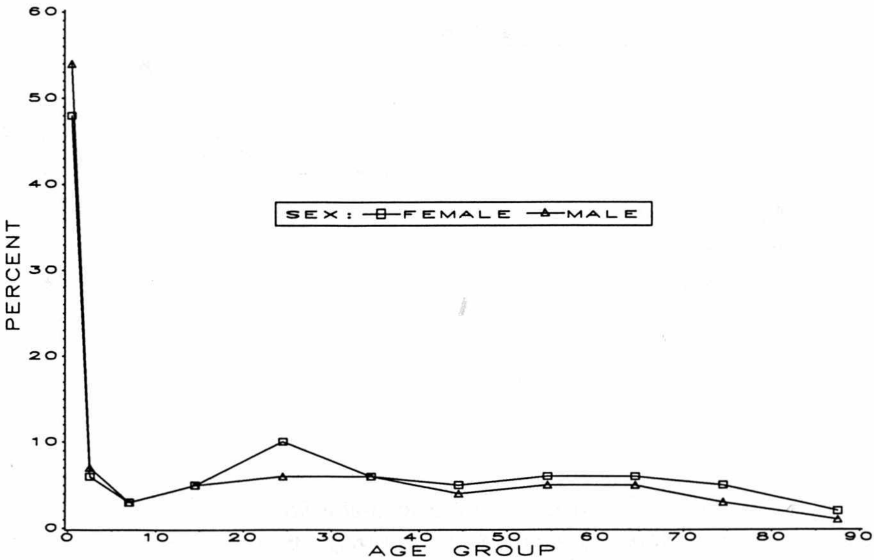


Figure 8. Age-standardized rates of reported isolates, by state.

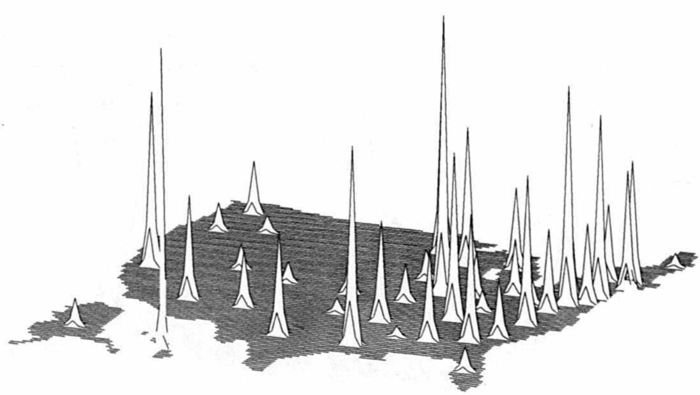


Figure 1. Reported isolates, 3-month moving average, by month and year.

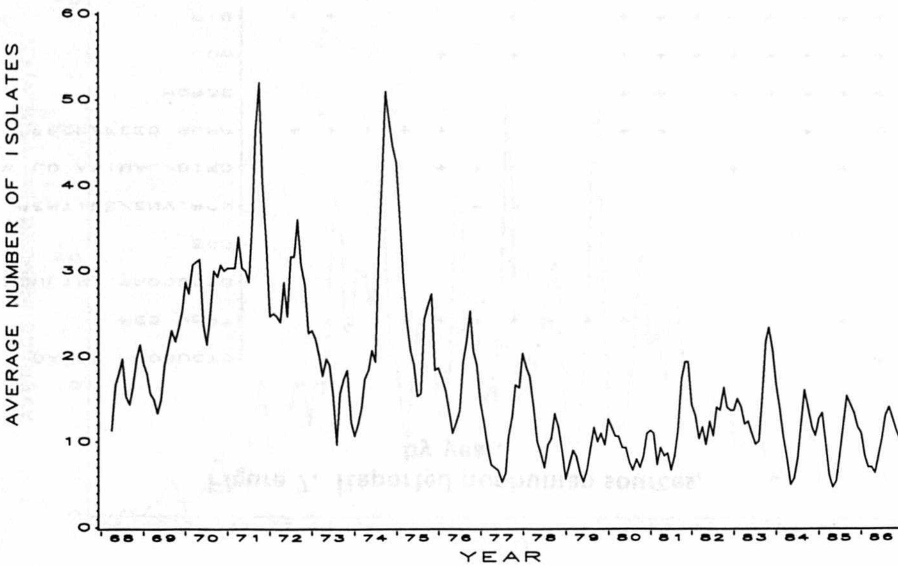


Figure 3. Number of reported isolates, by age-group and year.

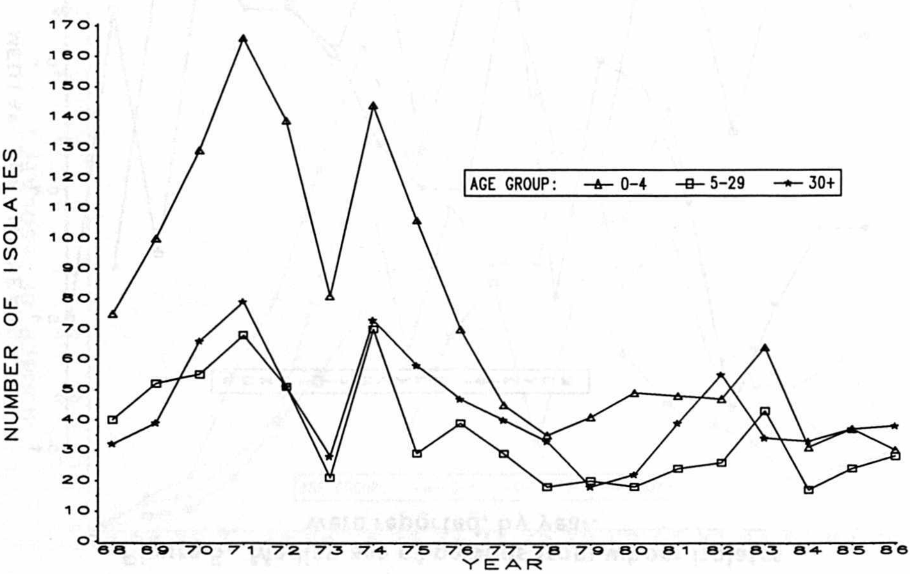


Figure 2. Percent of reported isolates from urban and rural counties, by month.

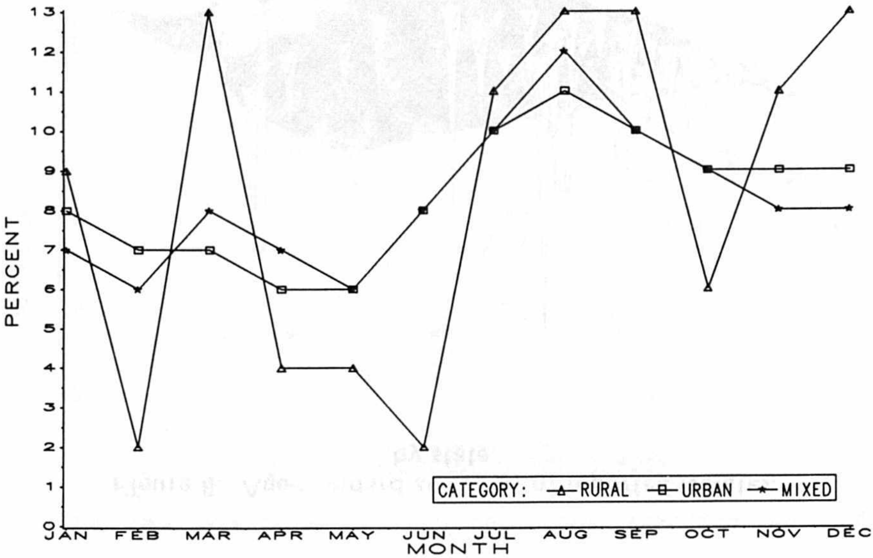
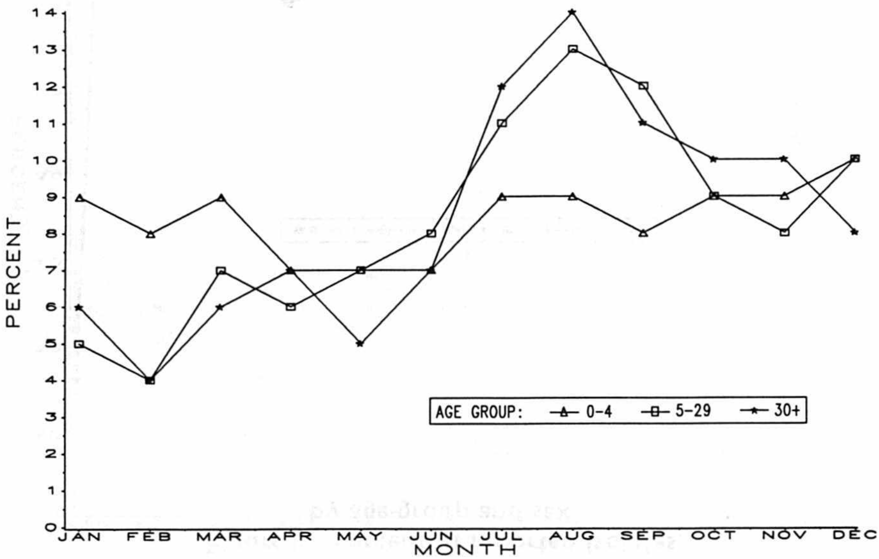


Figure 4. Percent of reported isolates, by age-group and month.



S. manhattan

Figure 5. Median age of persons from whom isolates were reported, by year.

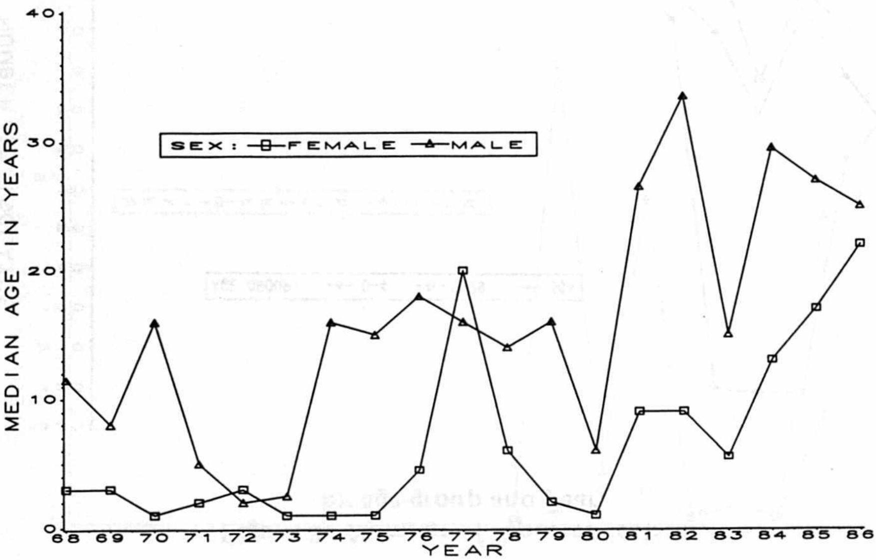


Figure 7. Reported nonhuman sources, by year.

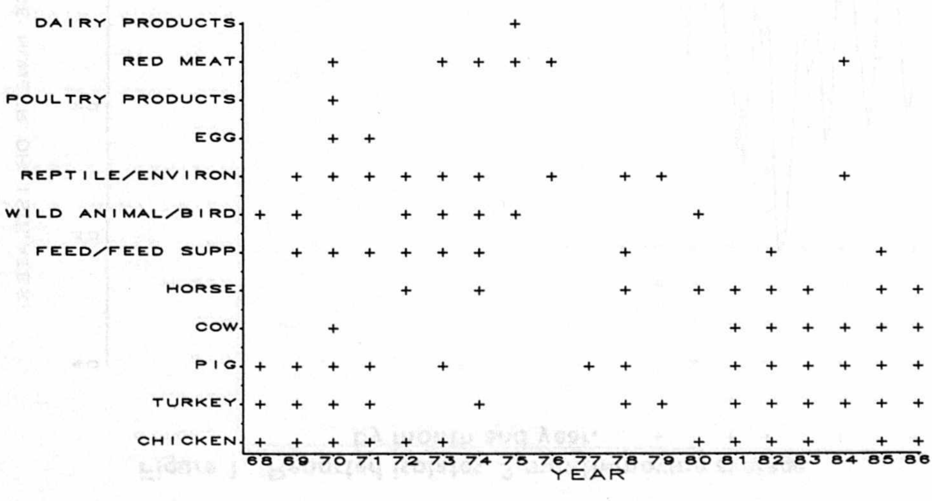


Figure 6. Percent of reported isolates, by age-group and sex.

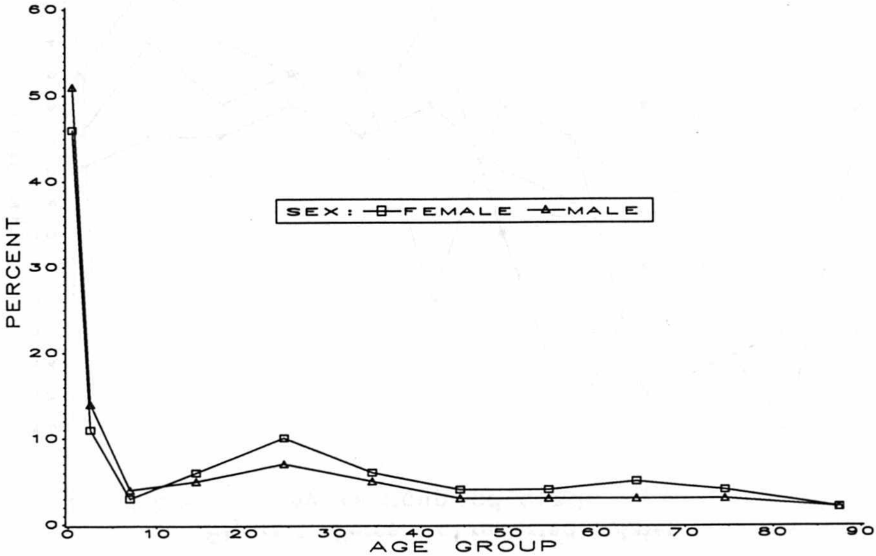
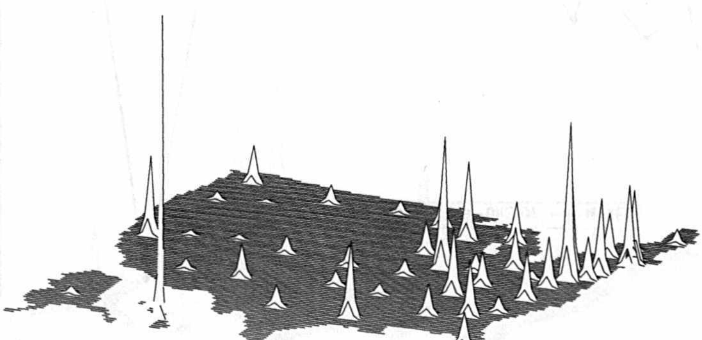


Figure 8. Age-standardized rates of reported isolates, by state.



S. manhattan

Figure 1. Reported isolates, 3-month moving average, by month and year.

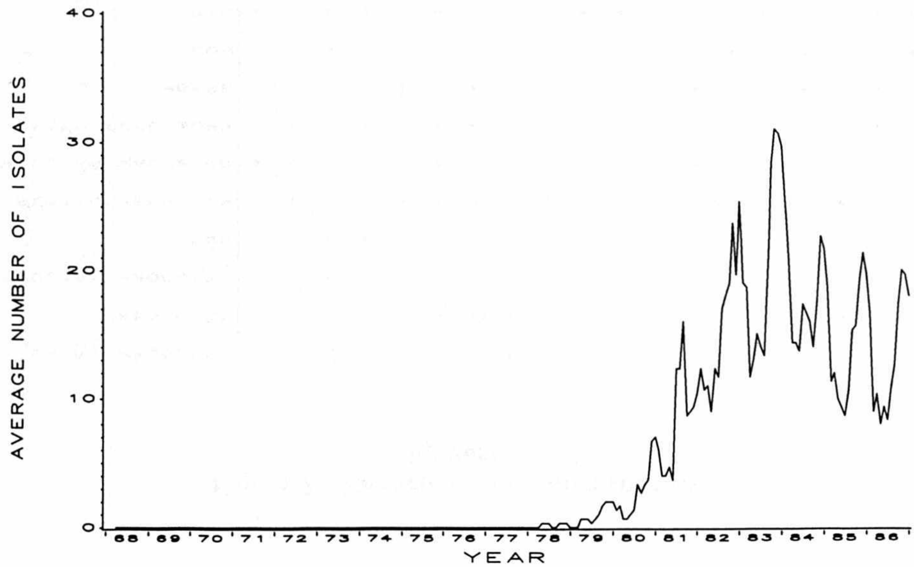


Figure 3. Number of reported isolates, by age-group and year.

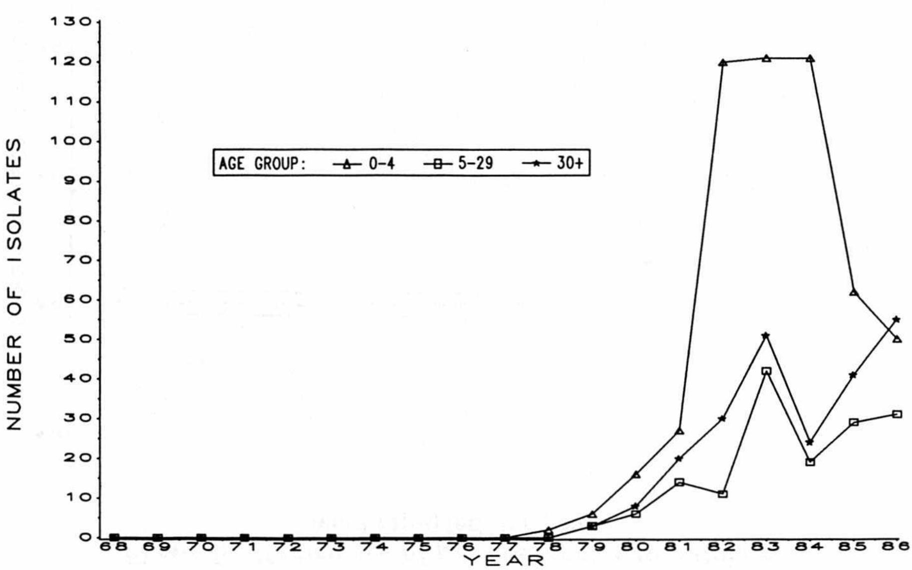


Figure 2. Percent of reported isolates from urban and rural counties, by month.

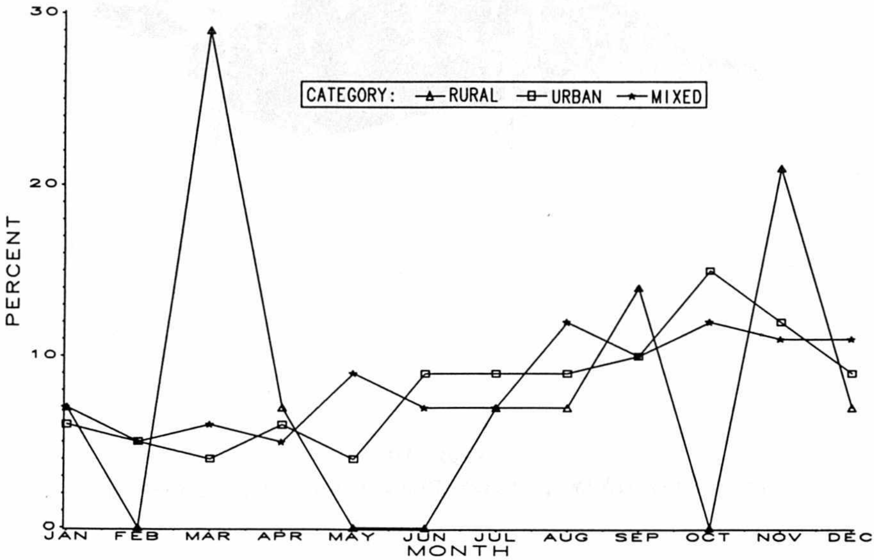
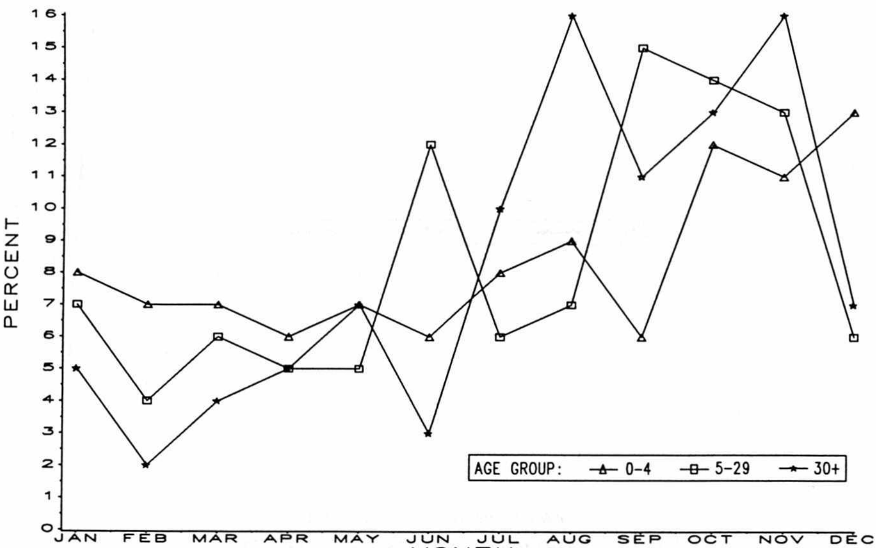


Figure 4. Percent of reported isolates, by age-group and month.



S. mbandaka

Figure 5. Median age of persons from whom isolates were reported, by year.

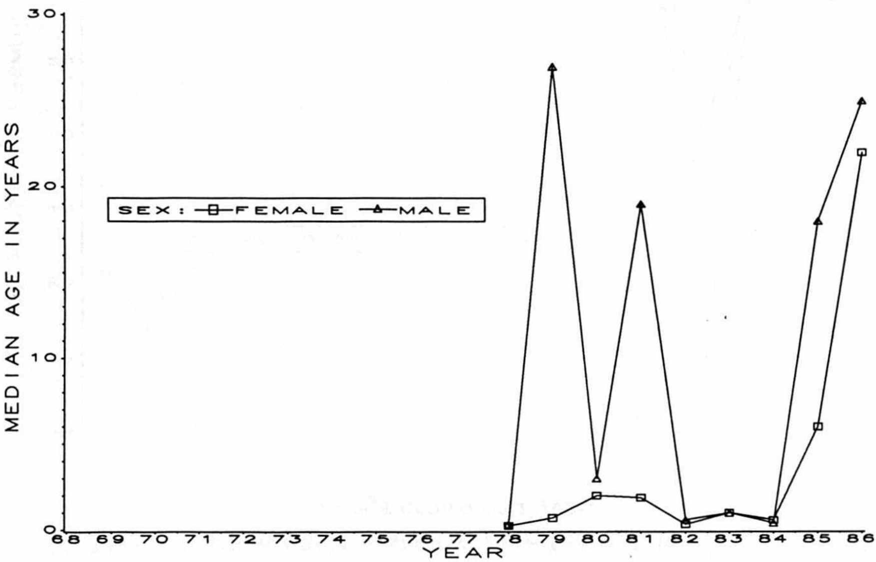


Figure 7. Reported nonhuman sources, by year.

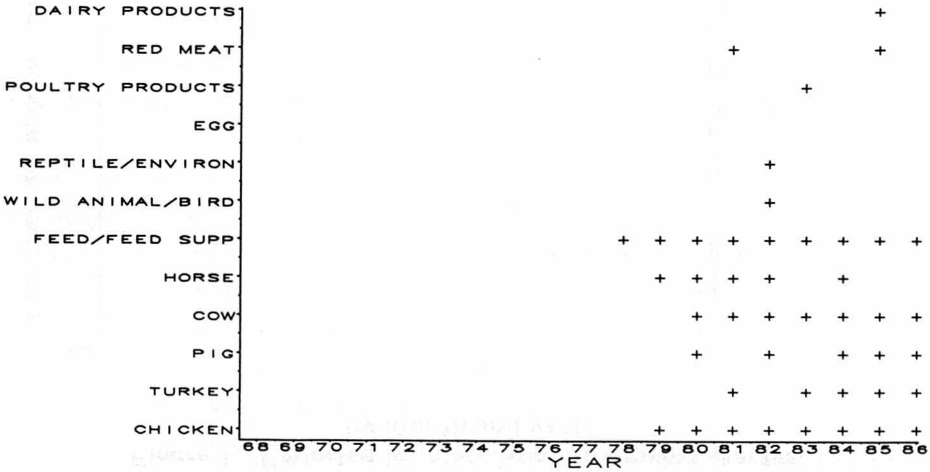


Figure 6. Percent of reported isolates, by age-group and sex.

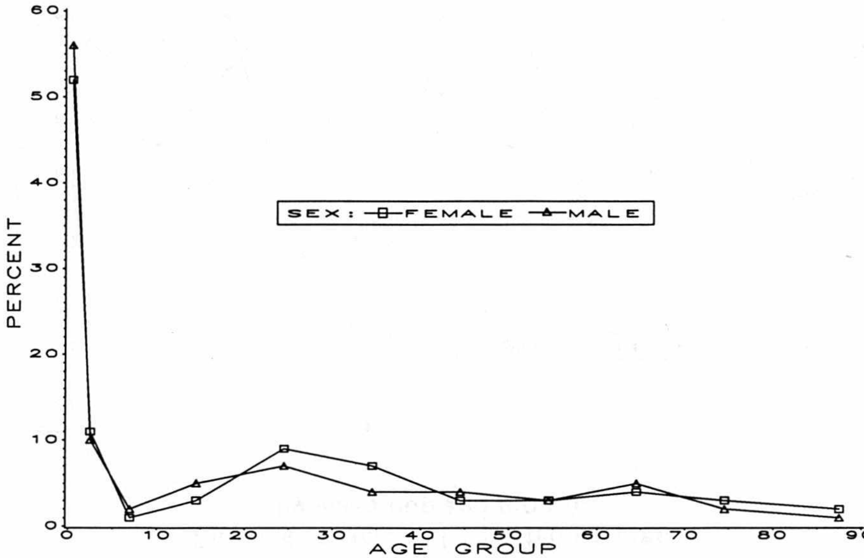
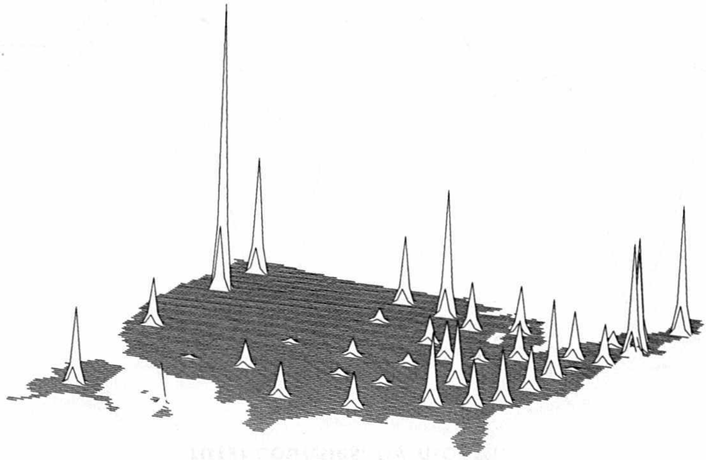


Figure 8. Age-standardized rates of reported isolates, by state.



S. mbandaka

Figure 1. Reported isolates, 3-month moving average, by month and year.

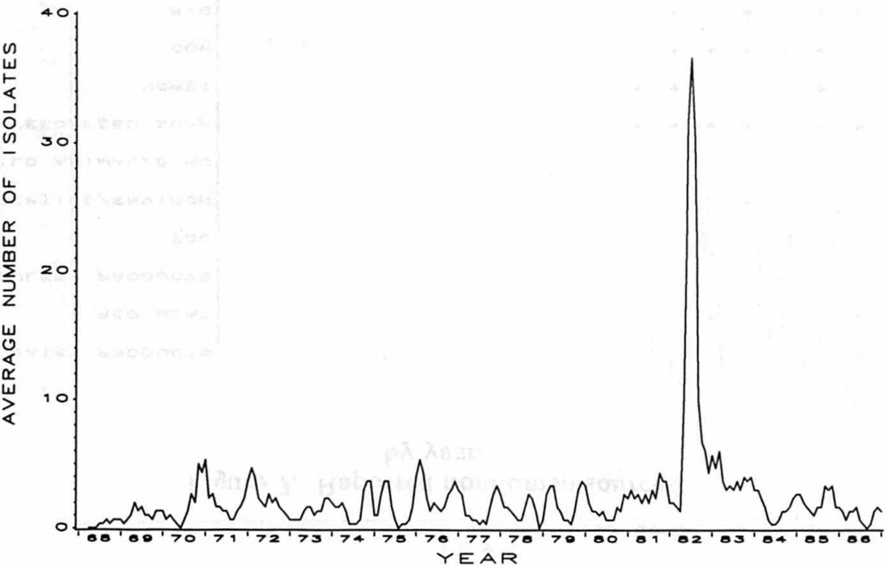
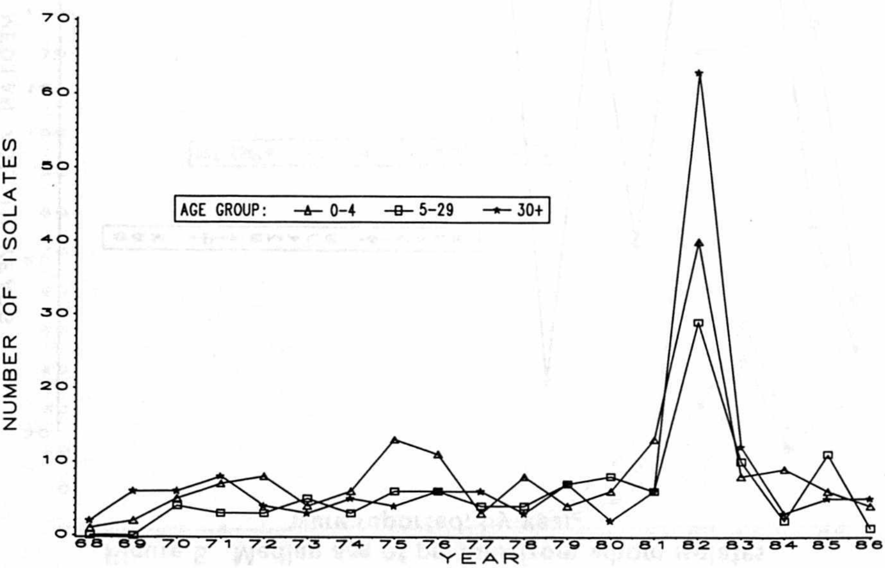


Figure 3. Number of reported isolates, by age-group and year.



S. meleagridis

Figure 2. Percent of reported isolates from urban and rural counties, by month.

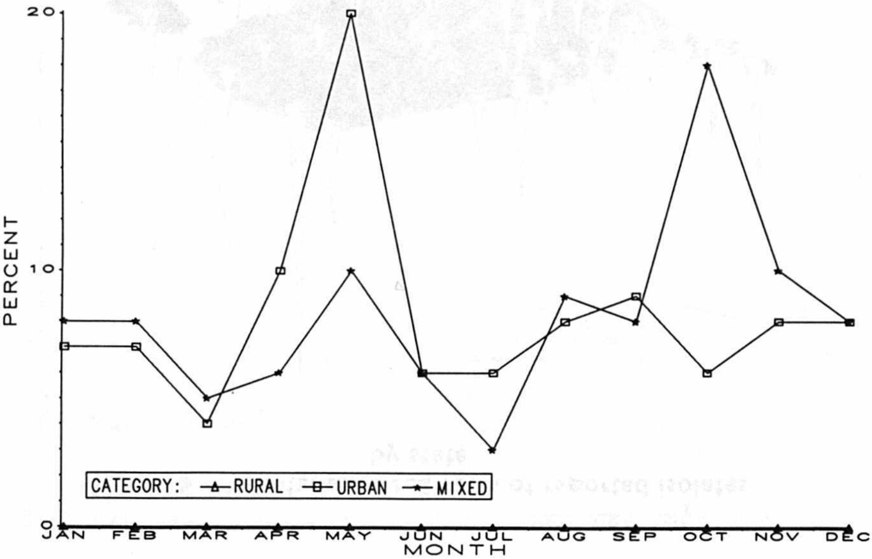


Figure 4. Percent of reported isolates, by age-group and month.

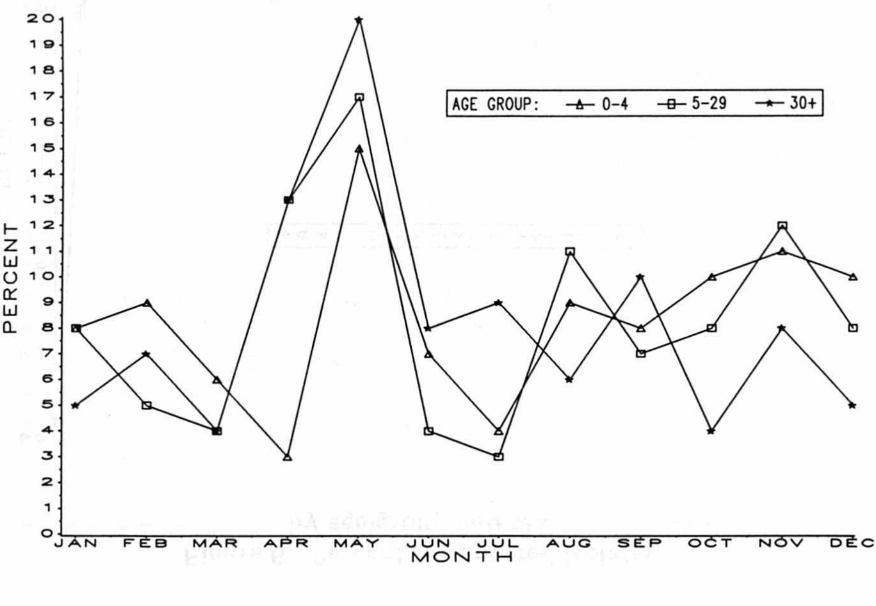


Figure 5. Median age of persons from whom isolates were reported, by year.

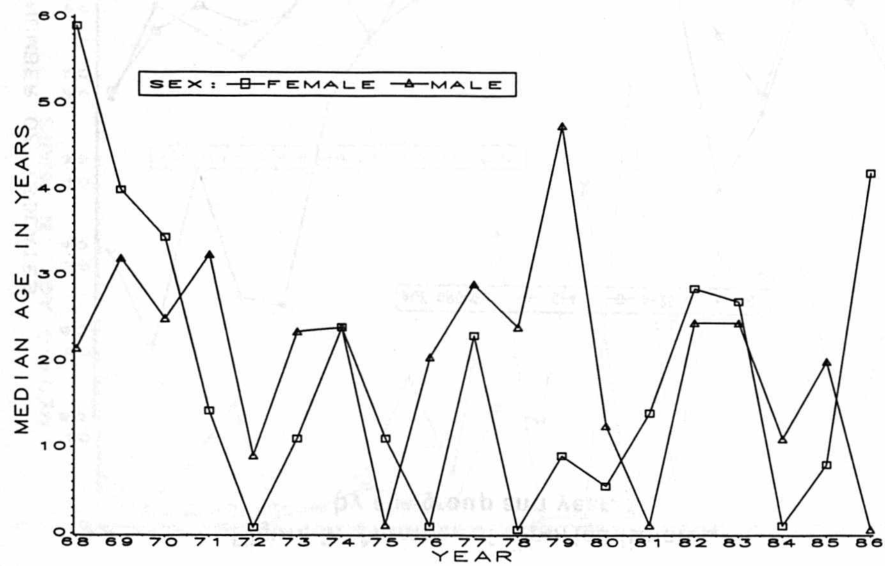


Figure 7. Reported nonhuman sources, by year.

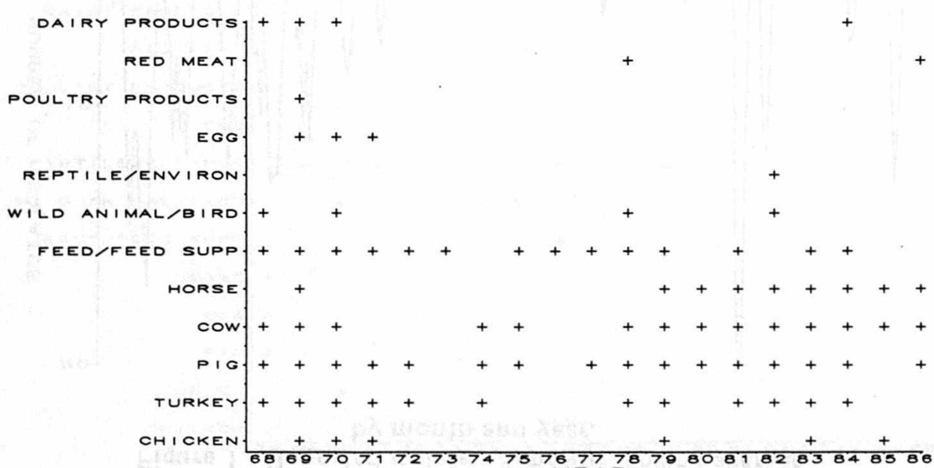


Figure 6. Percent of reported isolates, by age-group and sex.

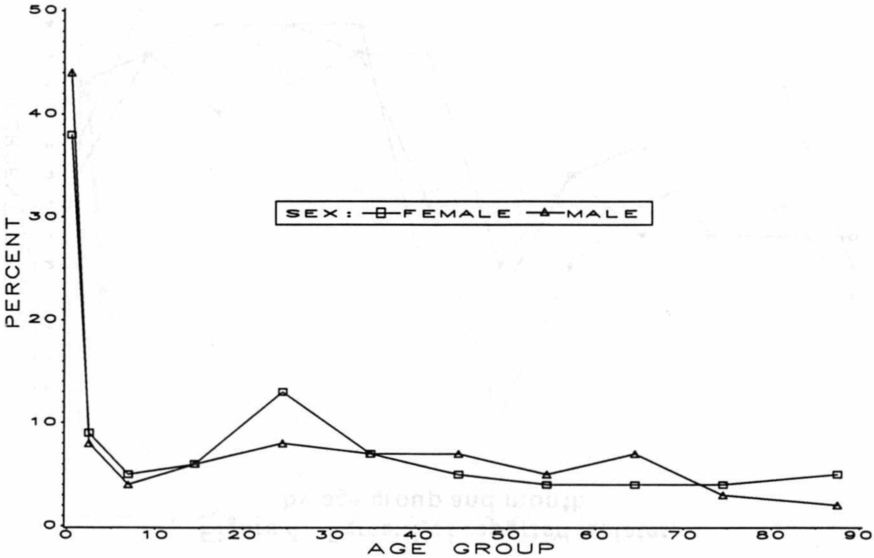
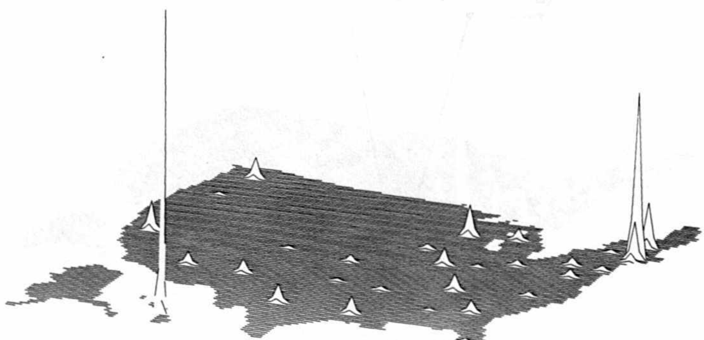


Figure 8. Age-standardized rates of reported isolates, by state.



S. meleagridis

Figure 1. Reported isolates, 3-month moving average, by month and year.

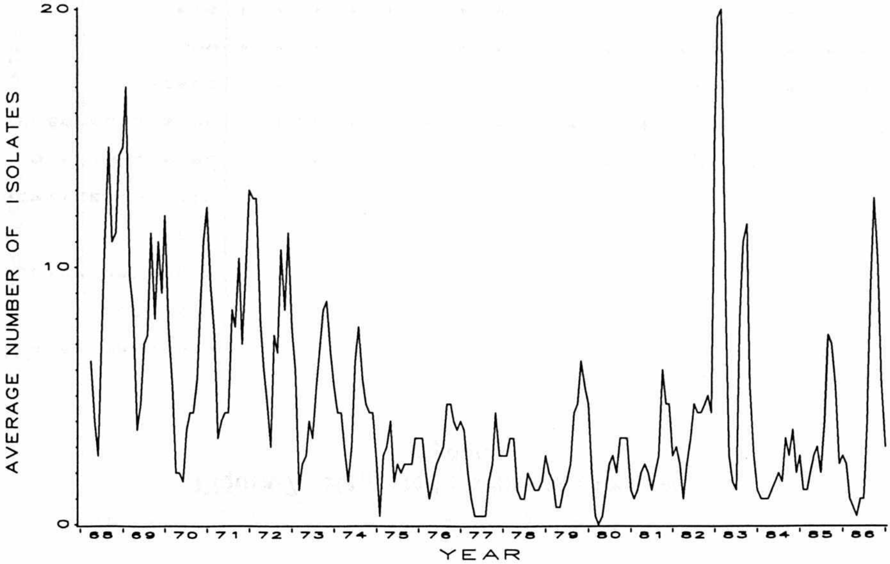


Figure 3. Number of reported isolates, by age-group and year.

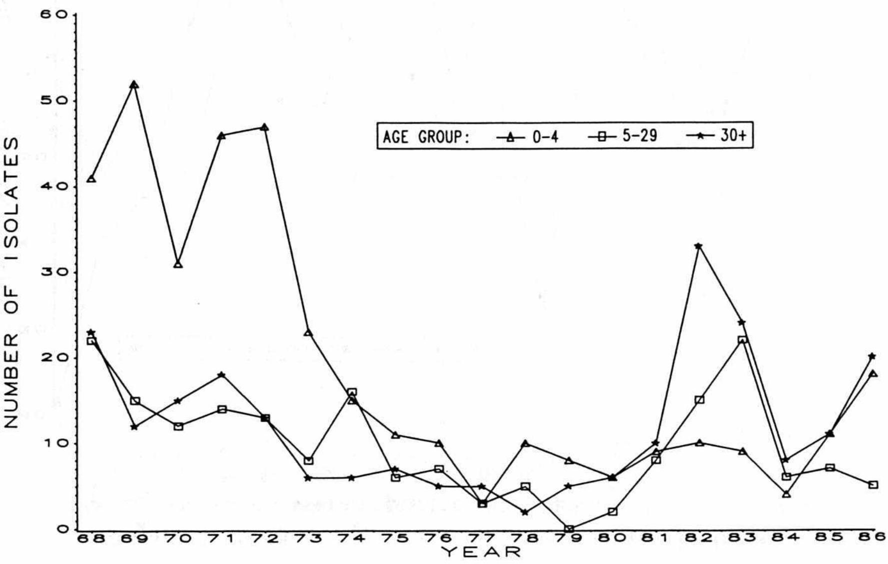


Figure 2. Percent of reported isolates from urban and rural counties, by month.

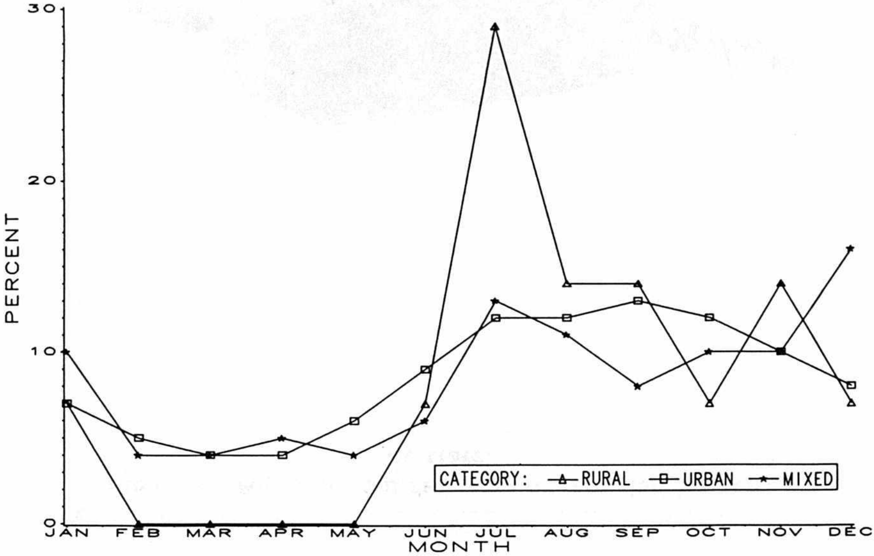
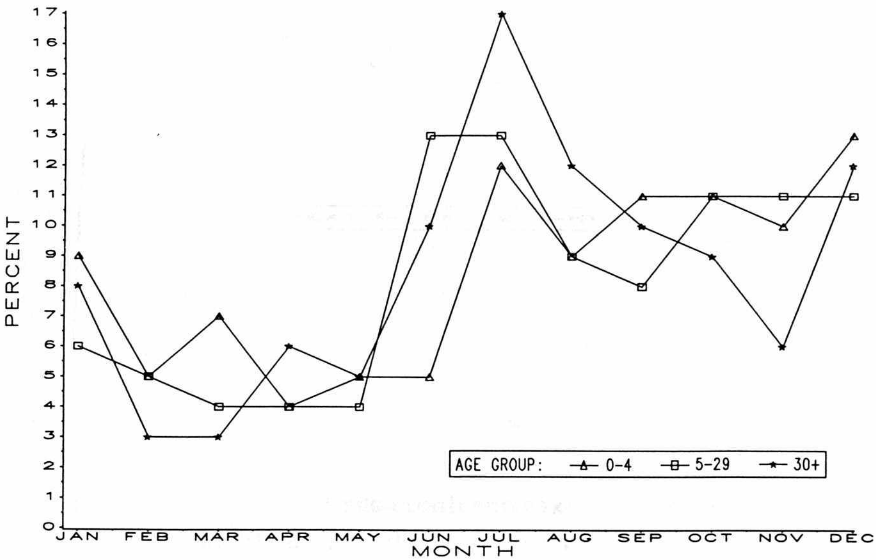


Figure 4. Percent of reported isolates, by age-group and month.



S. miami

Figure 5. Median age of persons from whom isolates were reported, by year.

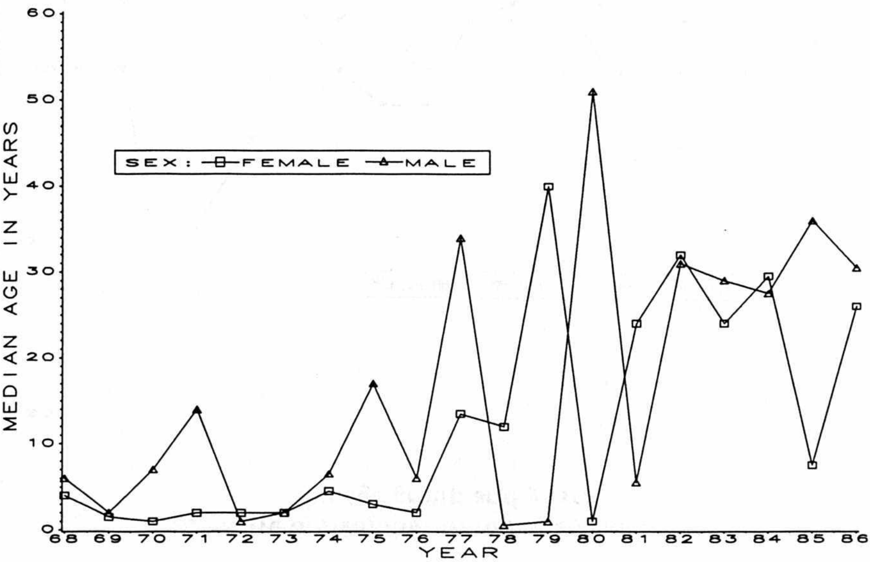


Figure 7. Reported nonhuman sources, by year.

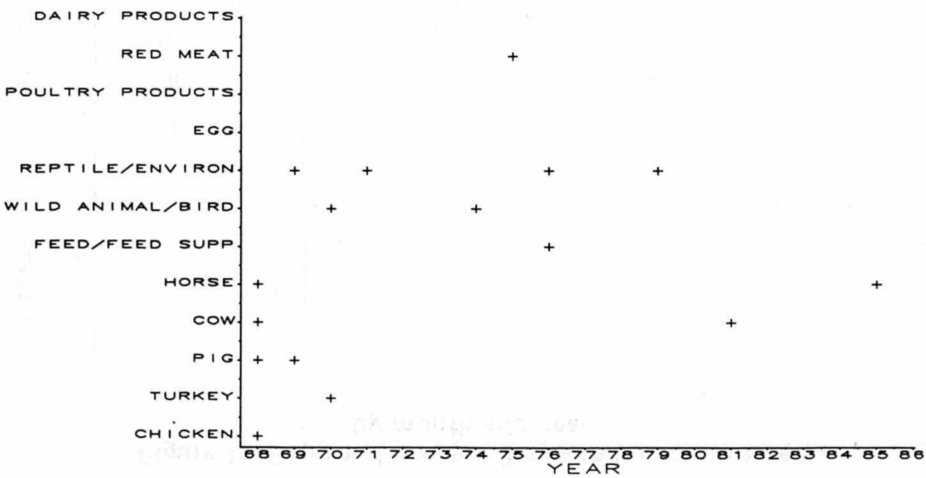


Figure 6. Percent of reported isolates, by age-group and sex.

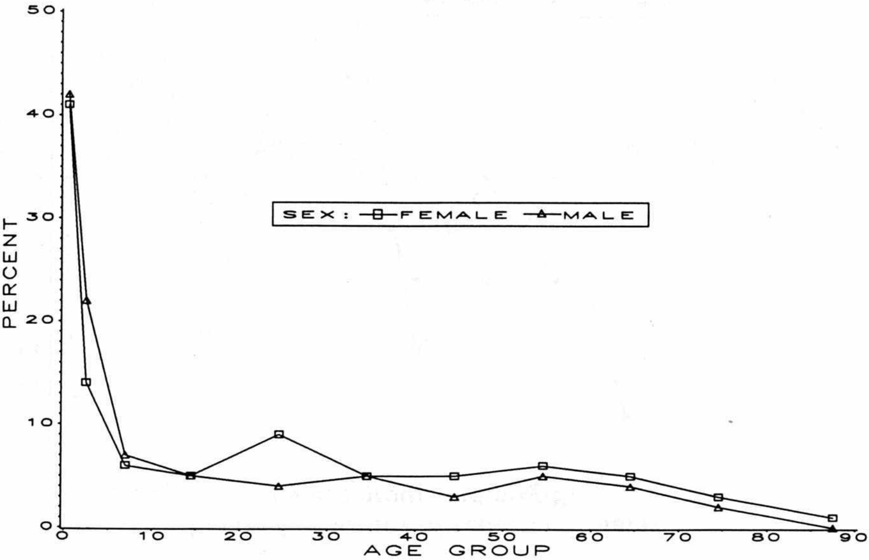


Figure 8. Age-standardized rates of reported isolates, by state.

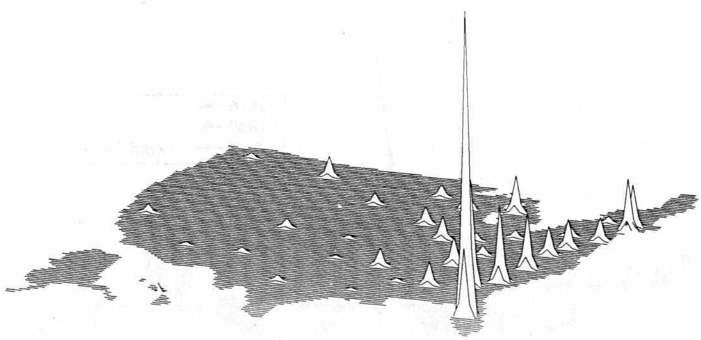


Figure 1. Reported isolates, 3-month moving average, by month and year.

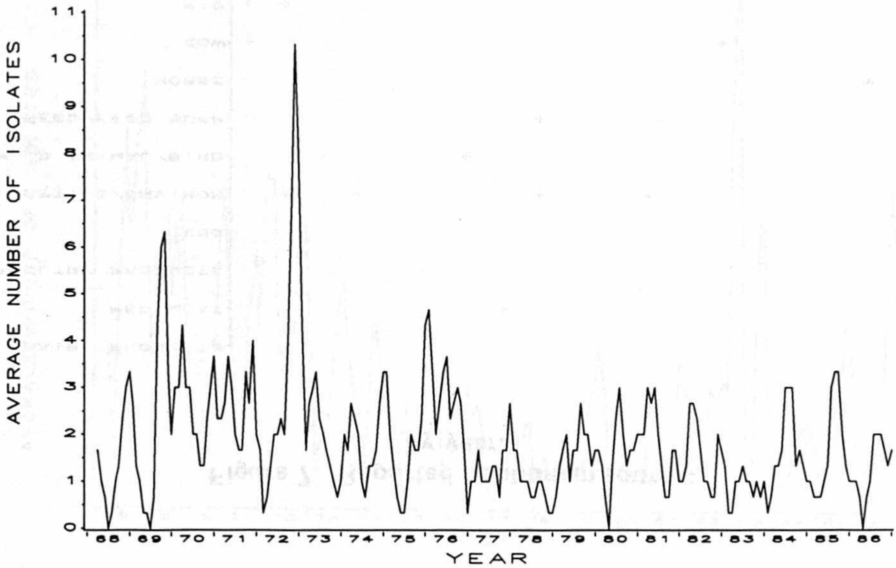


Figure 3. Number of reported isolates, by age-group and year.

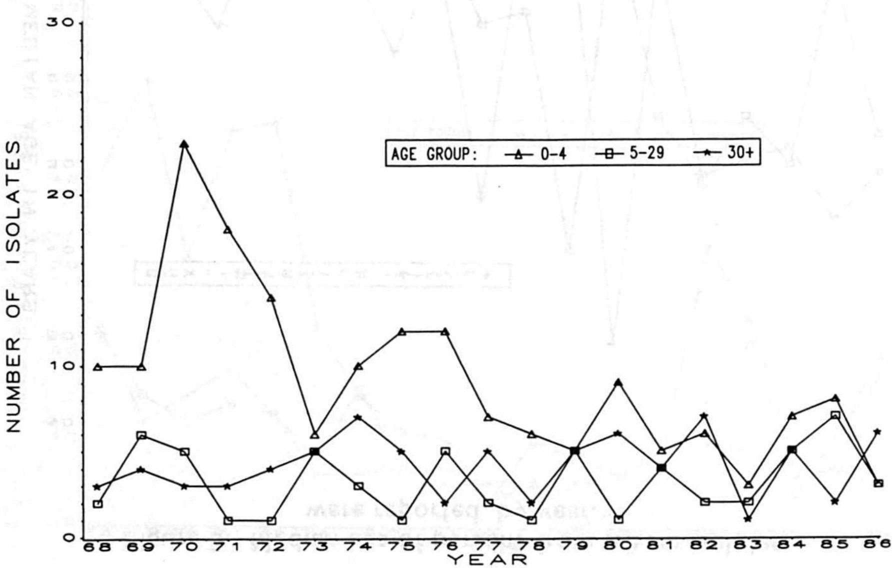


Figure 2. Percent of reported isolates from urban and rural counties, by month.

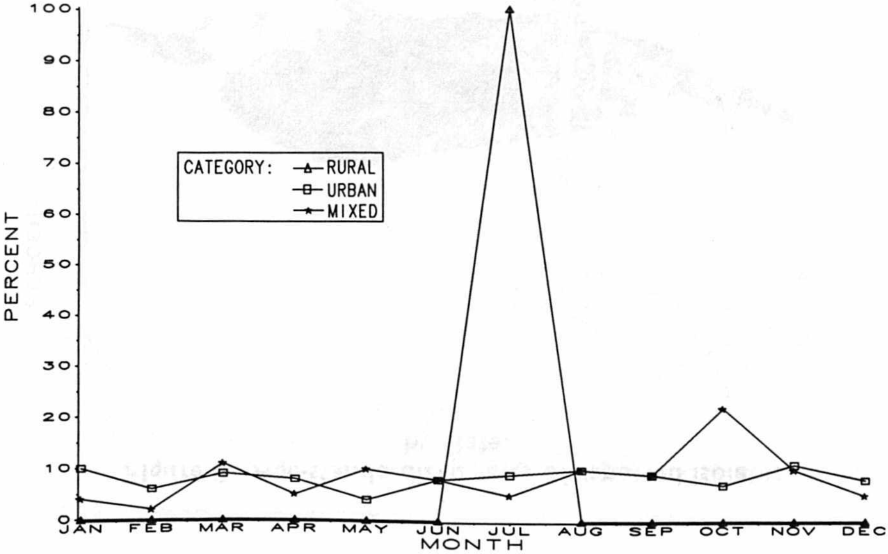
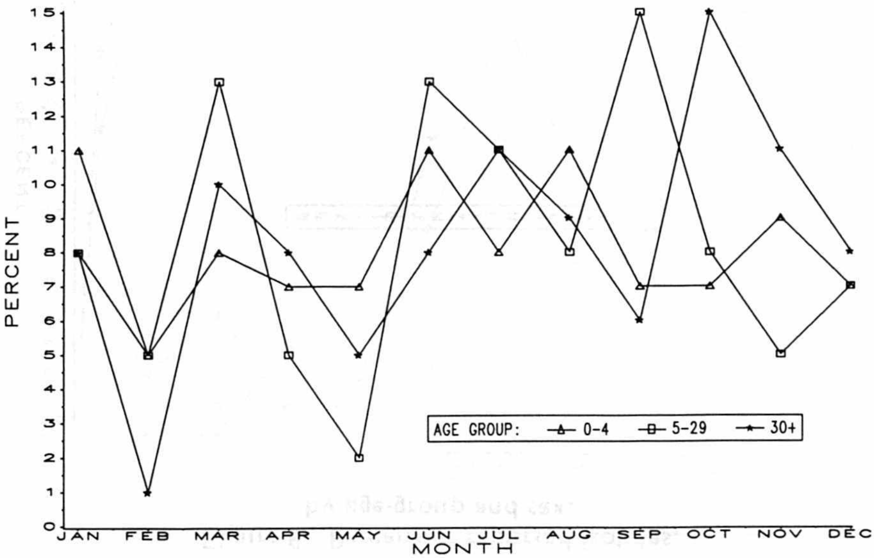


Figure 4. Percent of reported isolates, by age-group and month.



S. minnesota

Figure 5. Median age of persons from whom isolates were reported, by year.

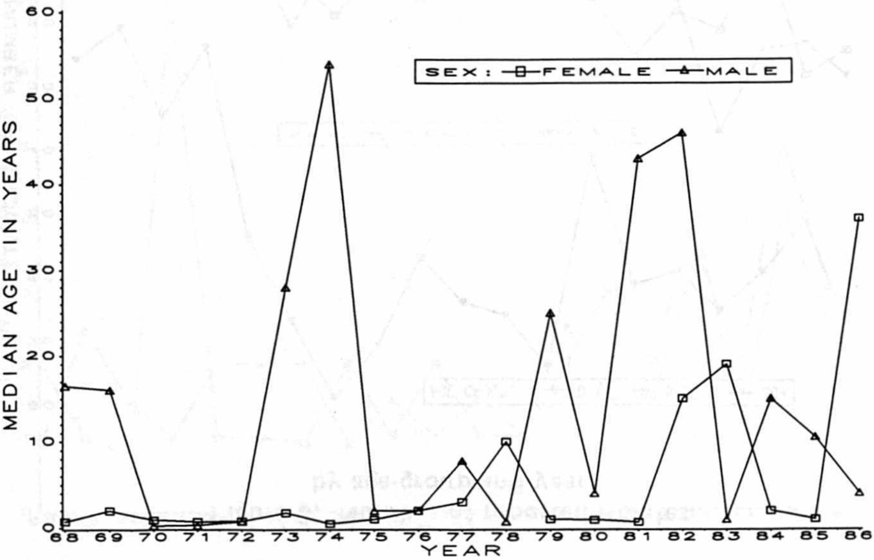


Figure 7. Reported nonhuman sources, by year.

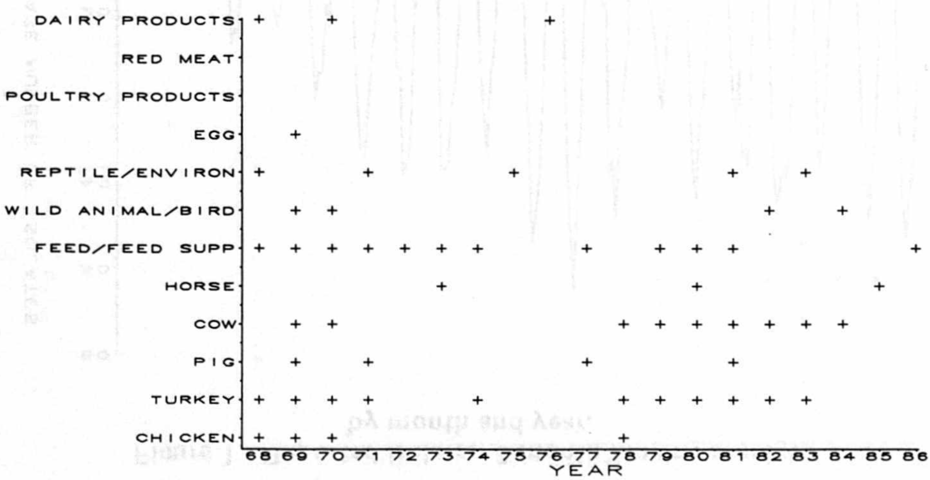


Figure 6. Percent of reported isolates, by age-group and sex.

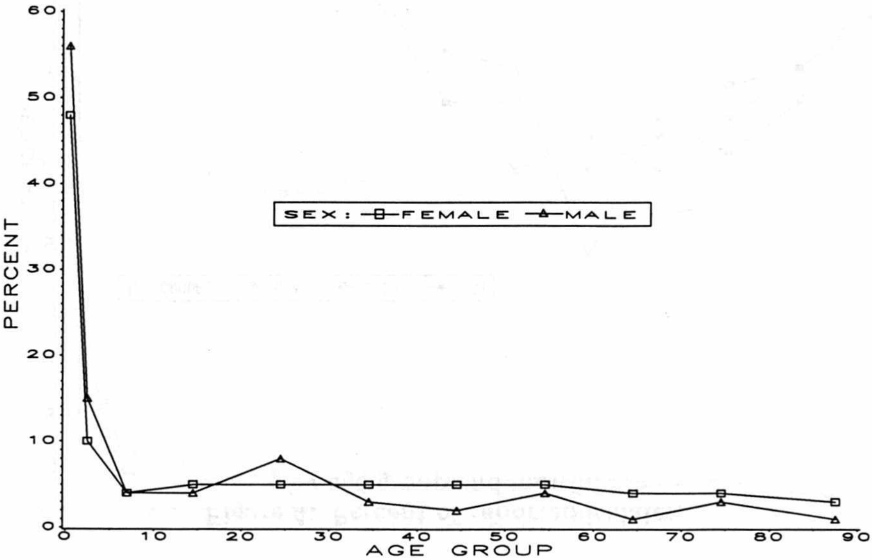
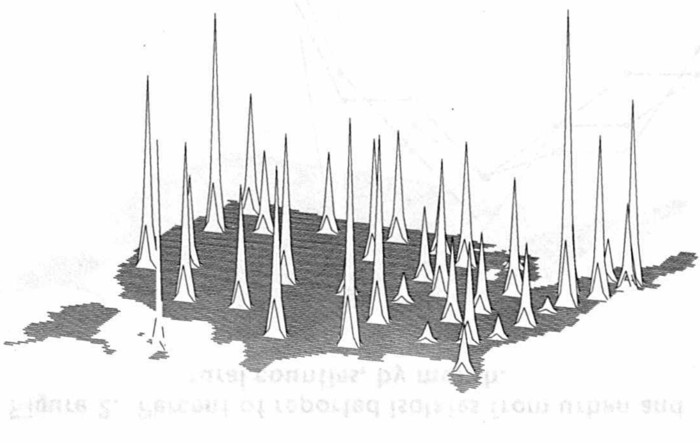


Figure 8. Age-standardized rates of reported isolates, by state.



S. minnesota

Figure 1. Reported isolates, 3-month moving average, by month and year.

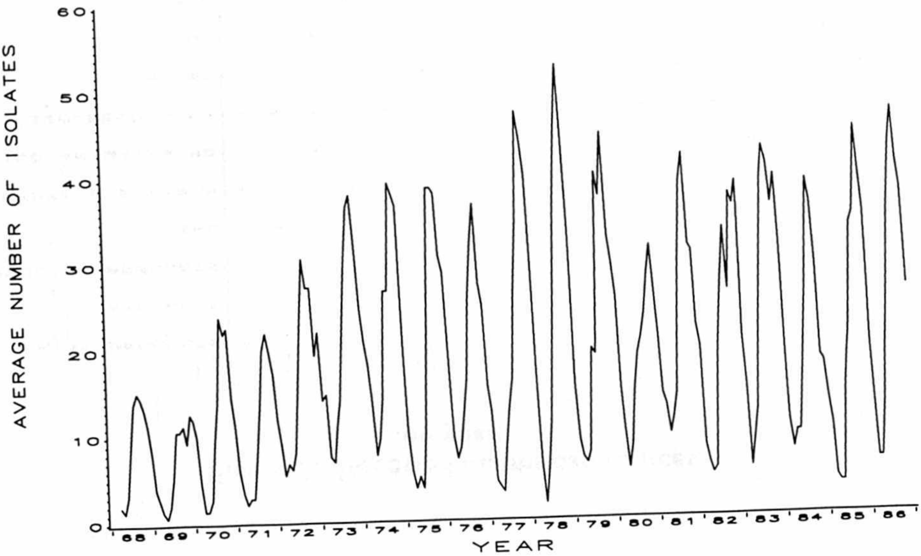


Figure 3. Number of reported isolates, by age-group and year.

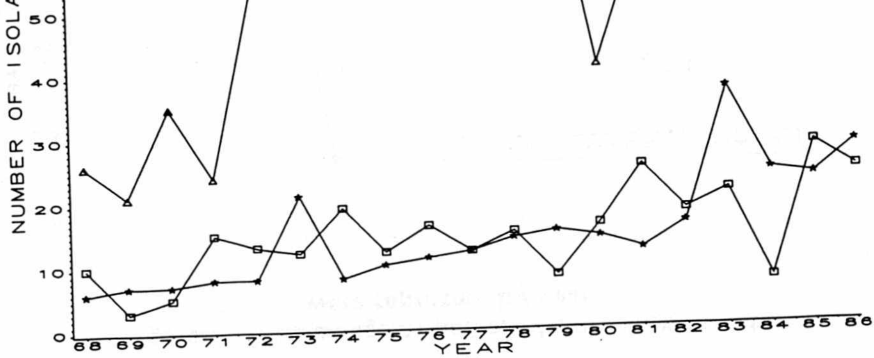


Figure 2. Percent of reported isolates from urban and rural counties, by month.

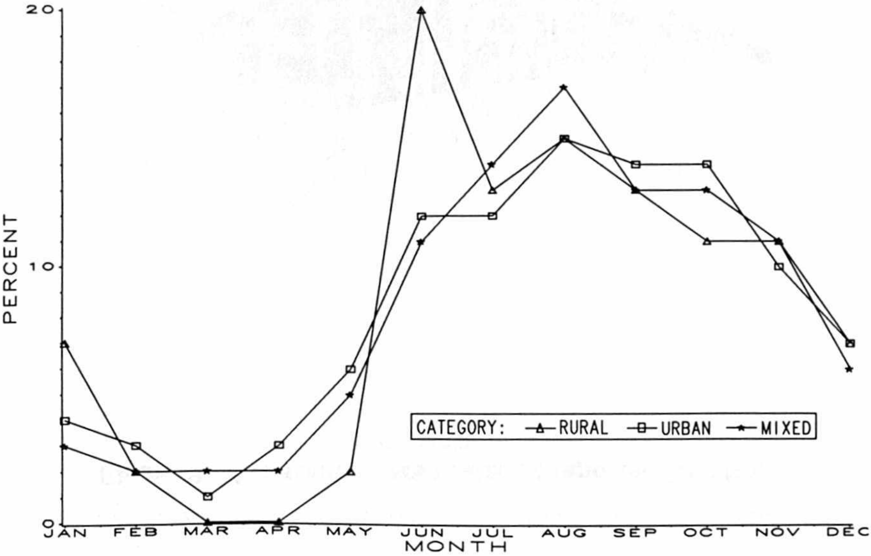
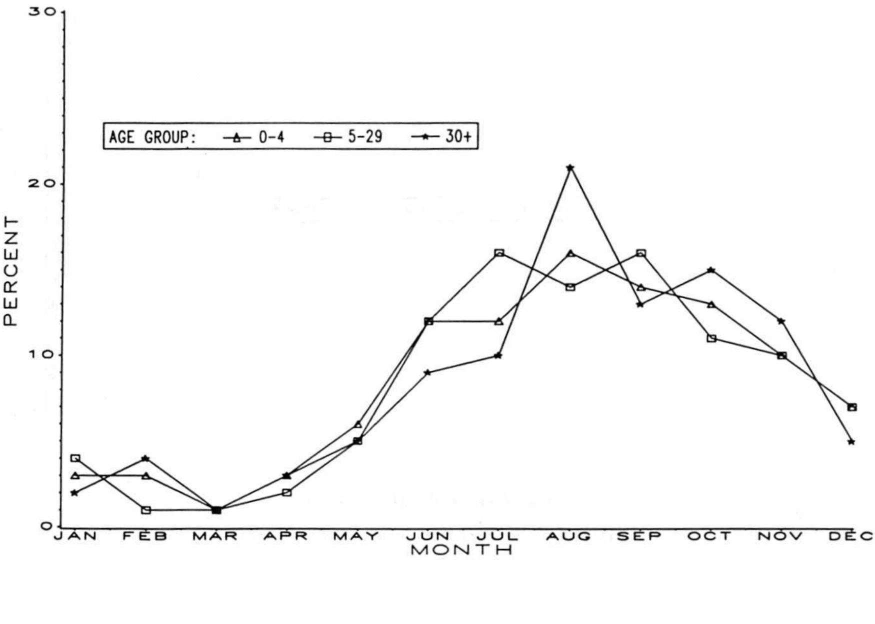


Figure 4. Percent of reported isolates, by age-group and month.



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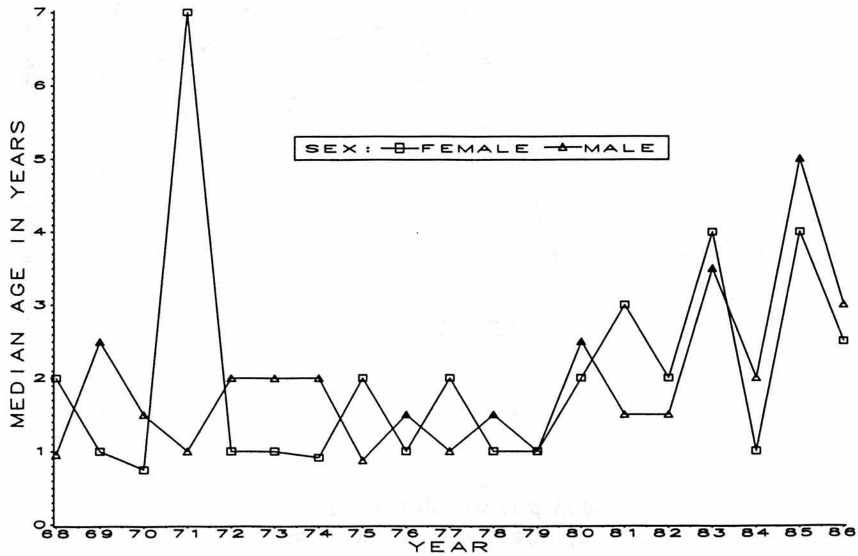


Figure 7. Reported nonhuman sources, by year.

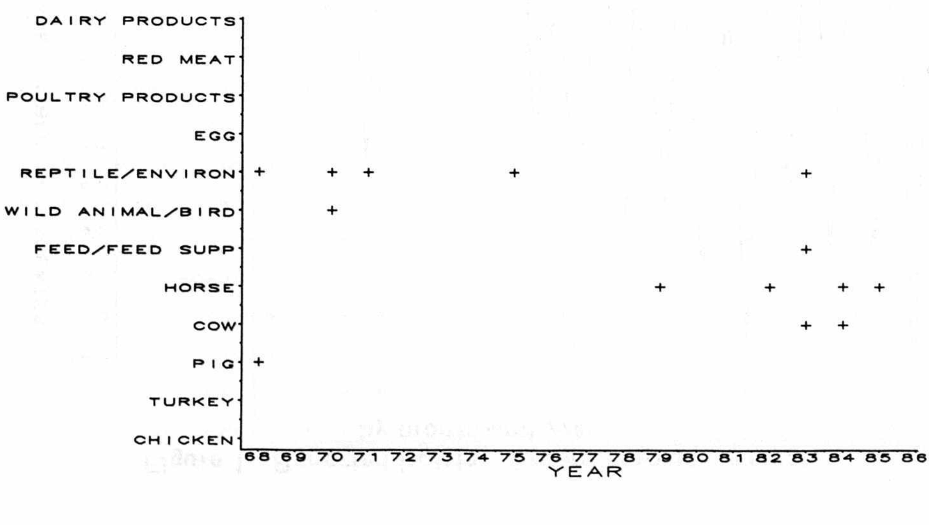


Figure 6. Percent of reported isolates, by age-group and sex.

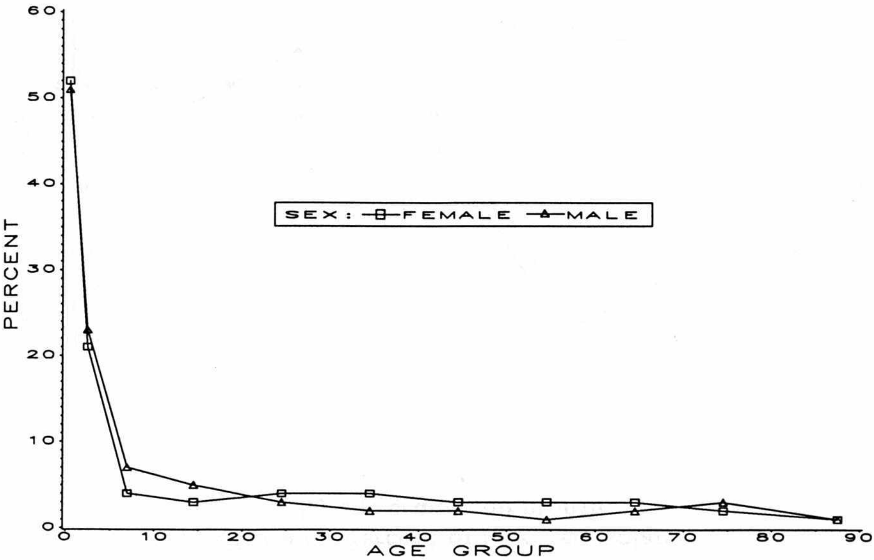


Figure 8. Age-standardized rates of reported isolates, by state.

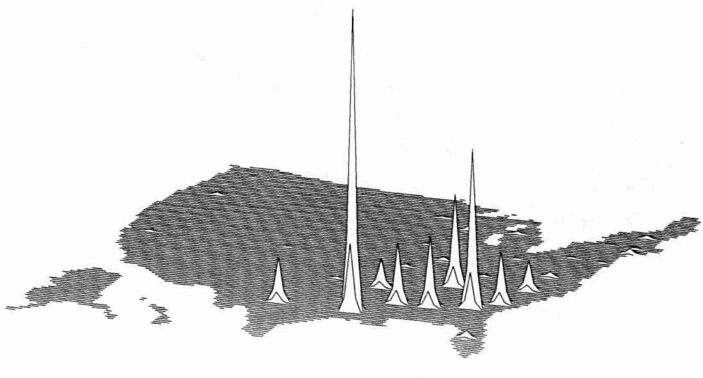


Figure 1. Reported isolates, 3-month moving average, by month and year.

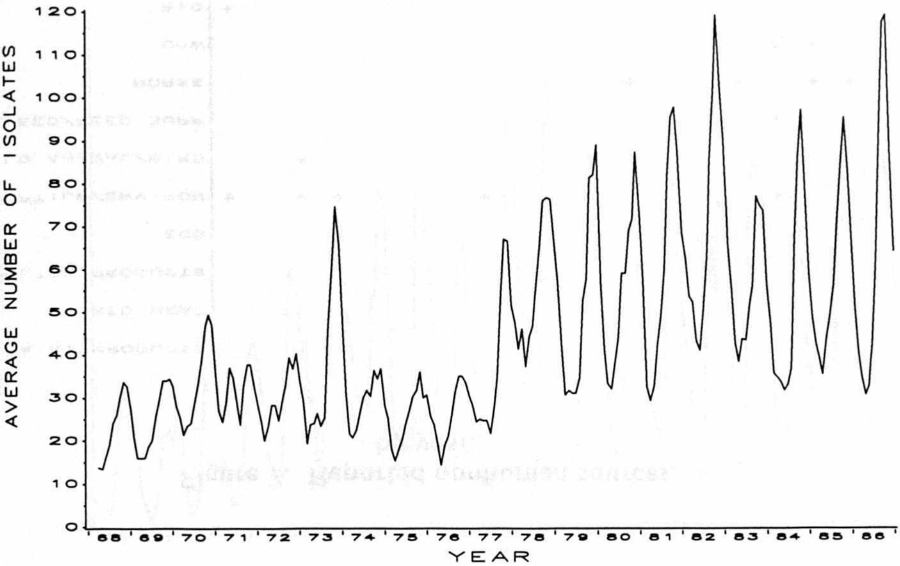
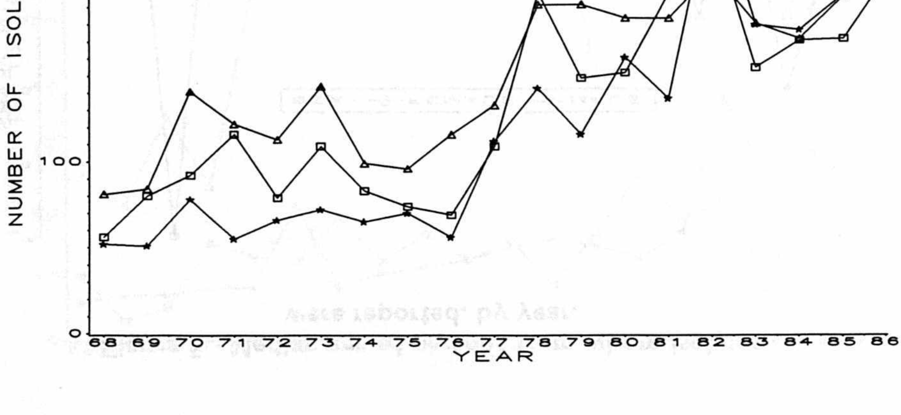


Figure 3. Number of reported isolates, by age-group and year.



S. montevideo

Figure 2. Percent of reported isolates from urban and rural counties, by month.

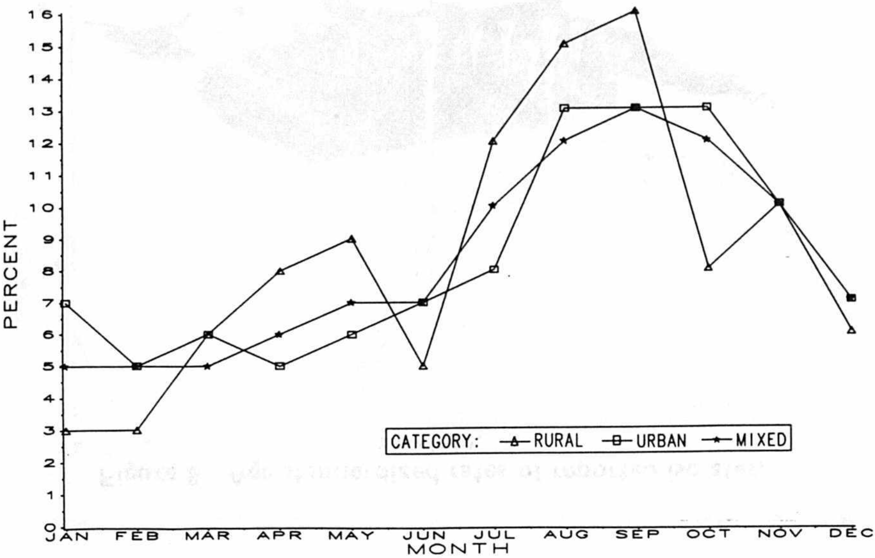


Figure 4. Percent of reported isolates, by age-group and month.

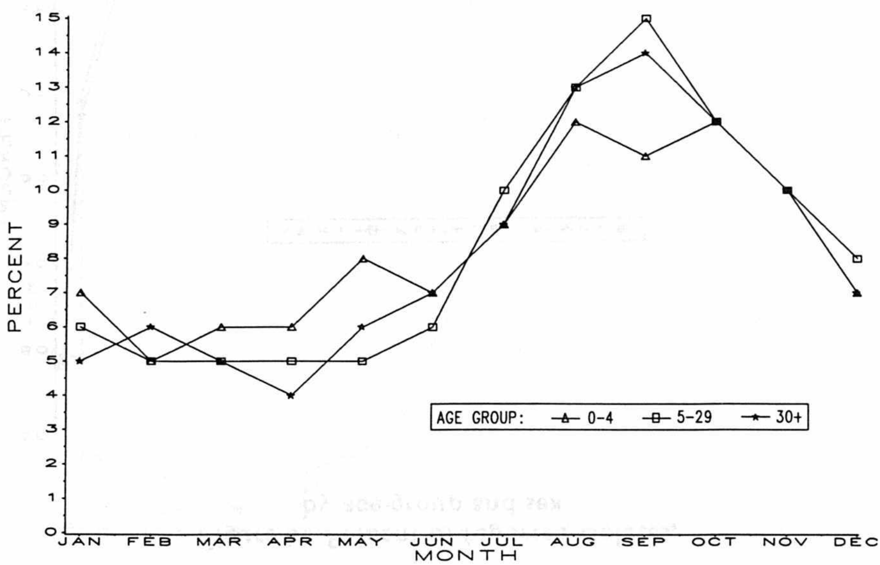


Figure 5. Median age of persons from whom isolates were reported, by year.

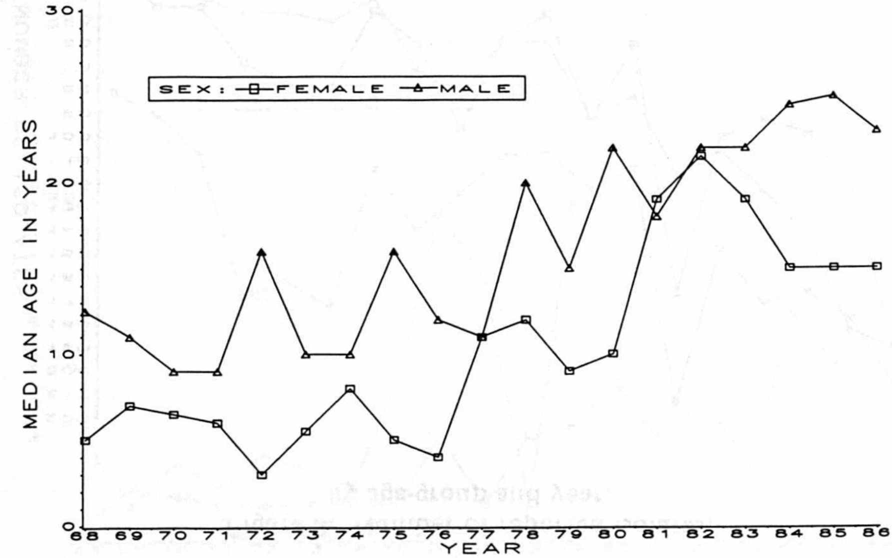


Figure 7. Reported nonhuman sources, by year.

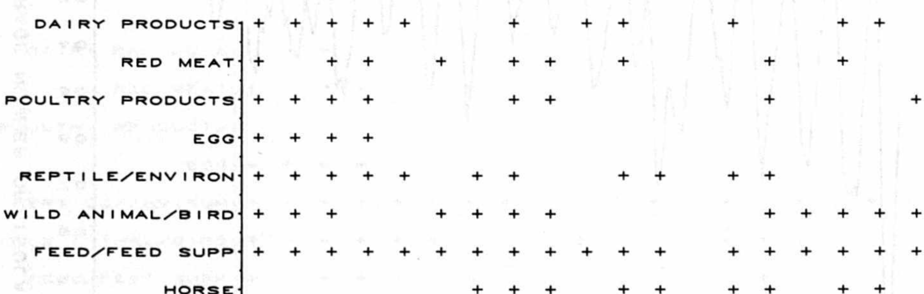


Figure 6. Percent of reported isolates, by age-group and sex.

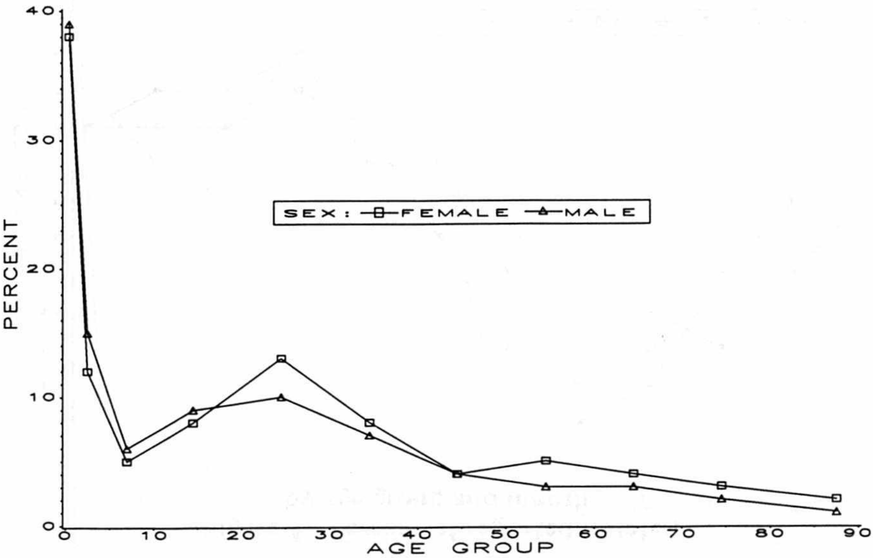
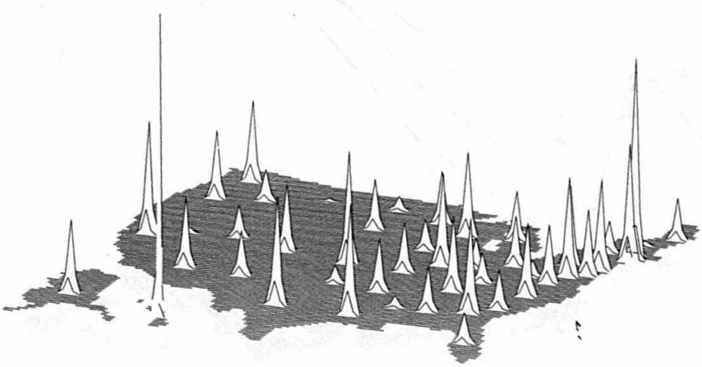


Figure 8. Age-standardized rates of reported isolates, by state.



S. montevideo

Figure 1. Reported isolates, 3-month moving average, by month and year.

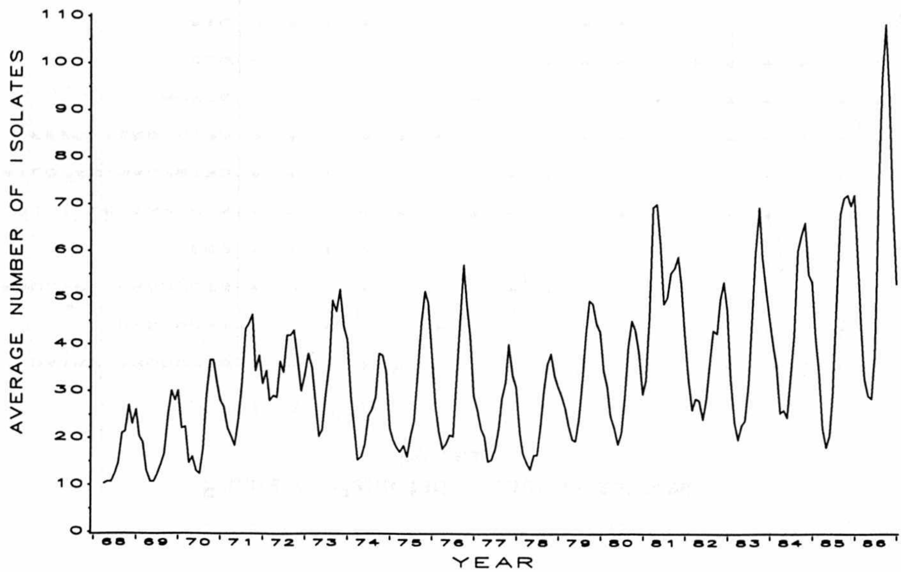
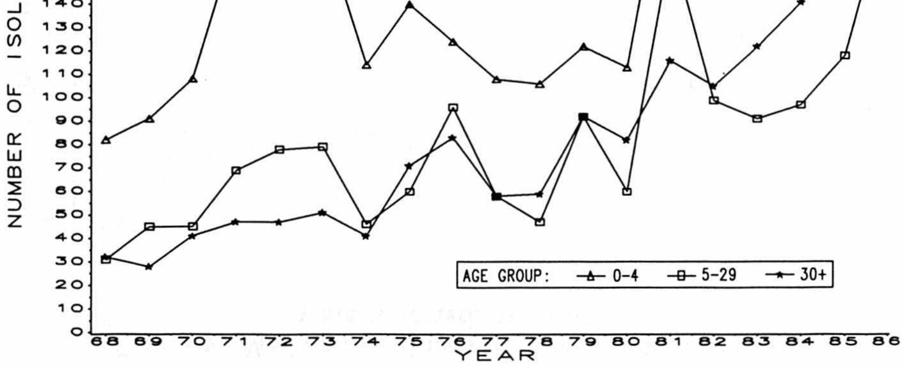


Figure 3. Number of reported isolates, by age-group and year.



S. muenchen

Figure 2. Percent of reported isolates from urban and rural counties, by month.

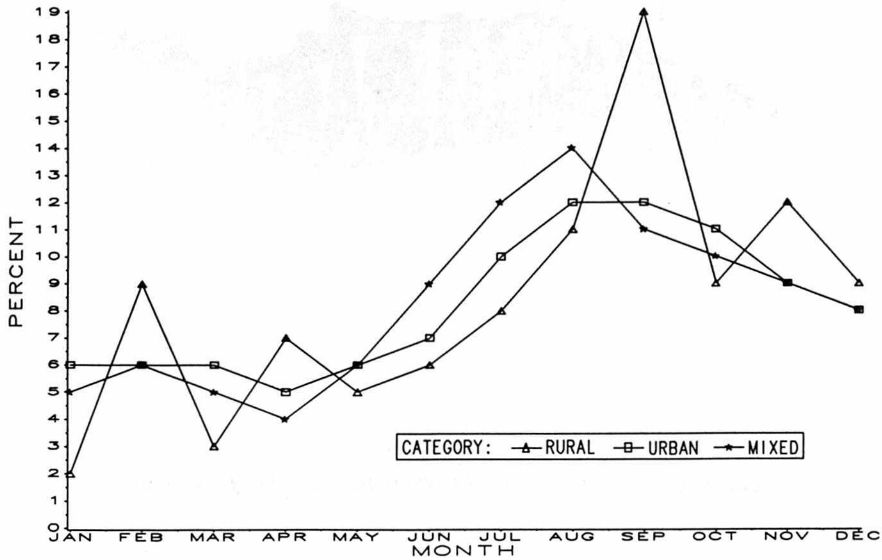


Figure 4. Percent of reported isolates, by age-group and month.

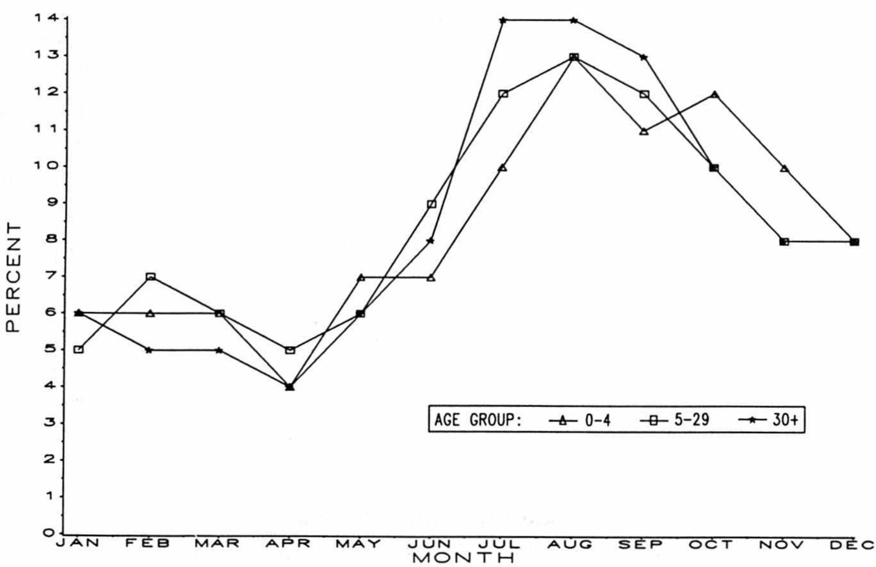


Figure 5. Median age of persons from whom isolates were reported, by year.

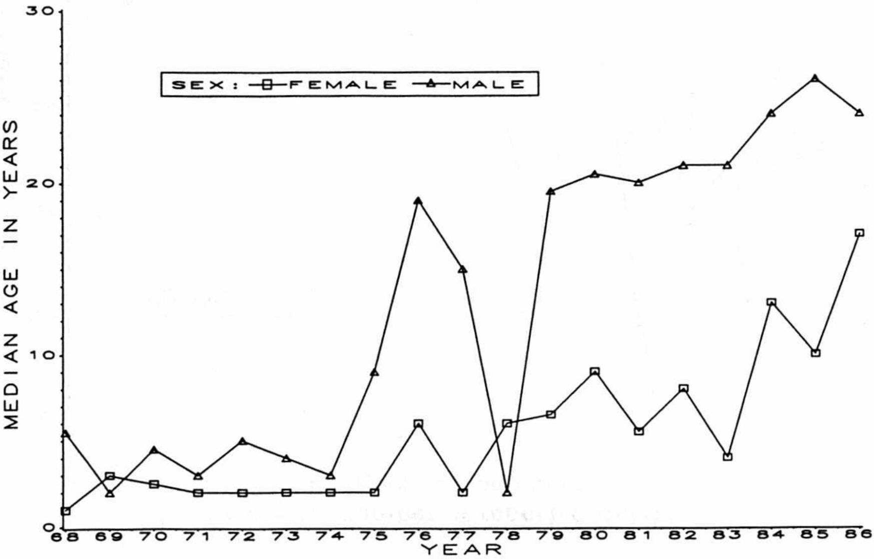


Figure 7. Reported nonhuman sources, by year.

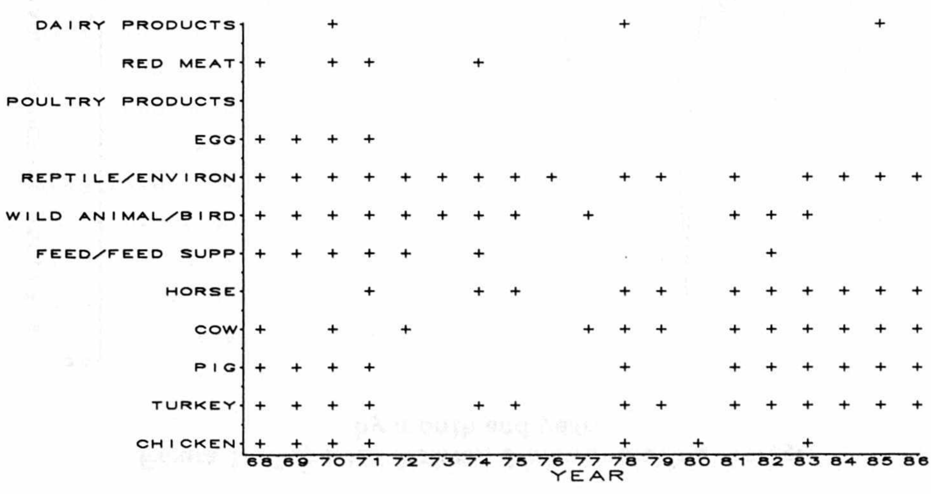
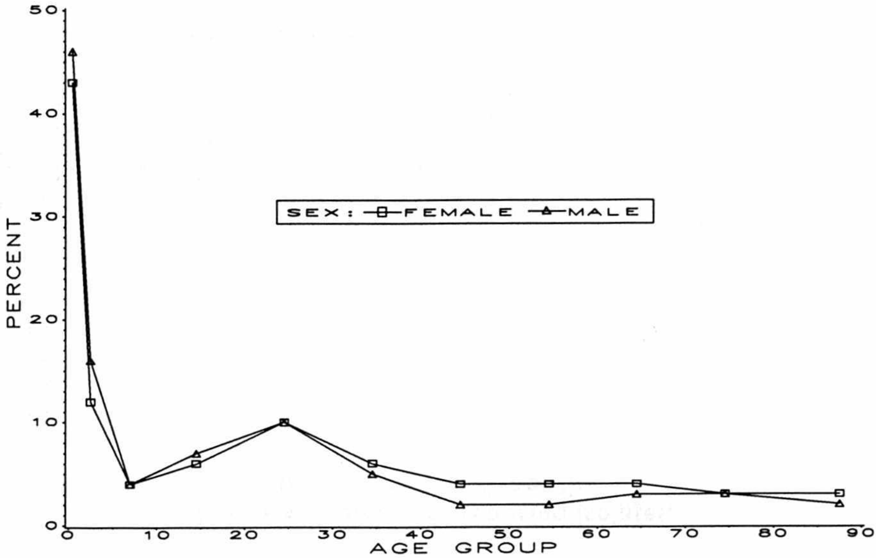


Figure 6. Percent of reported isolates, by age-group and sex.



S. muenchen

Figure 8. Age-standardized rates of reported isolates, by state.

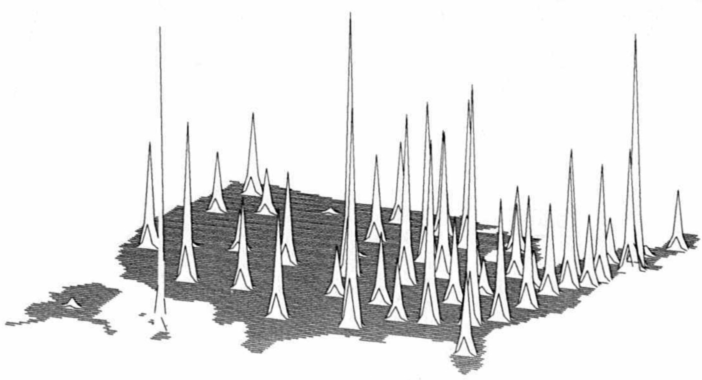


Figure 1. Reported isolates, 3-month moving average, by month and year.

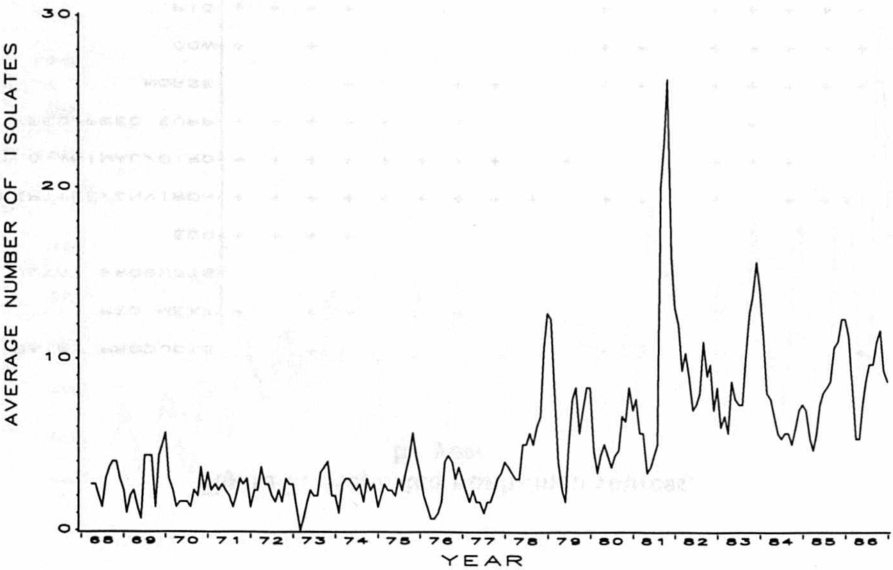


Figure 3. Number of reported isolates, by age-group and year.

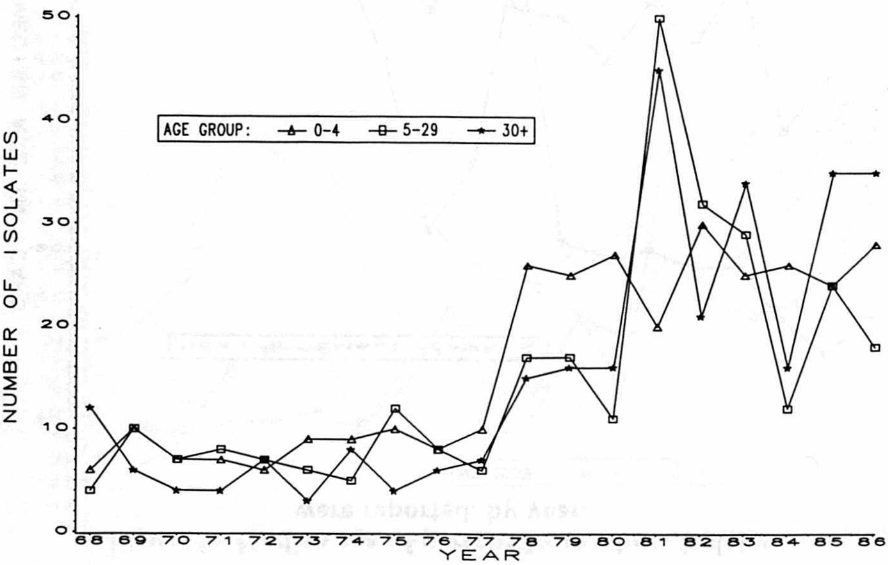


Figure 2. Percent of reported isolates from urban and rural counties, by month.

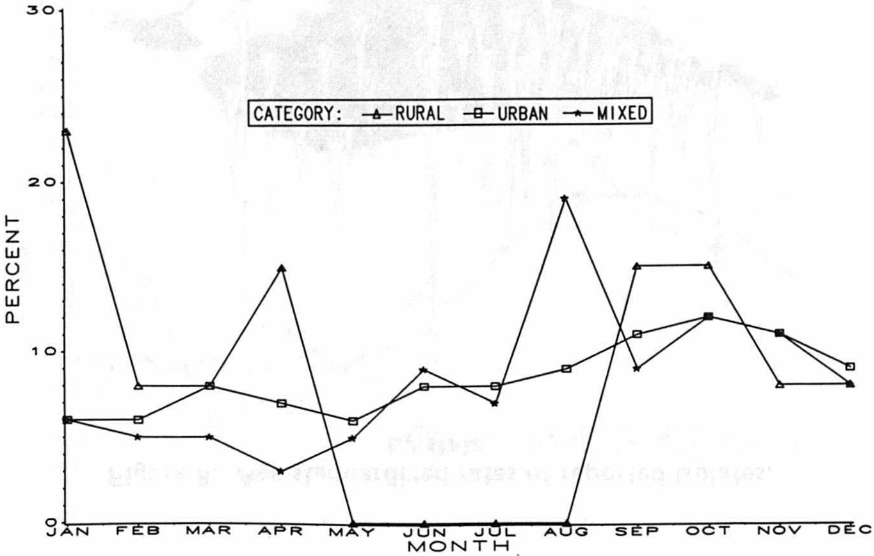
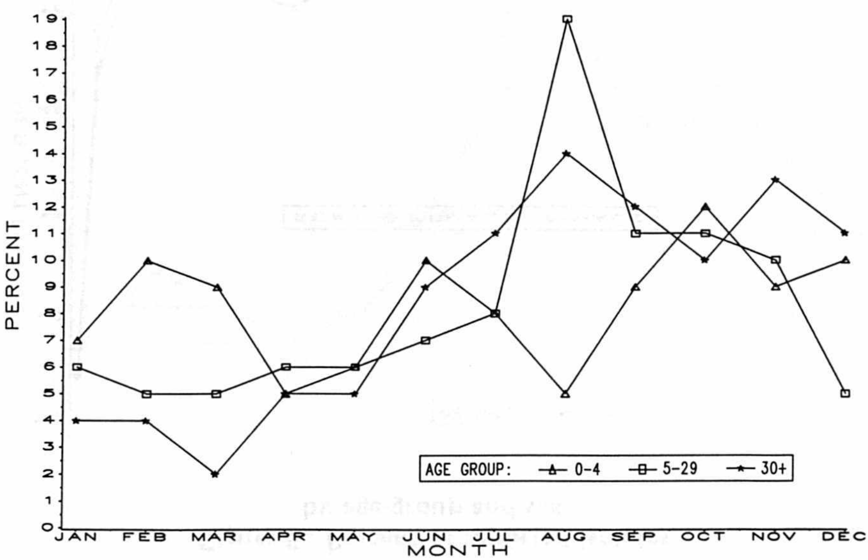


Figure 4. Percent of reported isolates, by age-group and month.



S. muenster

Figure 5. Median age of persons from whom isolates were reported, by year.

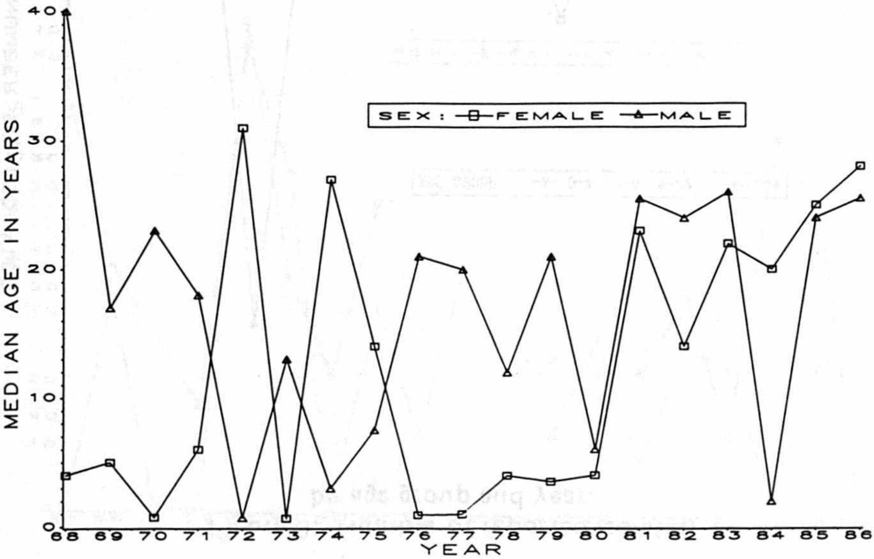


Figure 7. Reported nonhuman sources, by year.

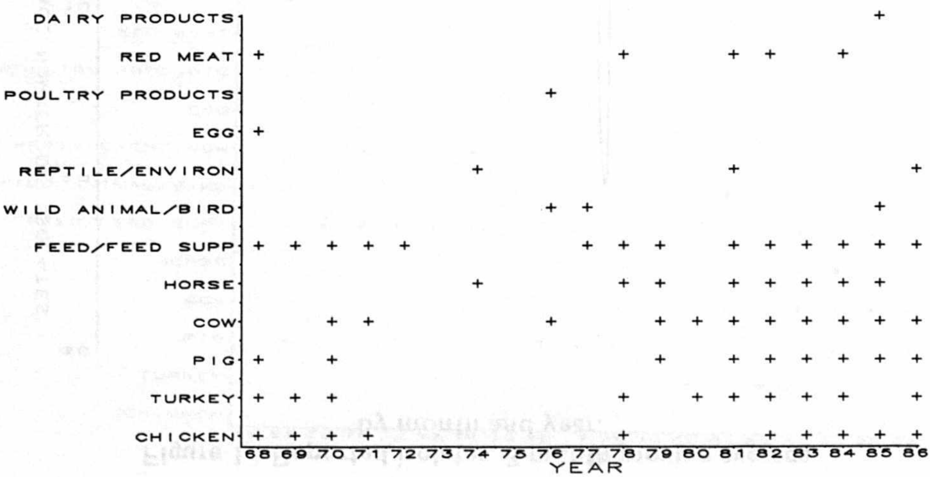


Figure 6. Percent of reported isolates, by age-group and sex.

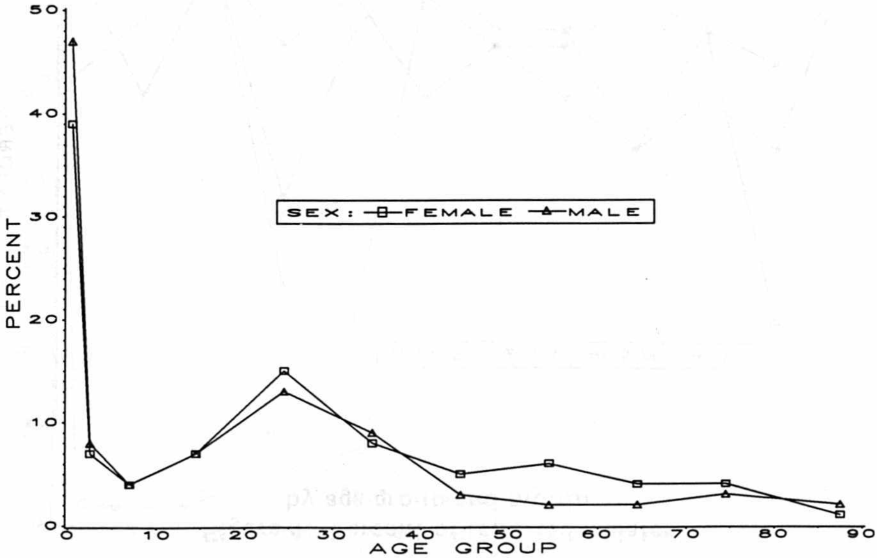
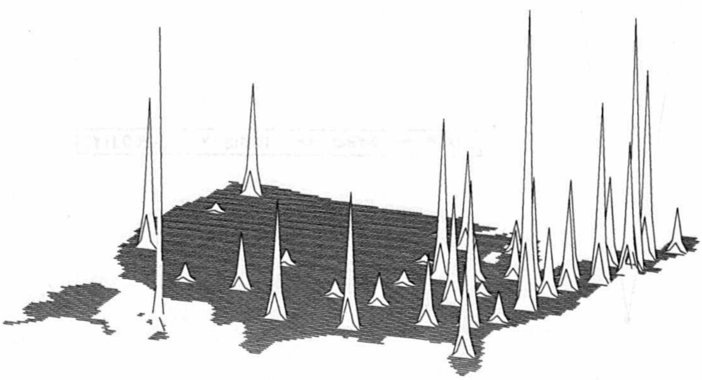


Figure 8. Age-standardized rates of reported isolates, by state.



S. muenster

Figure 1. Reported isolates, 3-month moving average, by month and year.

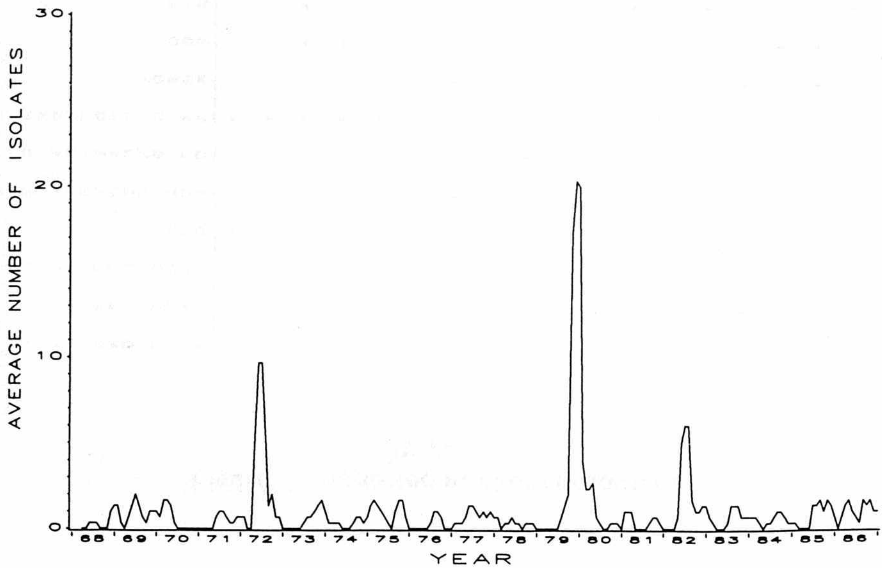


Figure 3. Number of reported isolates, by age-group and year.

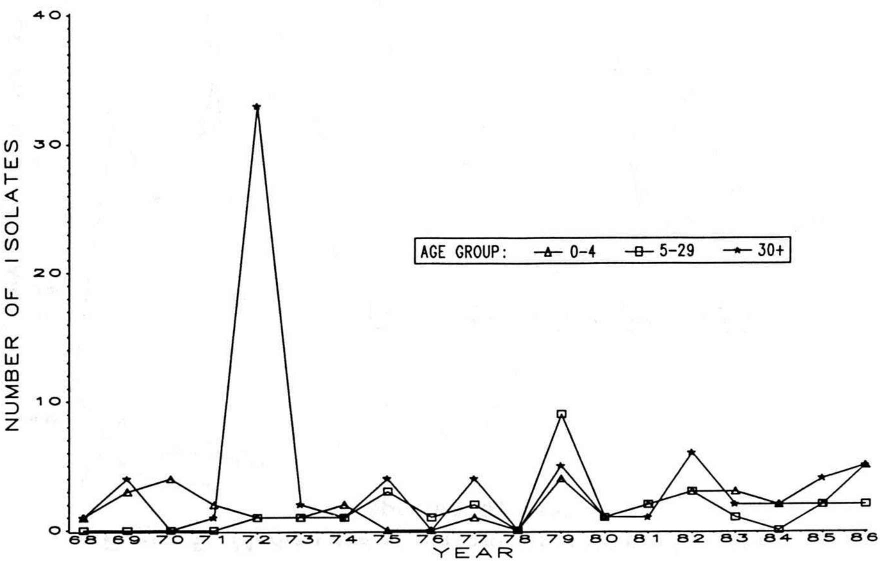


Figure 2. Percent of reported isolates from urban and rural counties, by month.

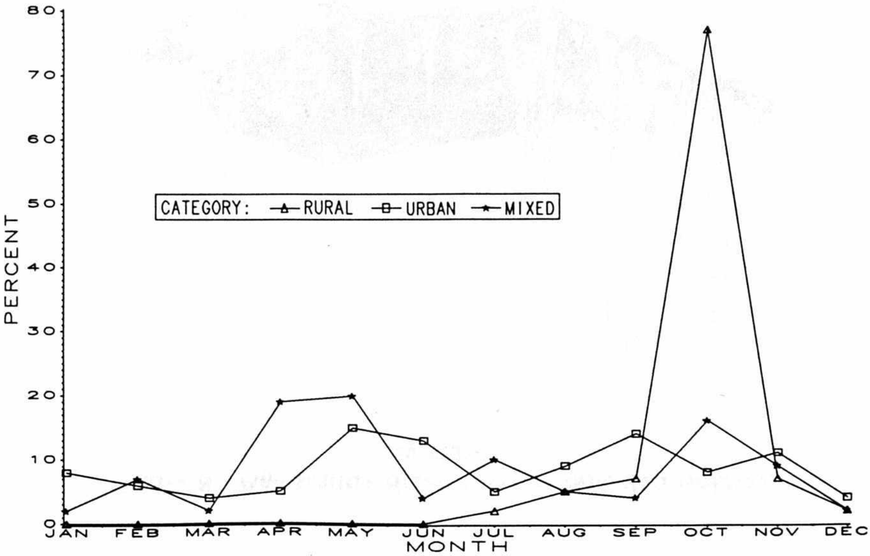
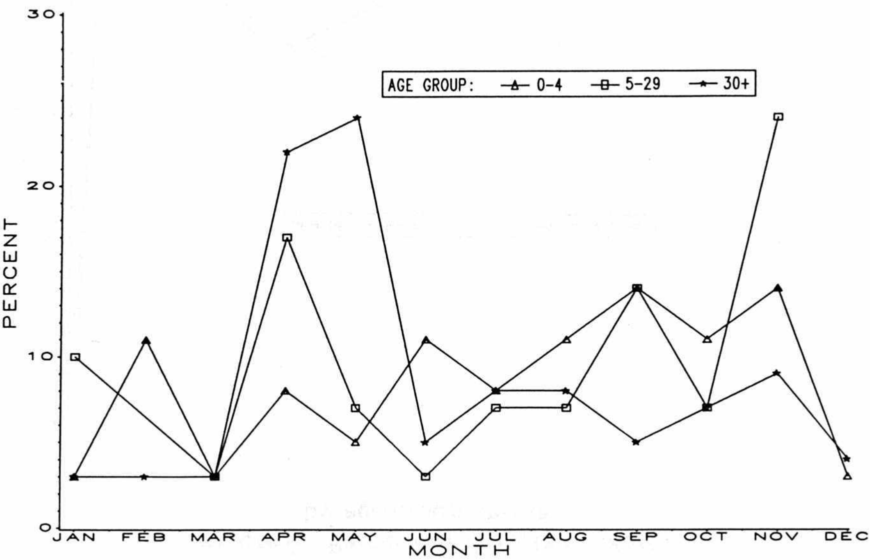


Figure 4. Percent of reported isolates, by age-group and month.



S. newbrunswick

Figure 5. Median age of persons from whom isolates were reported, by year.

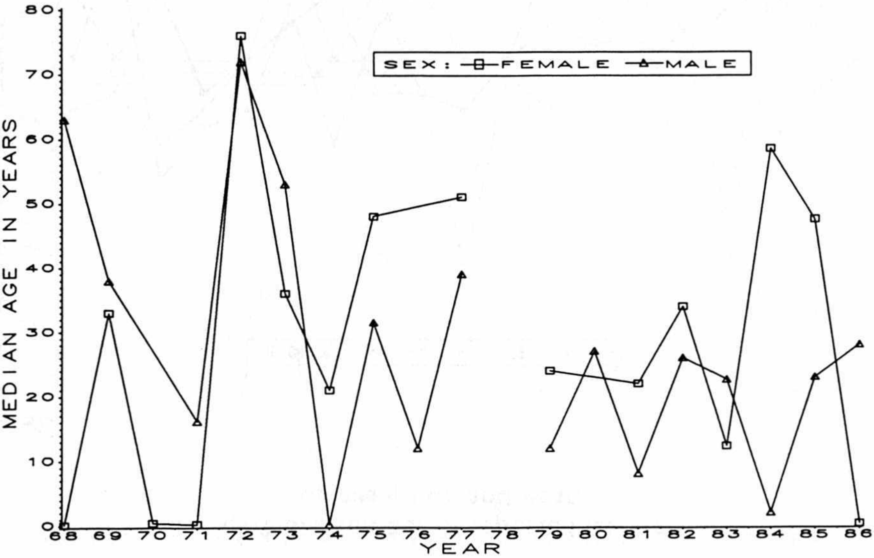


Figure 7. Reported nonhuman sources, by year.

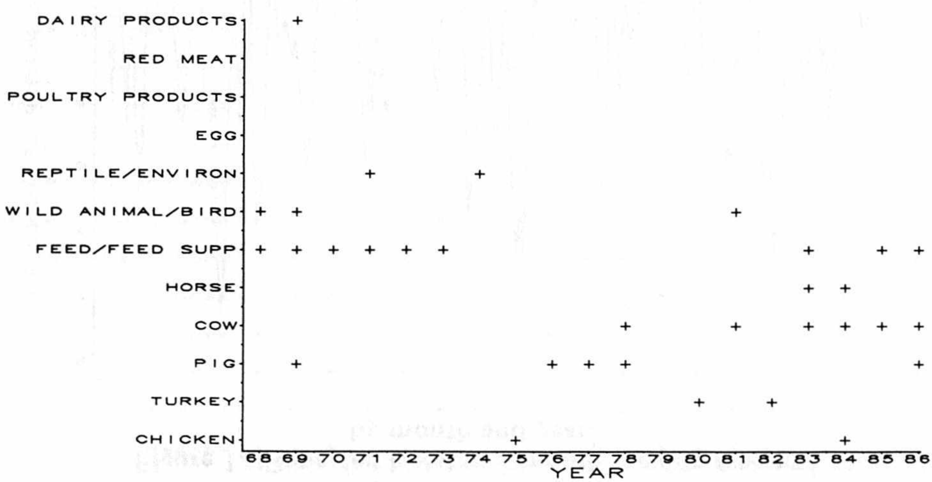


Figure 6. Percent of reported isolates, by age-group and sex.

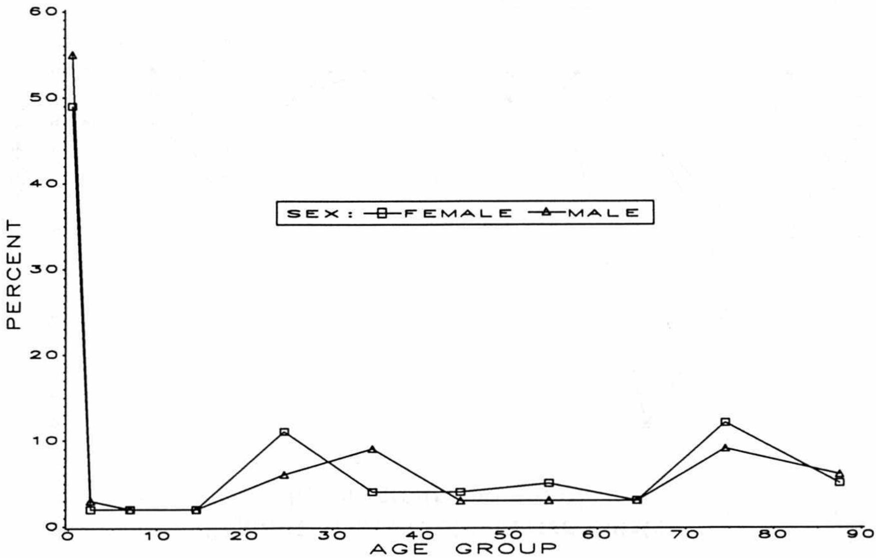
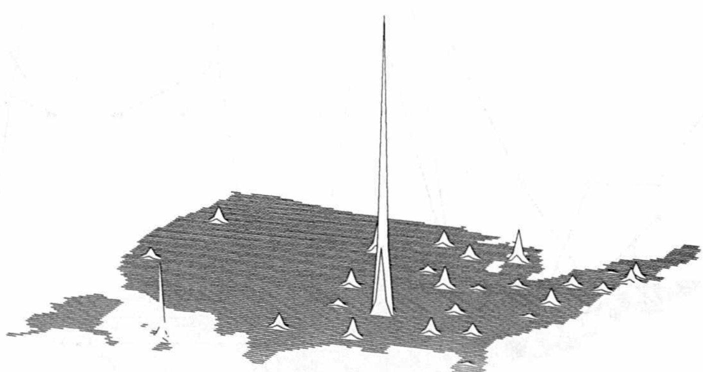


Figure 8. Age-standardized rates of reported isolates, by state.



S. newbrunswick

Figure 1. Reported isolates, 3-month moving average, by month and year.

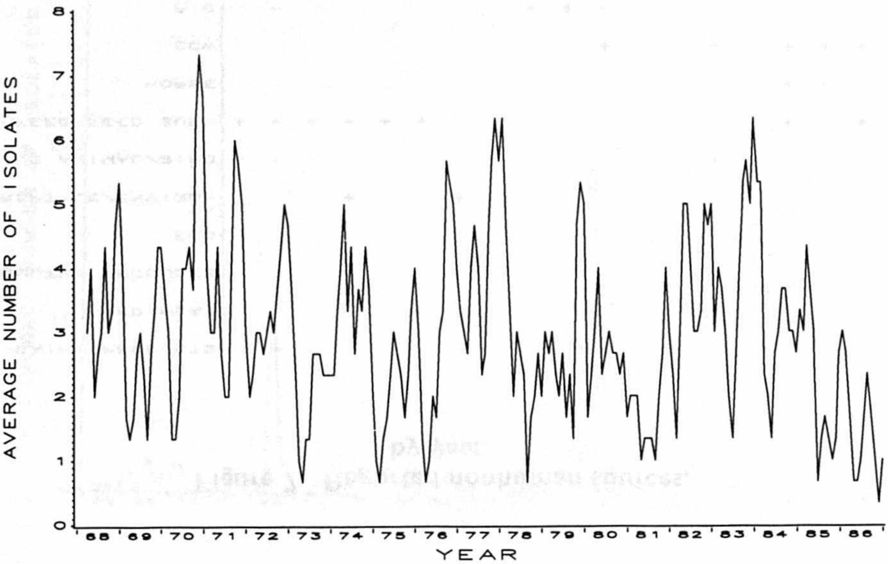


Figure 3. Number of reported isolates, by age-group and year.

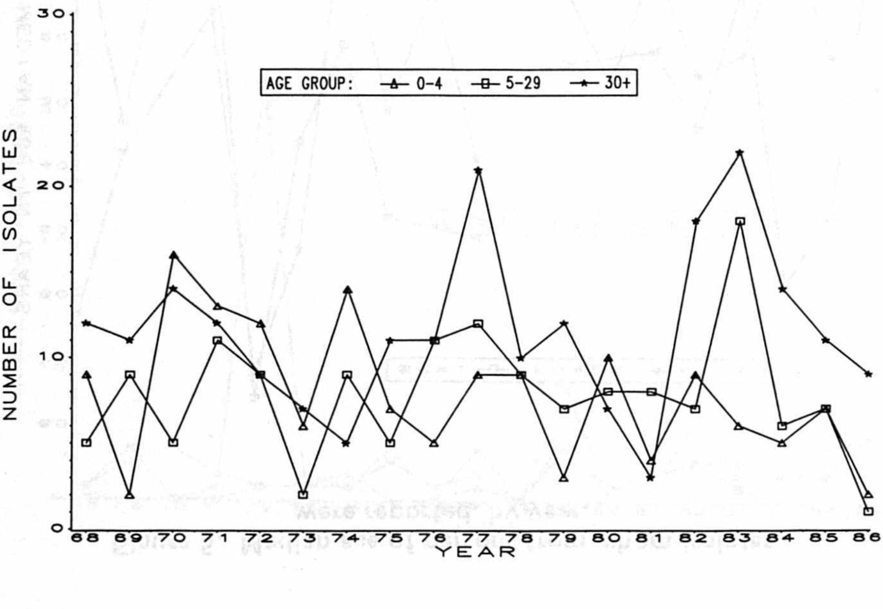


Figure 2. Percent of reported isolates from urban and rural counties, by month.

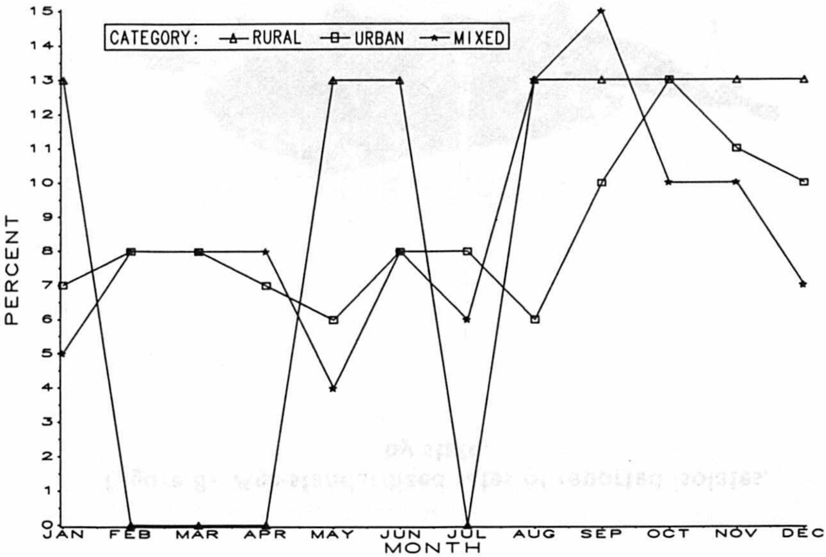
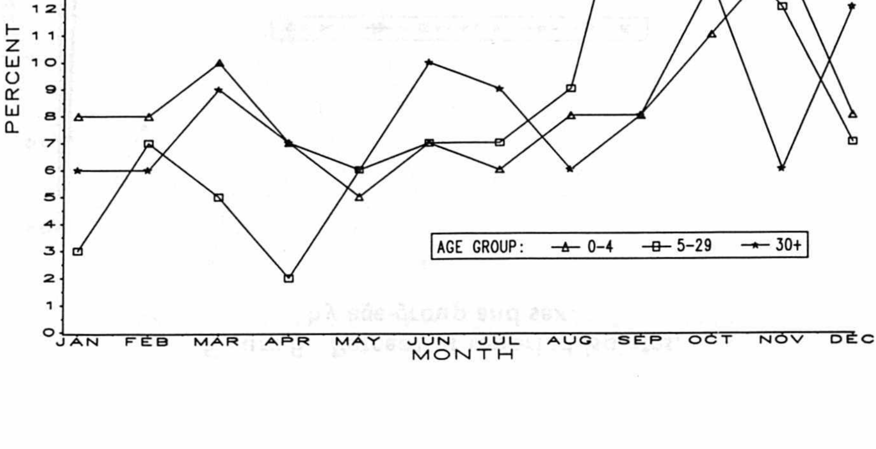


Figure 4. Percent of reported isolates, by age-group and month.



S. newington

Figure 5. Median age of persons from whom isolates were reported, by year.

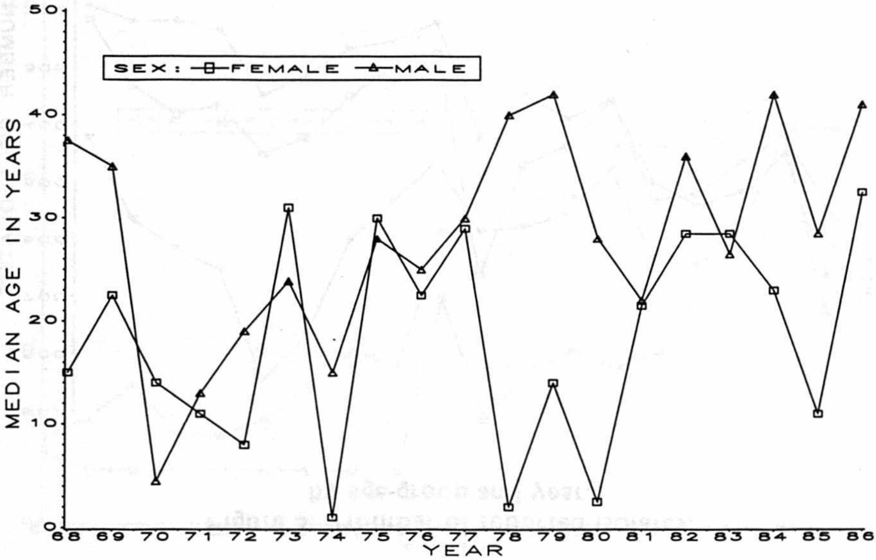


Figure 7. Reported nonhuman sources, by year.

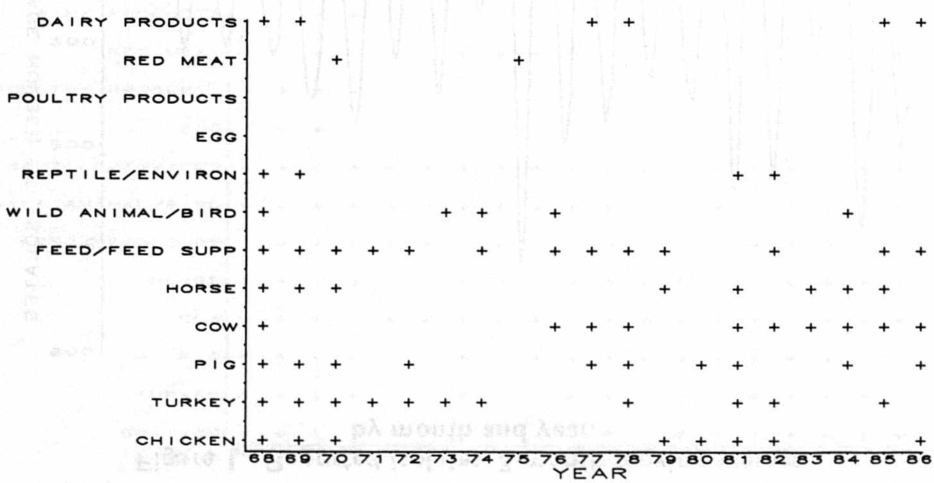


Figure 6. Percent of reported isolates, by age-group and sex.

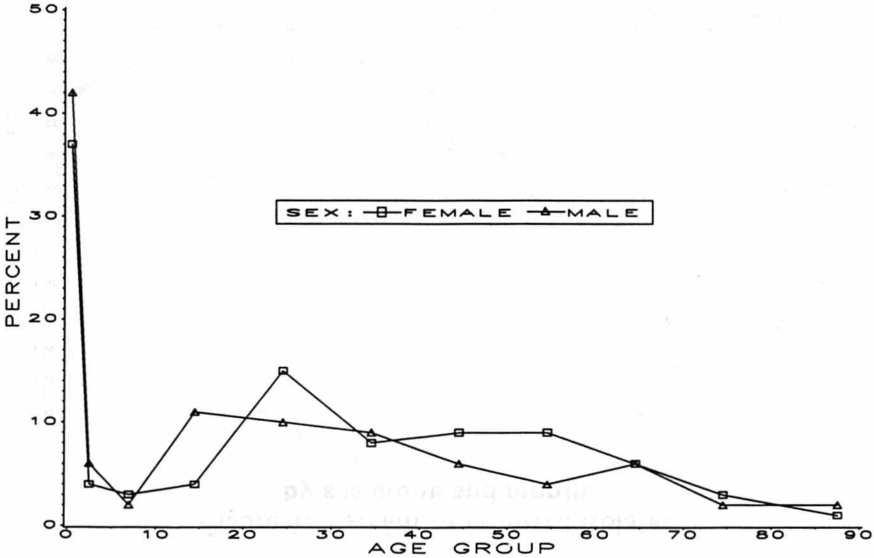
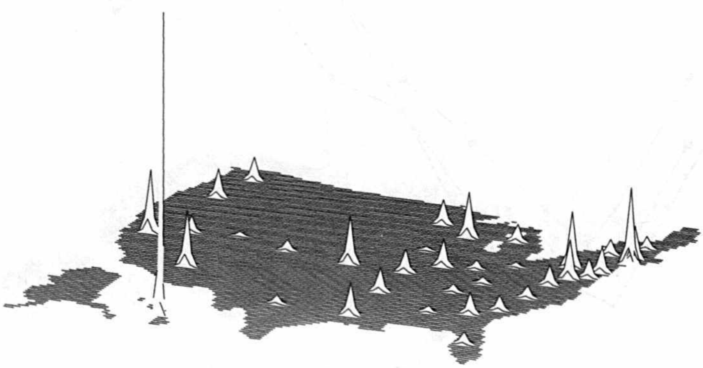


Figure 8. Age-standardized rates of reported isolates, by state.



S. newington

Figure 1. Reported isolates, 3-month moving average, by month and year.

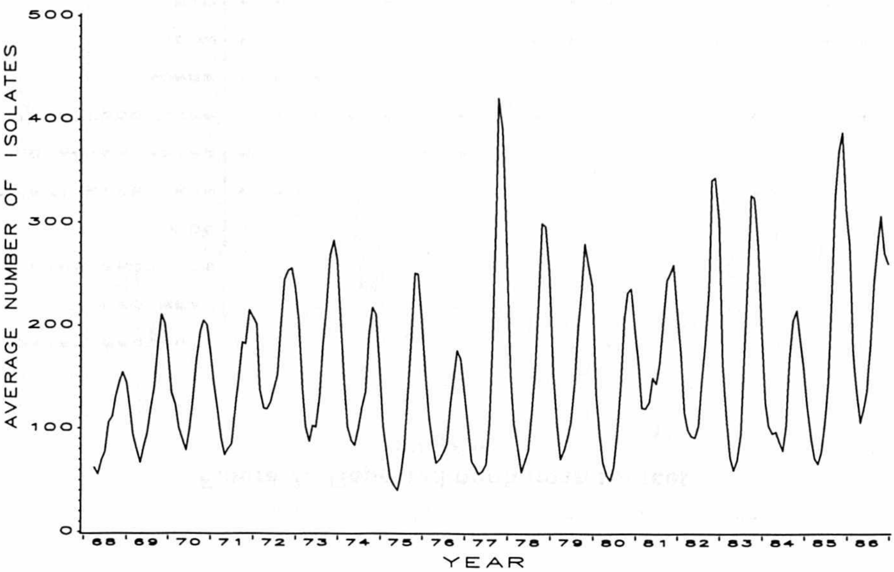


Figure 3. Number of reported isolates, by age-group and year.

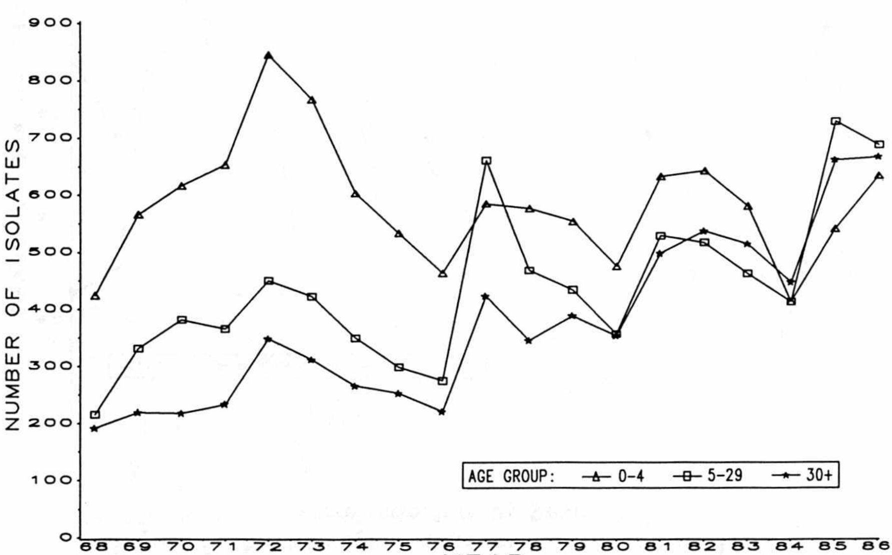


Figure 2. Percent of reported isolates from urban and rural counties, by month.

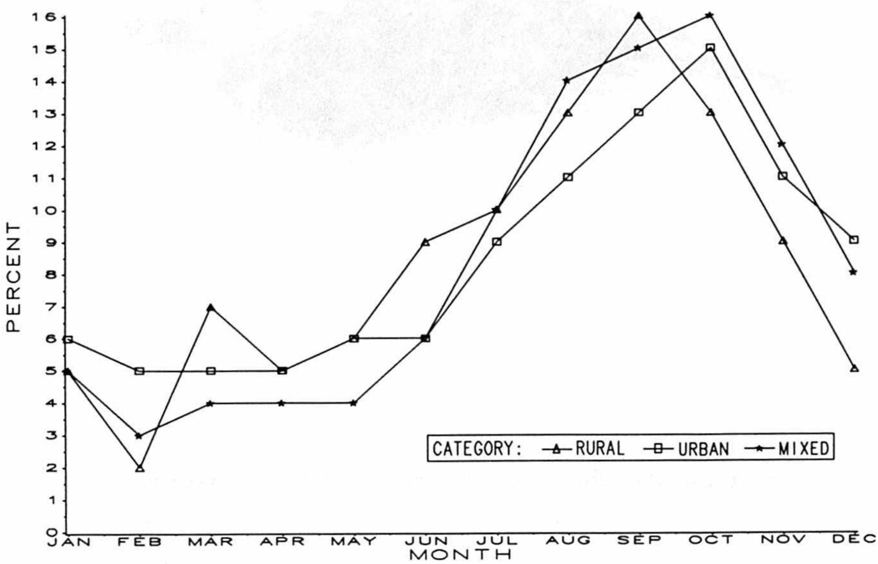
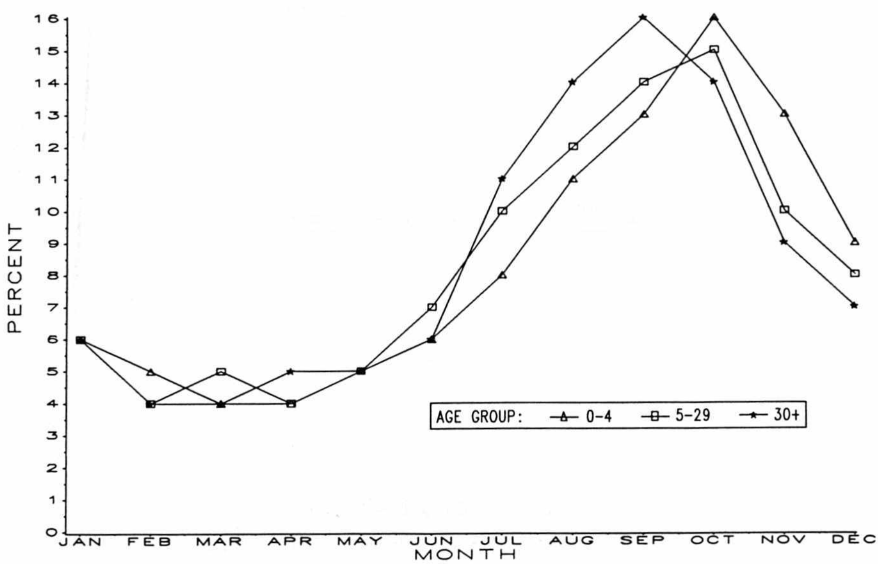


Figure 4. Percent of reported isolates, by age-group and month.



S. newport

Figure 5. Median age of persons from whom isolates were reported, by year.

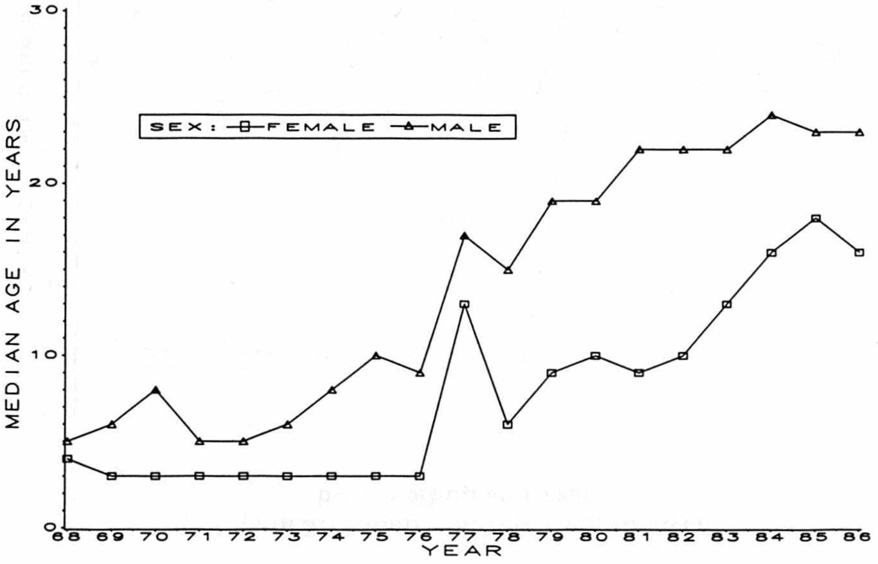


Figure 7. Reported nonhuman sources, by year.

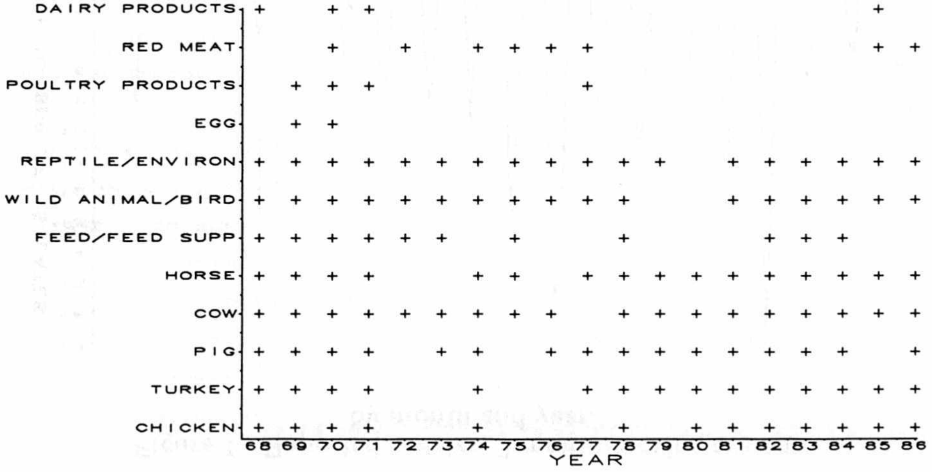


Figure 6. Percent of reported isolates, by age-group and sex.

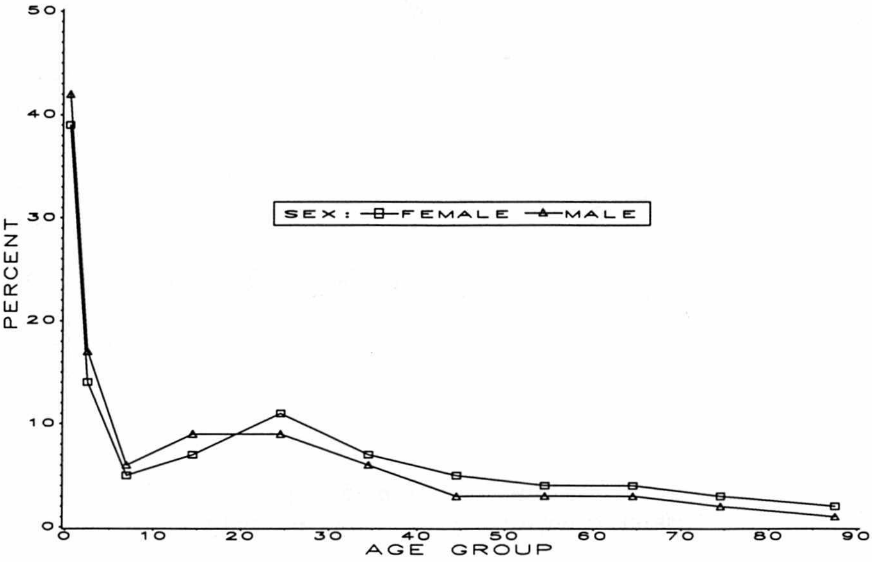
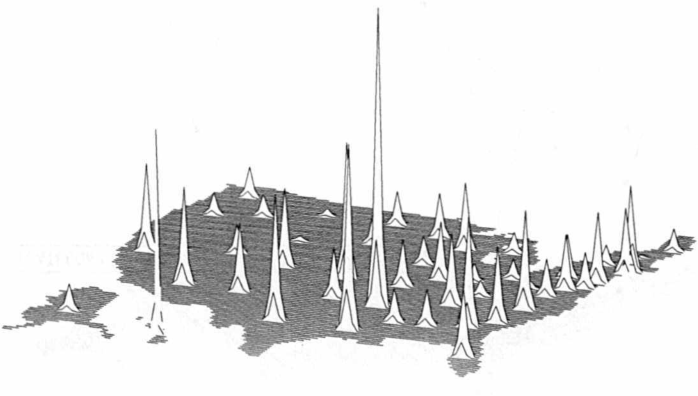


Figure 8. Age-standardized rates of reported isolates, by state.



S. newport

Figure 1. Reported isolates, 3-month moving average, by month and year.

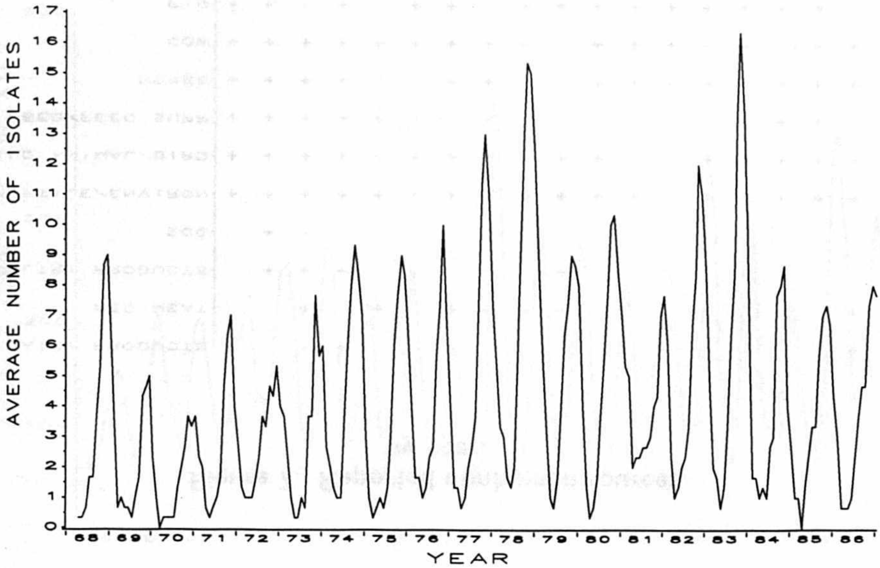


Figure 3. Number of reported isolates, by age-group and year.

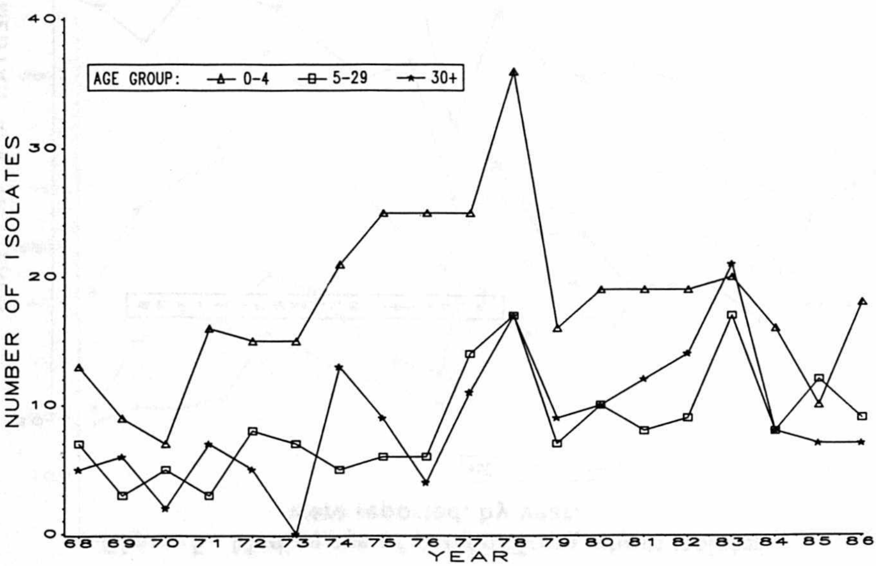


Figure 2. Percent of reported isolates from urban and rural counties, by month.

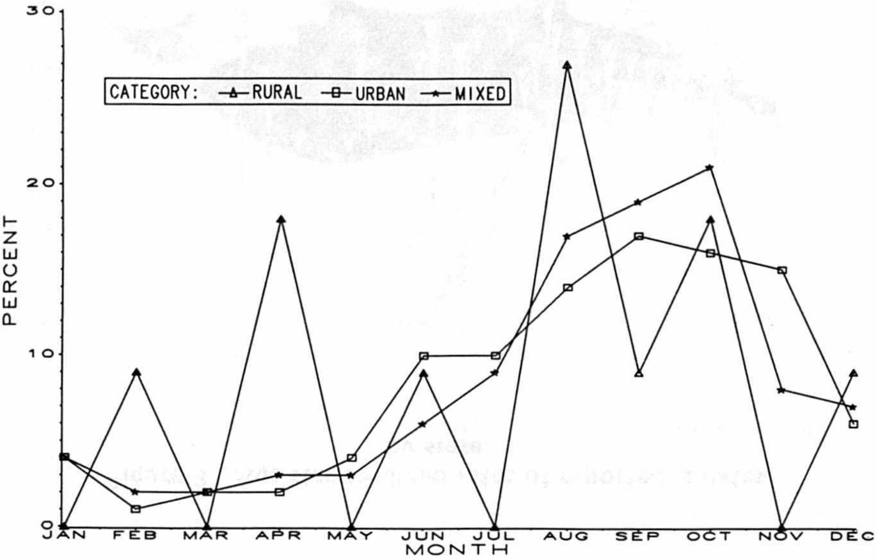
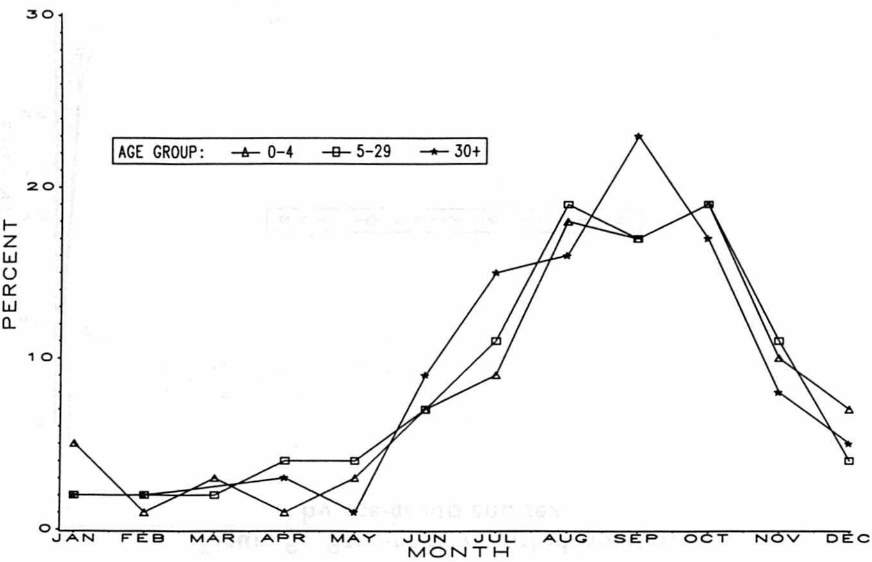


Figure 4. Percent of reported isolates, by age-group and month.



S. norwich

Figure 5. Median age of persons from whom isolates were reported, by year.

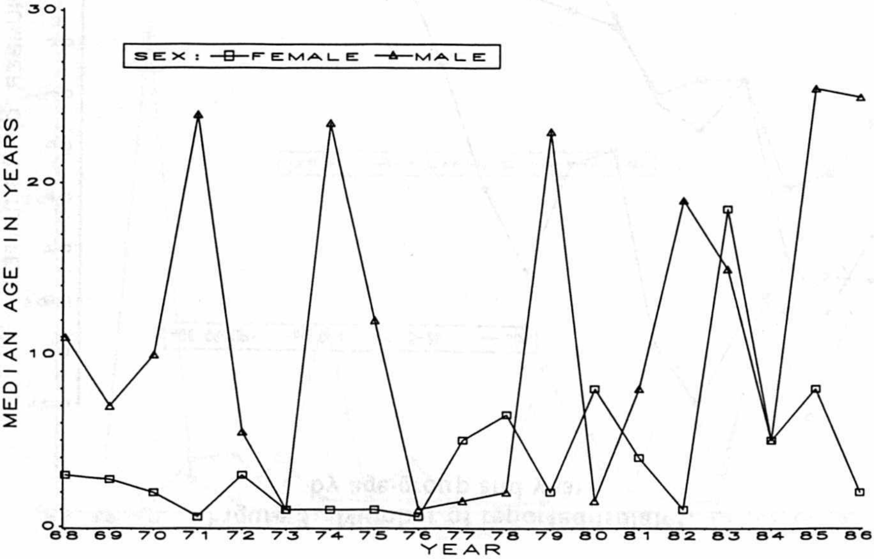


Figure 7. Reported nonhuman sources, by year.

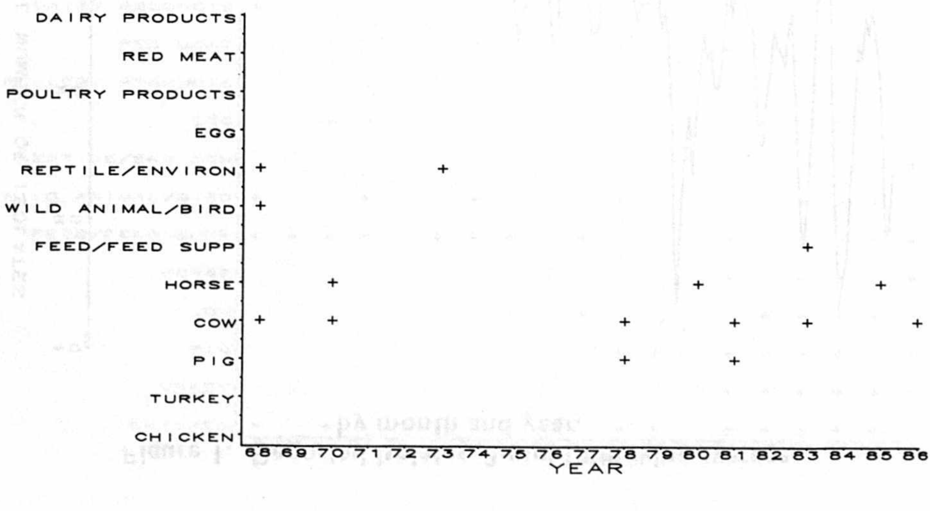


Figure 6. Percent of reported isolates, by age-group and sex.

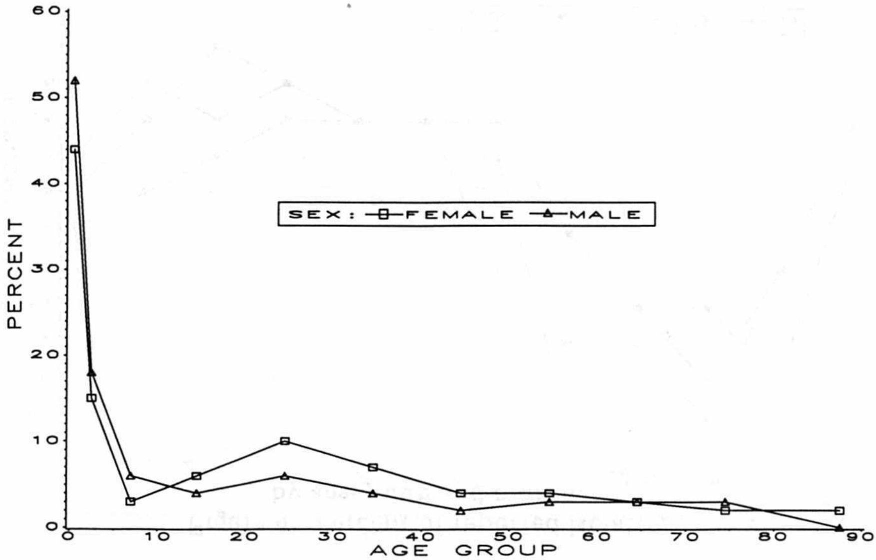


Figure 8. Age-standardized rates of reported isolates, by state.

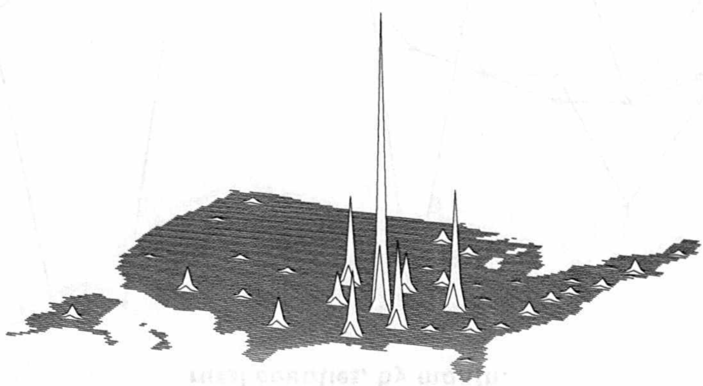


Figure 1. Reported isolates, 3-month moving average, by month and year.

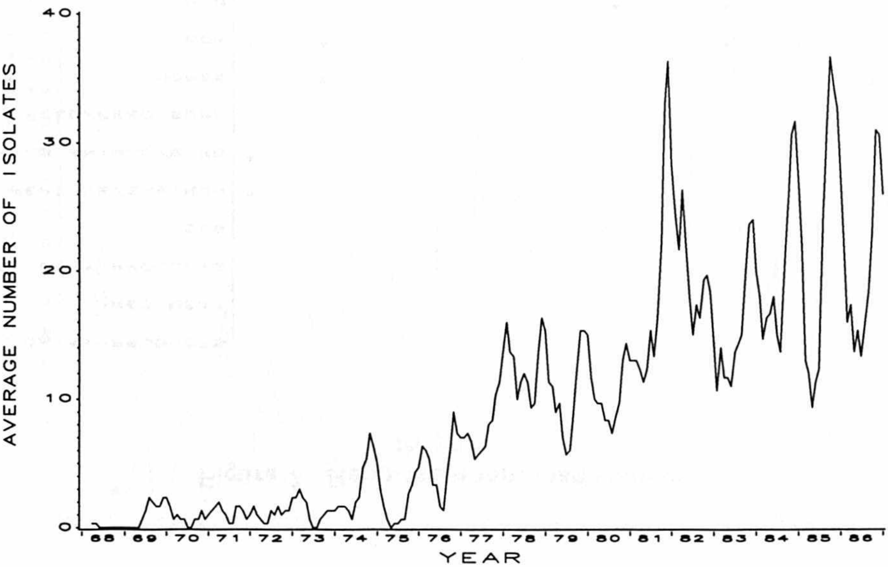


Figure 3. Number of reported isolates, by age-group and year.

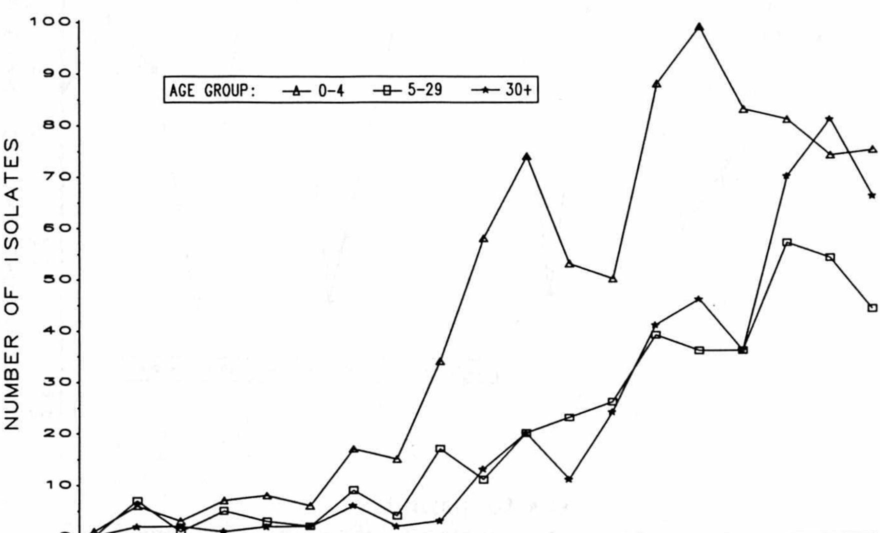


Figure 2. Percent of reported isolates from urban and rural counties, by month.

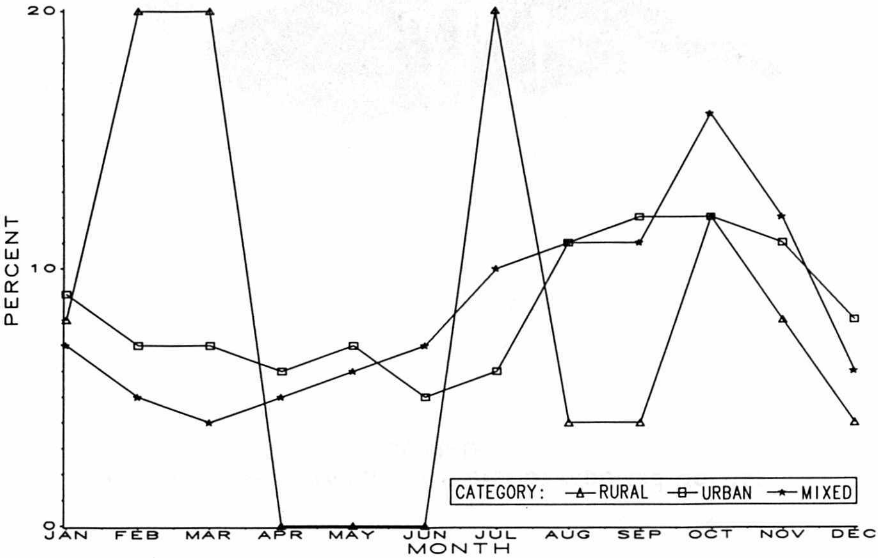
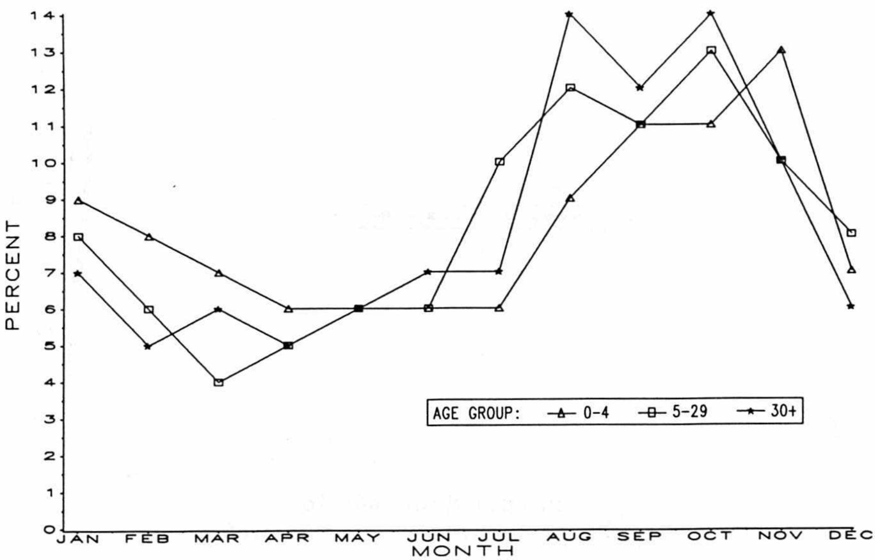


Figure 4. Percent of reported isolates, by age-group and month.



S. ohio

Figure 5. Median age of persons from whom isolates were reported, by year.

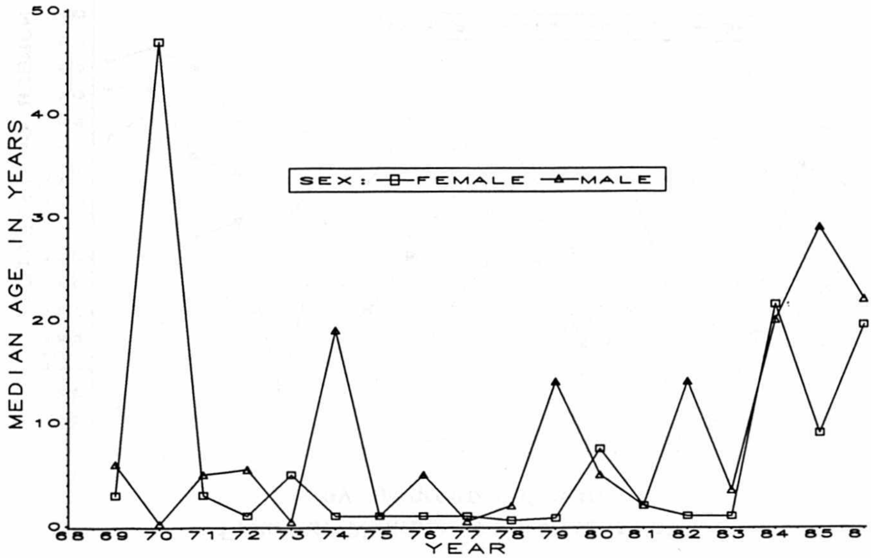


Figure 7. Reported nonhuman sources, by year.

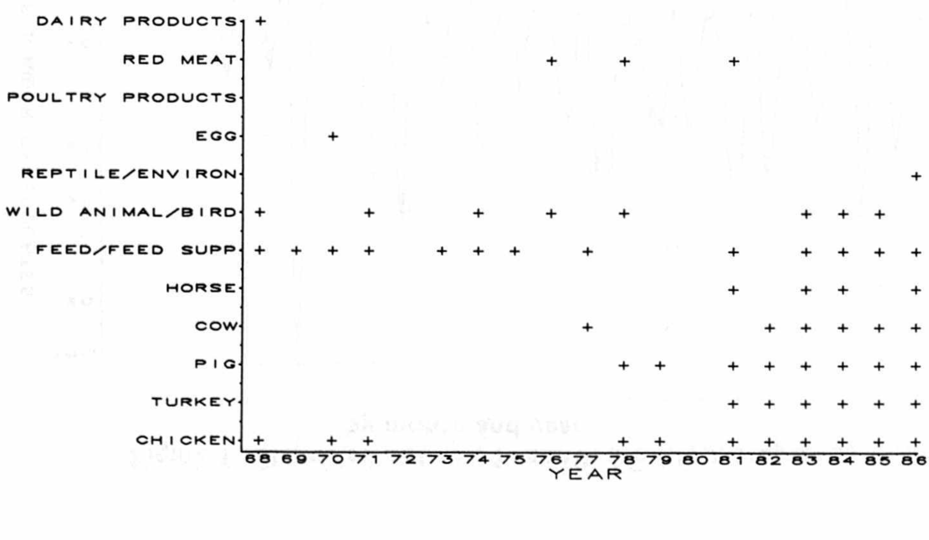


Figure 6. Percent of reported isolates, by age-group and sex.

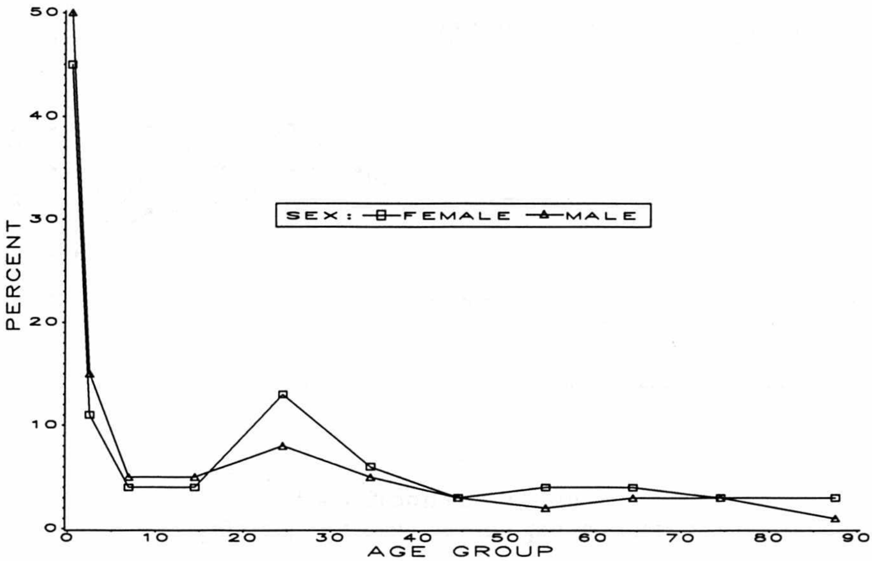
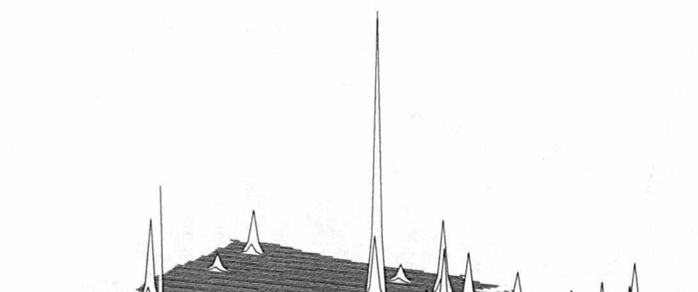


Figure 8. Age-standardized rates of reported isolates, by state.



S. ohio

Figure 1. Reported isolates, 3-month moving average, by month and year.

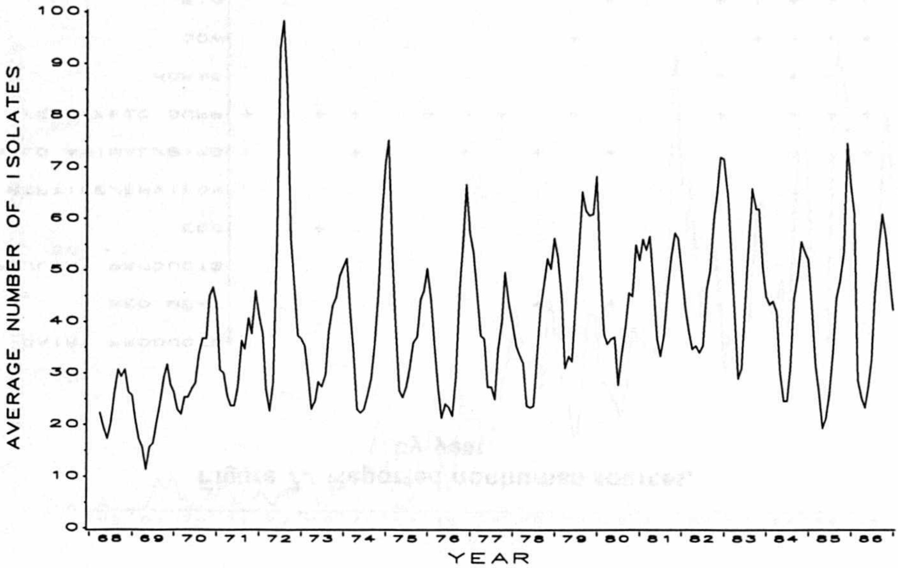


Figure 3. Number of reported isolates, by age-group and year.

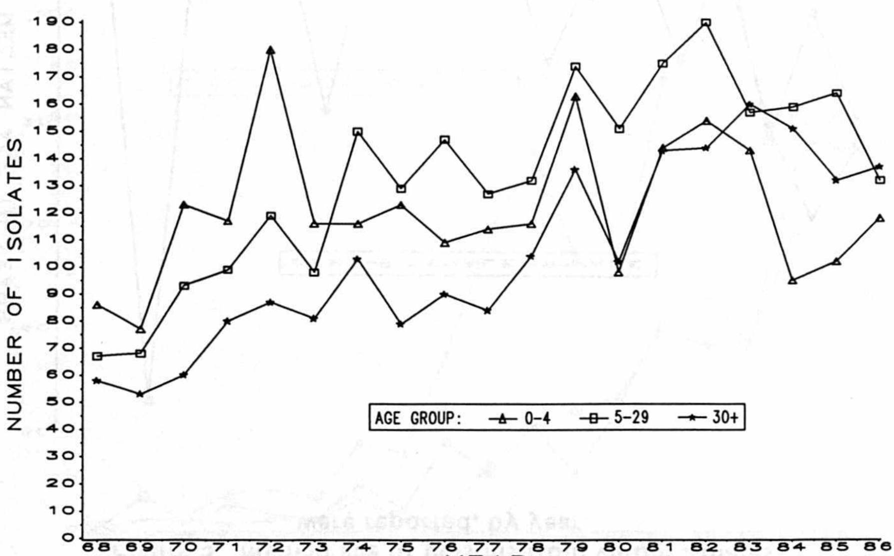
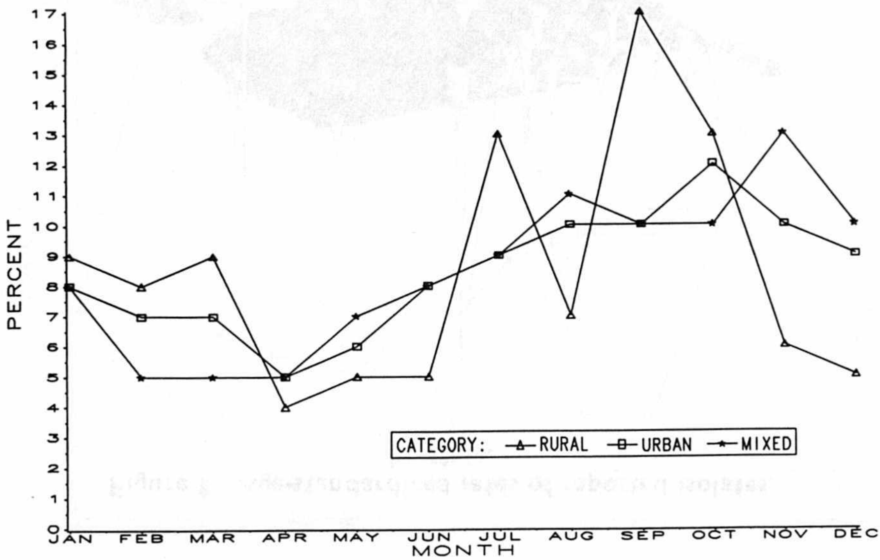


Figure 2. Percent of reported isolates from urban and rural counties, by month.



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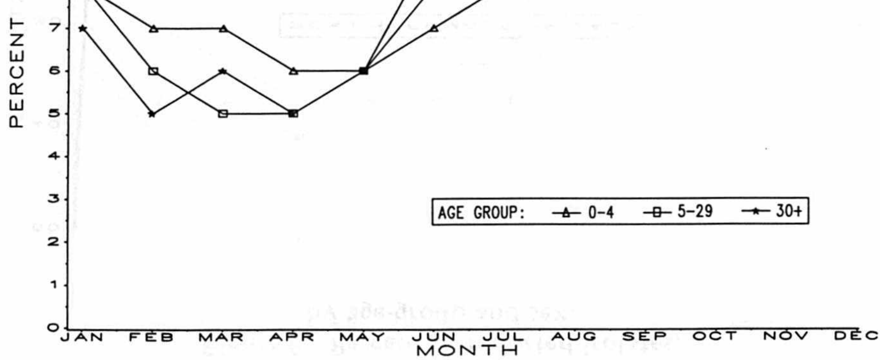


S. oranienburg

Figure 5. Median age of persons from whom isolates were reported, by year.

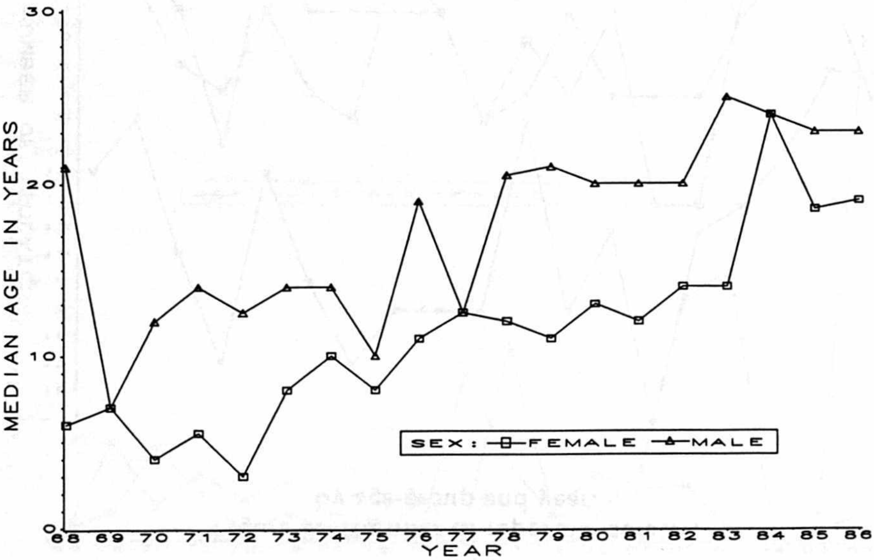


Figure 7. Reported nonhuman sources, by year.

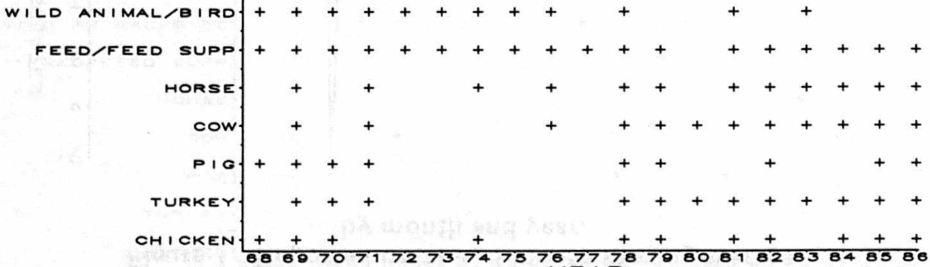


Figure 6. Percent of reported isolates, by age-group and sex.

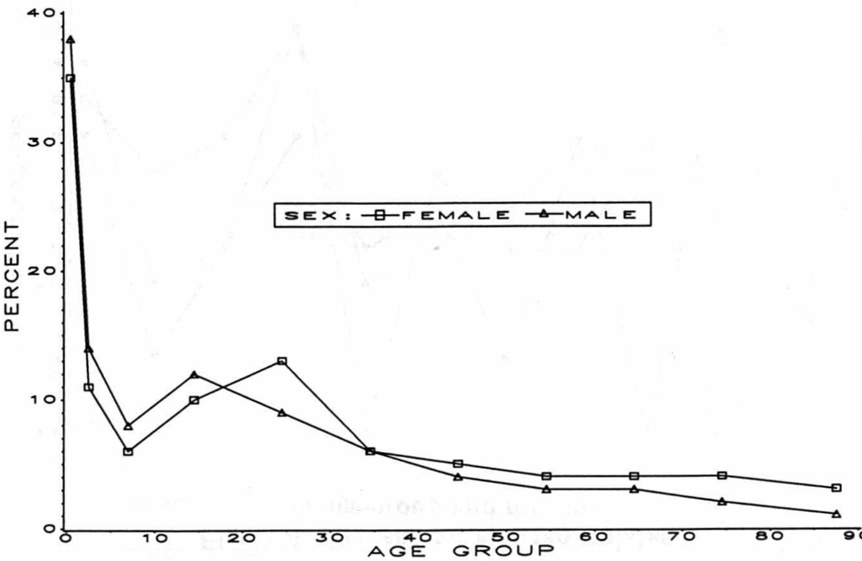
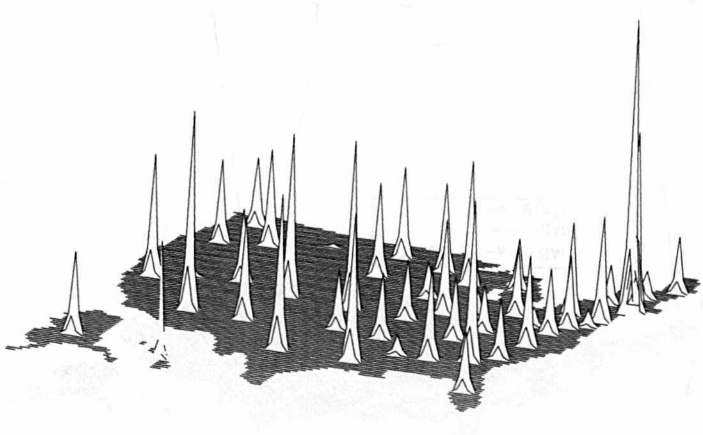


Figure 8. Age-standardized rates of reported isolates, by state.



S. oranienburg

Figure 1. Reported isolates, 3-month moving average, by month and year.

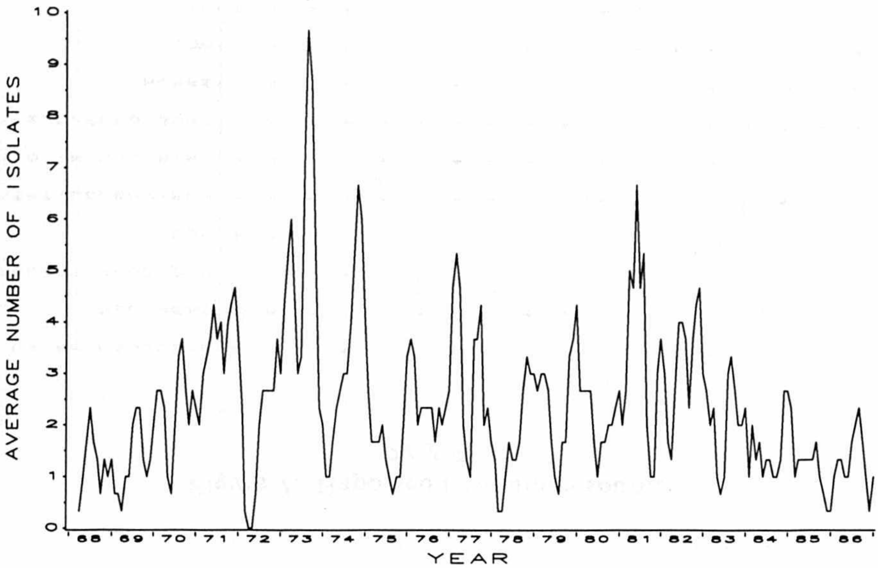
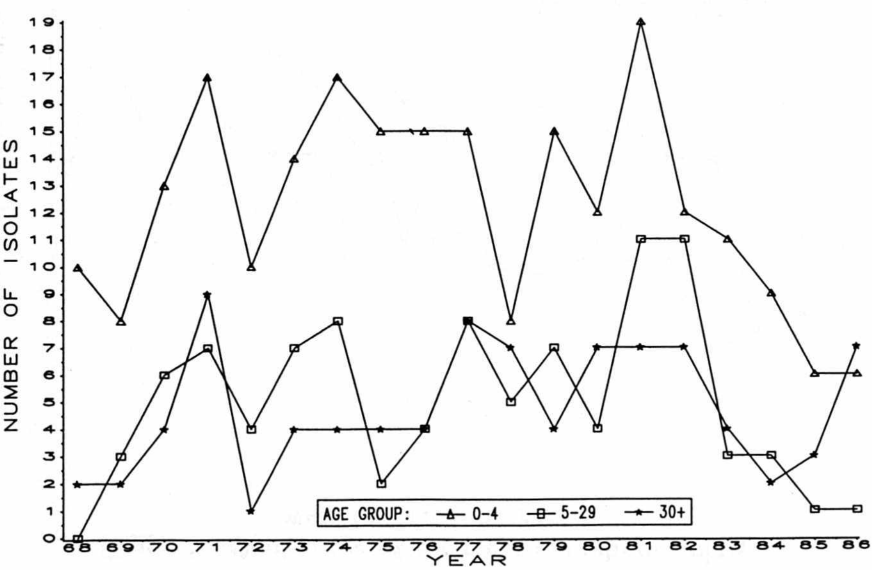


Figure 3. Number of reported isolates, by age-group and year.



S. oslo

Figure 2. Percent of reported isolates from urban and rural counties, by month.

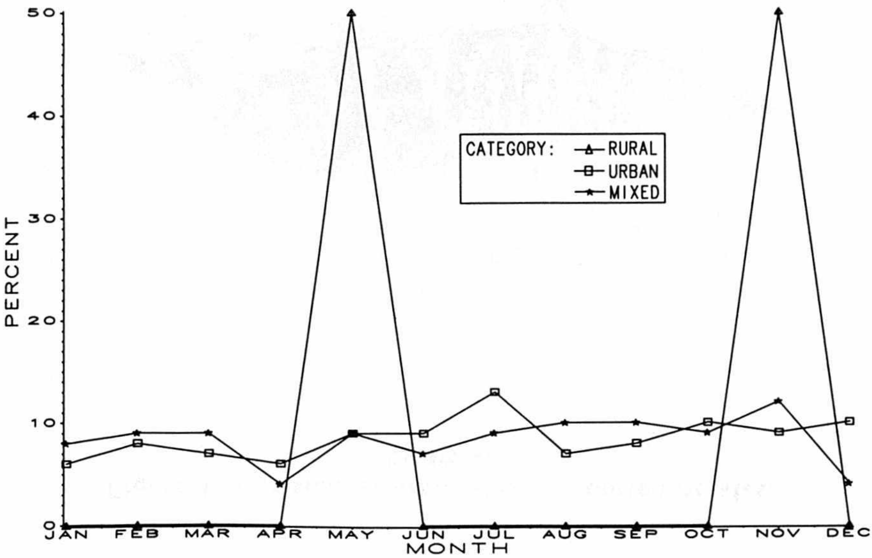


Figure 4. Percent of reported isolates, by age-group and month.

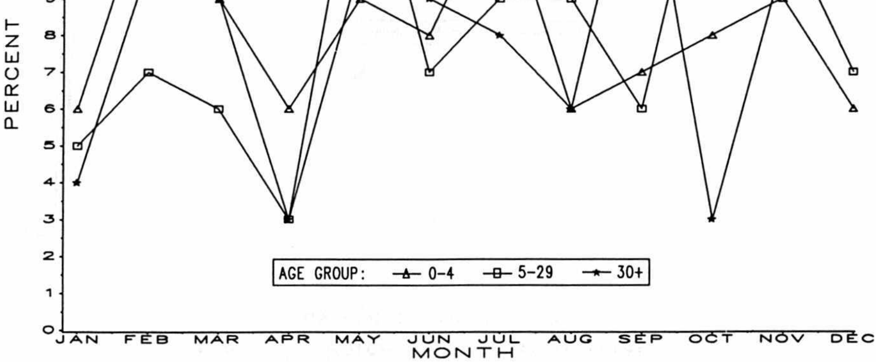


Figure 5. Median age of persons from whom isolates were reported, by year.

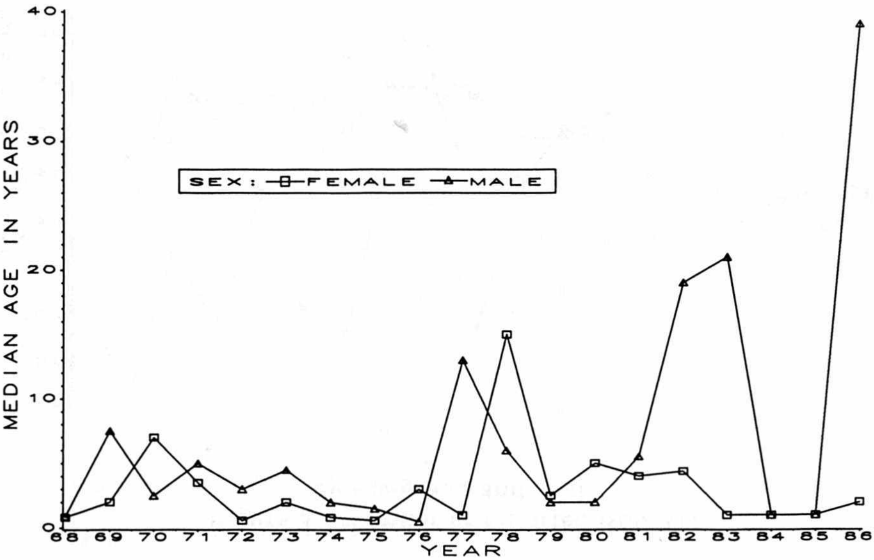


Figure 7. Reported nonhuman sources, by year.

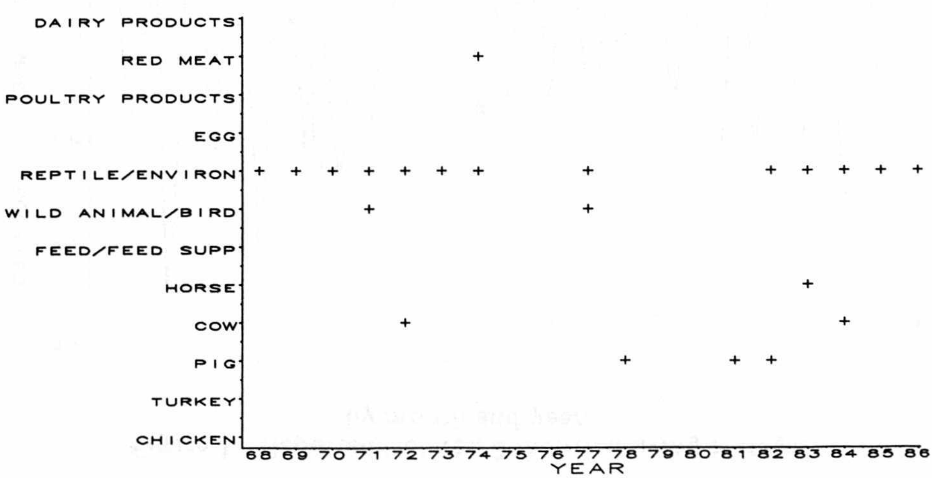
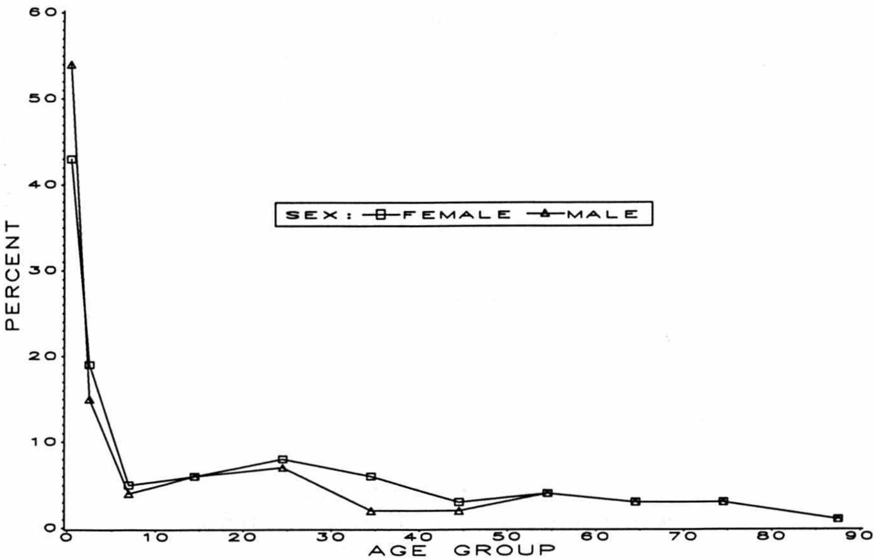


Figure 6. Percent of reported isolates, by age-group and sex.



S. oslo

Figure 8. Age-standardized rates of reported isolates, by state.

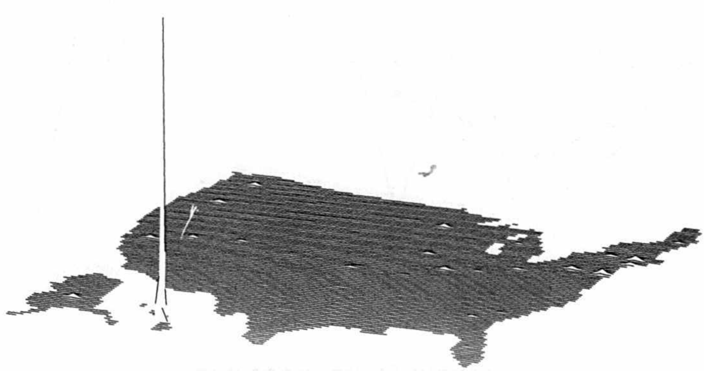


Figure 1. Reported isolates, 3-month moving average, by month and year.

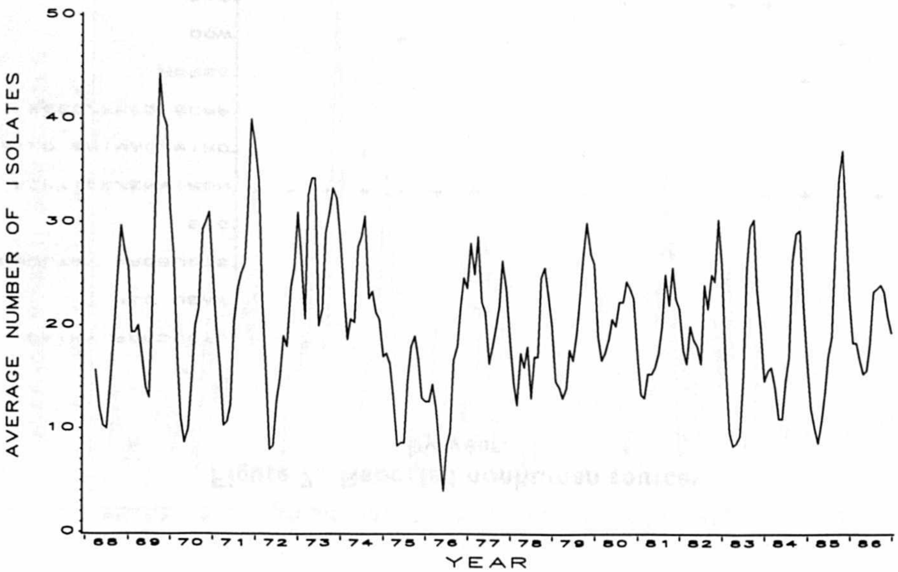


Figure 3. Number of reported isolates, by age-group and year.

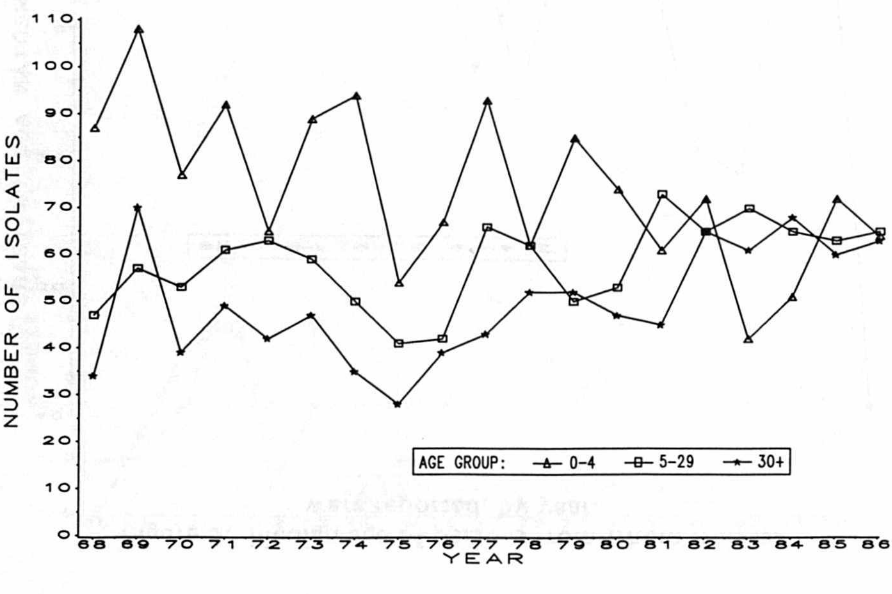


Figure 2. Percent of reported isolates from urban and rural counties, by month.

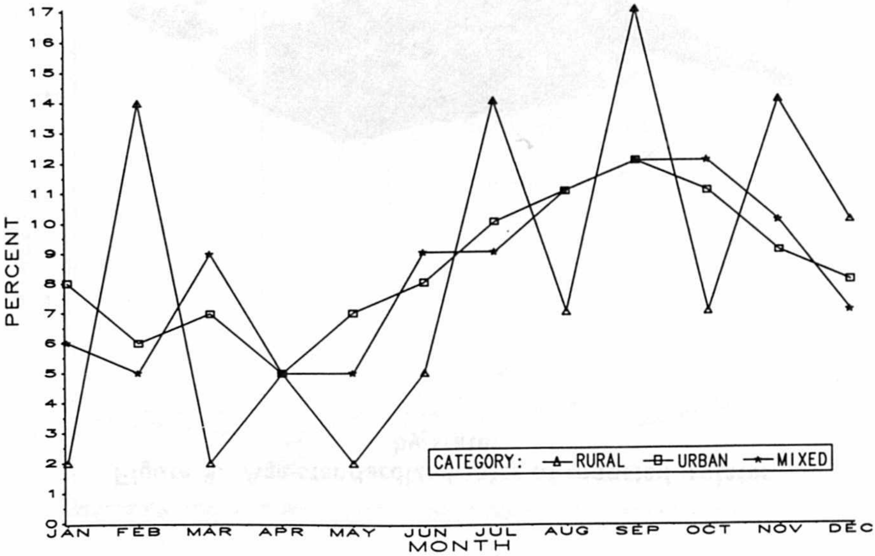
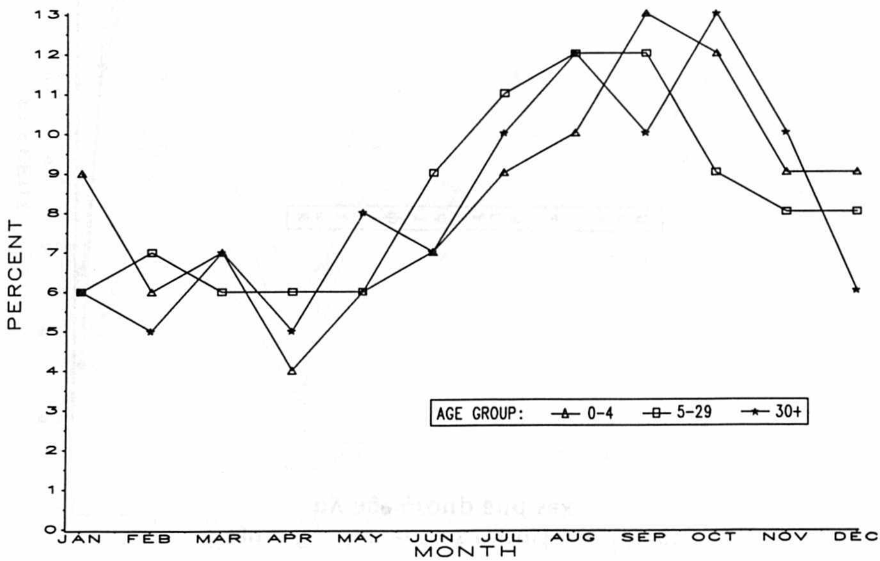


Figure 4. Percent of reported isolates, by age-group and month.



S. panama

Figure 5. Median age of persons from whom isolates were reported, by year.

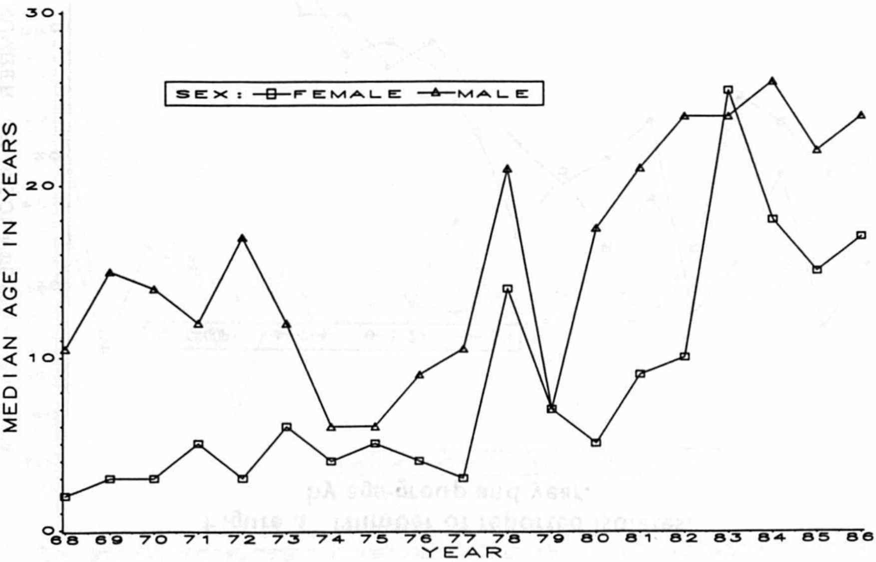


Figure 7. Reported nonhuman sources, by year.

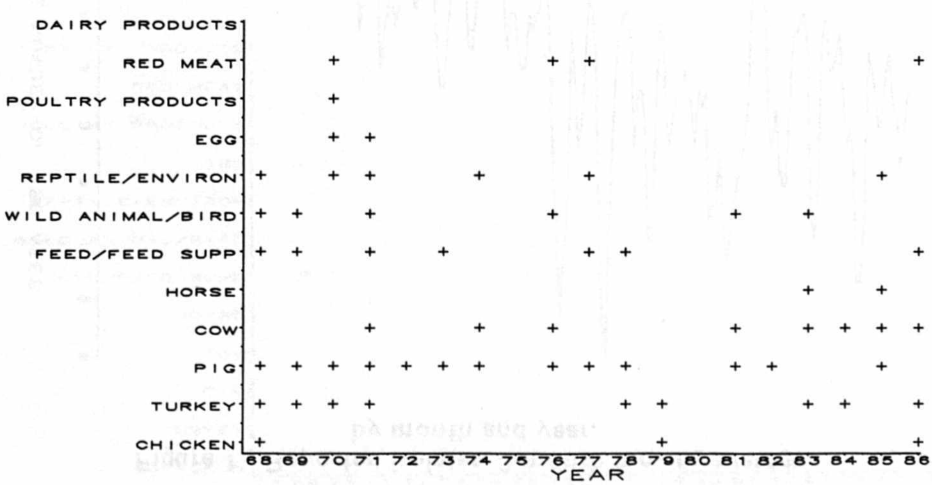


Figure 6. Percent of reported isolates, by age-group and sex.

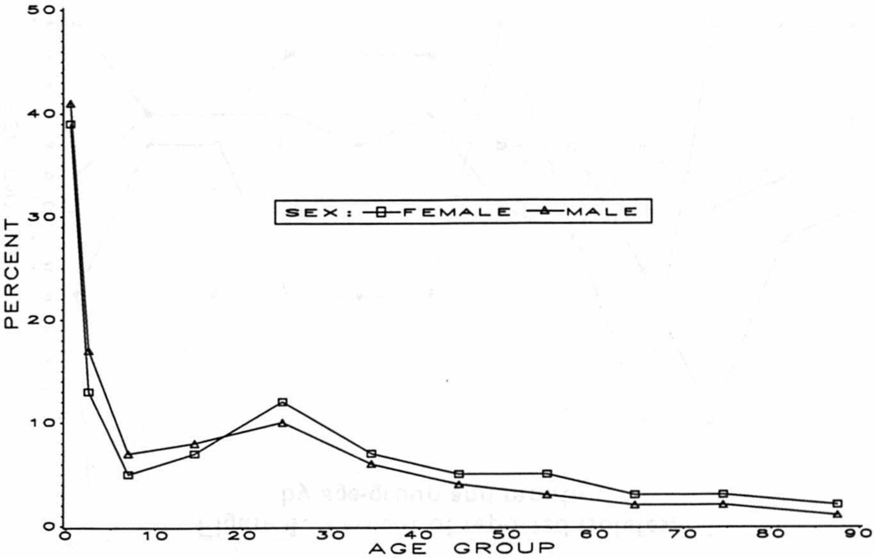
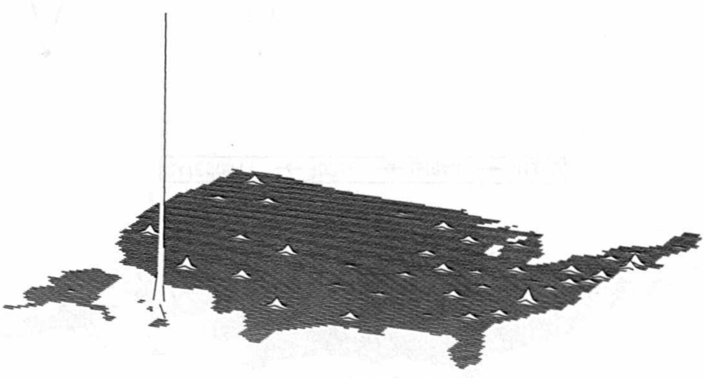


Figure 8. Age-standardized rates of reported isolates, by state.



S. panama

Figure 1. Reported isolates, 3-month moving average, by month and year.

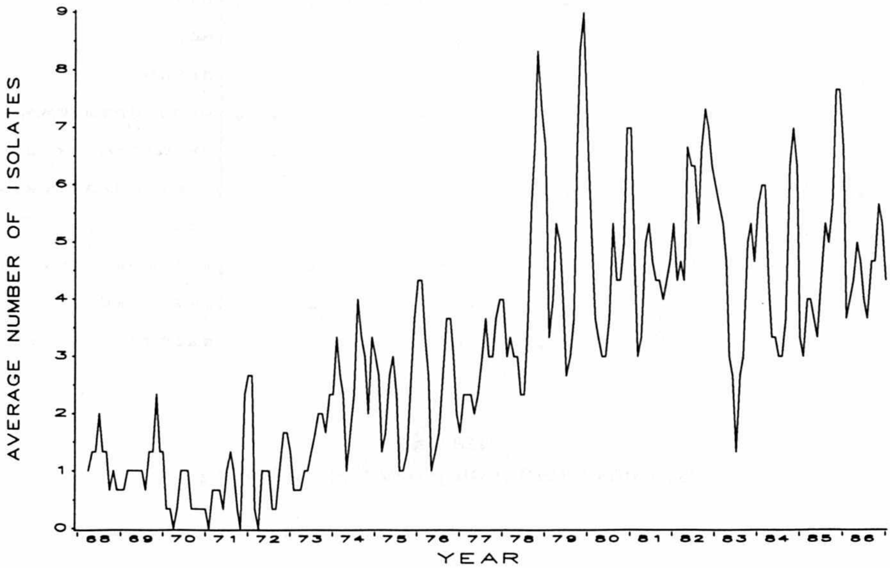
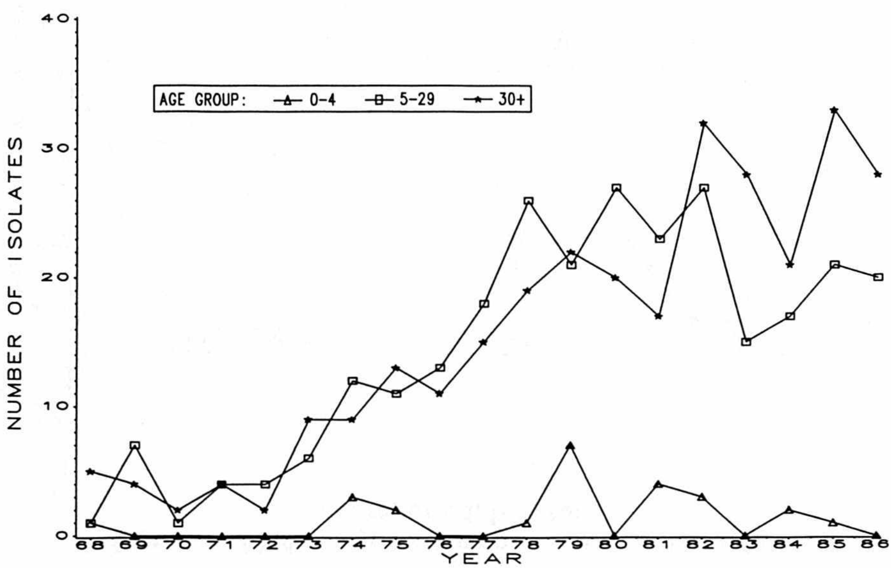


Figure 3. Number of reported isolates, by age-group and year.



S. paratyphi—A

Figure 2. Percent of reported isolates from urban and rural counties, by month.

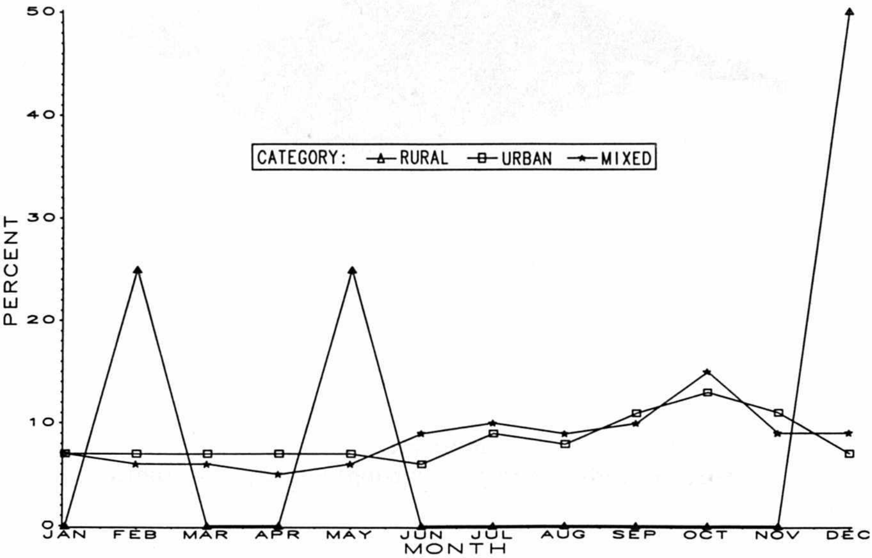


Figure 4. Percent of reported isolates, by age-group and month.

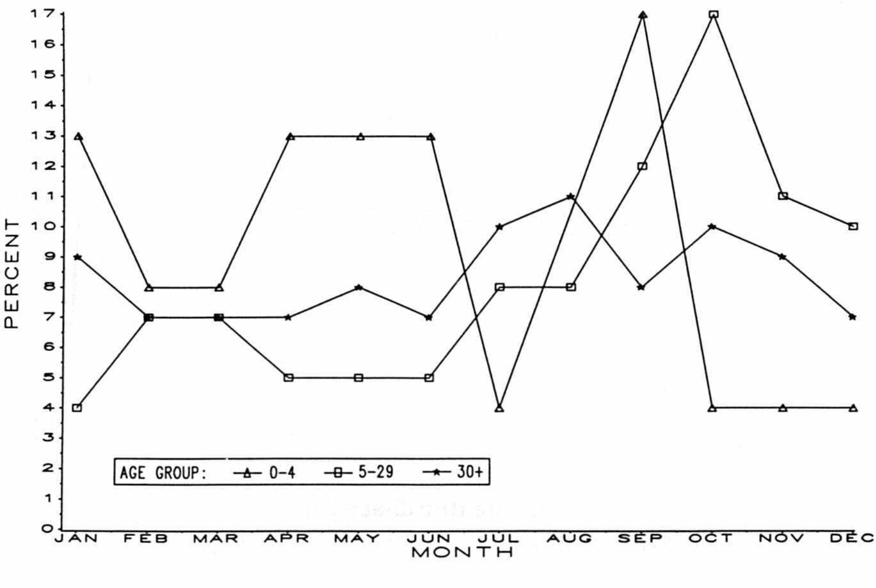


Figure 5. Median age of persons from whom isolates were reported, by year.

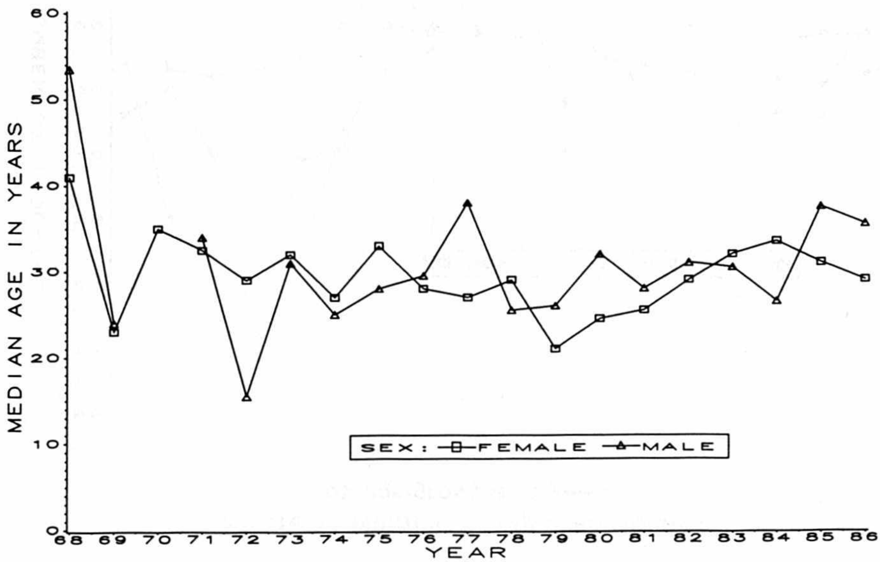


Figure 7. Reported nonhuman sources, by year.

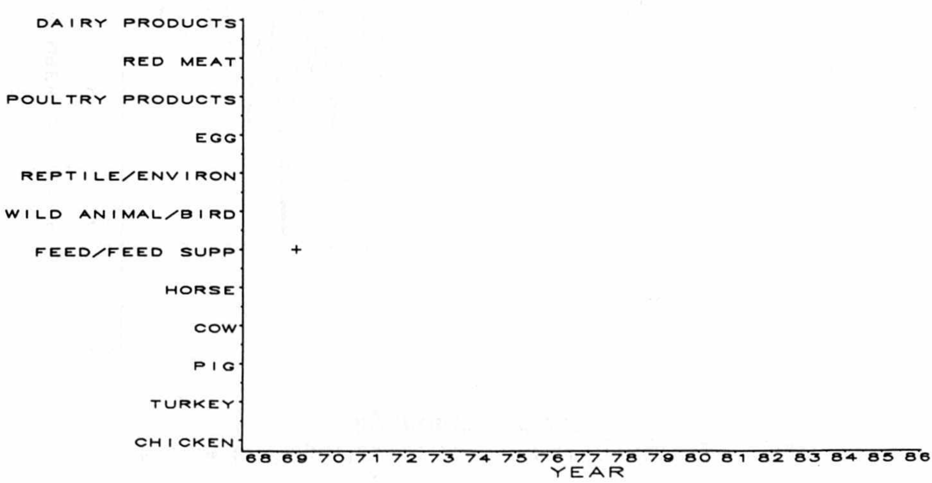


Figure 6. Percent of reported isolates, by age-group and sex.

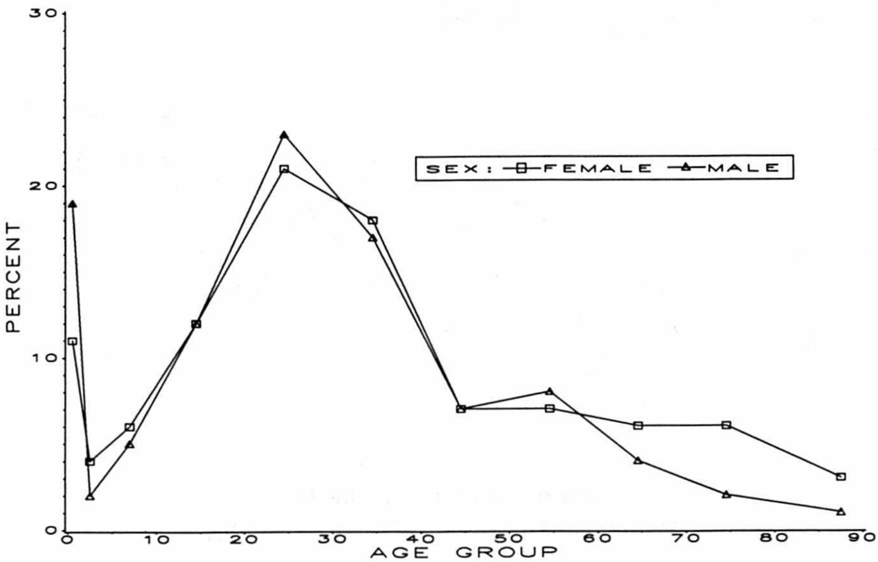
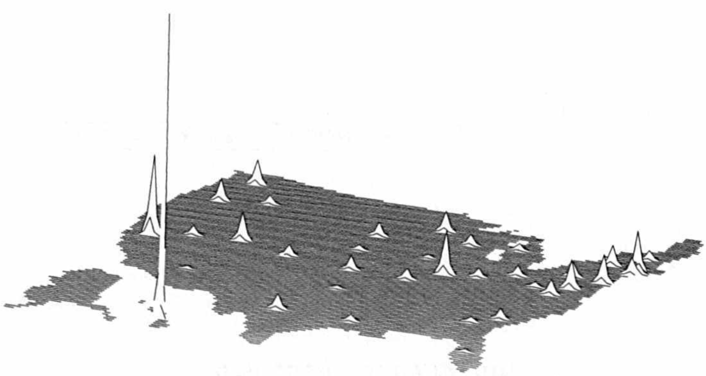


Figure 8. Age-standardized rates of reported isolates, by state.



S. paratyphi—A

Figure 1. Reported isolates, 3-month moving average, by month and year.

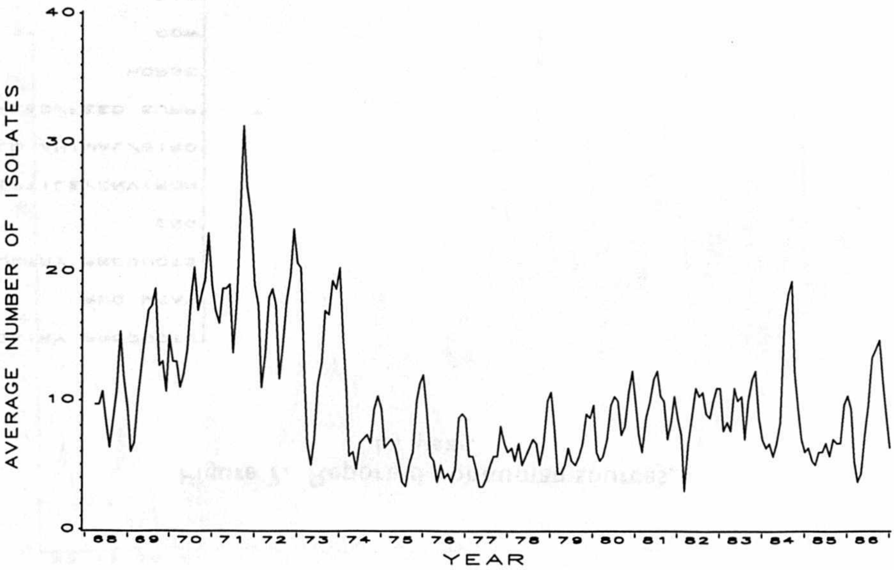


Figure 3. Number of reported isolates, by age-group and year.

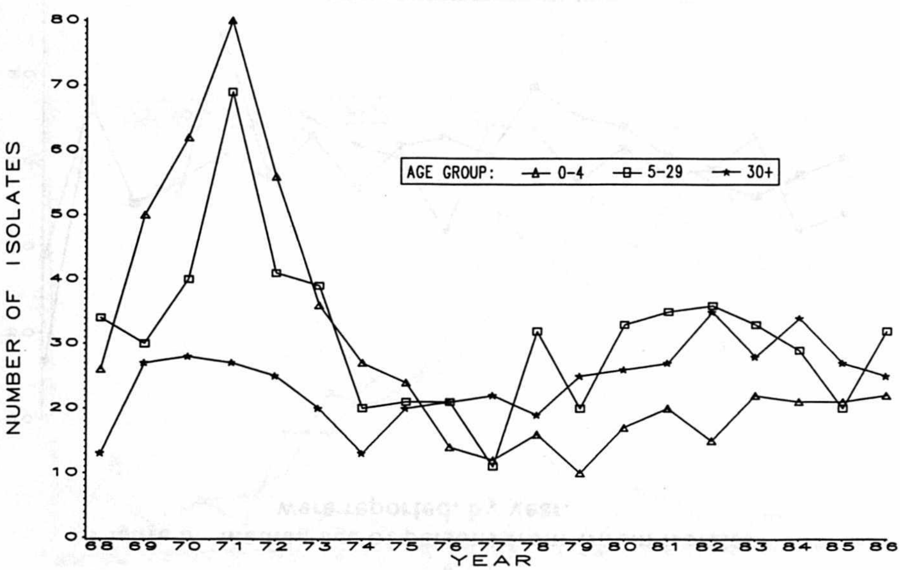


Figure 2. Percent of reported isolates from urban and rural counties, by month.

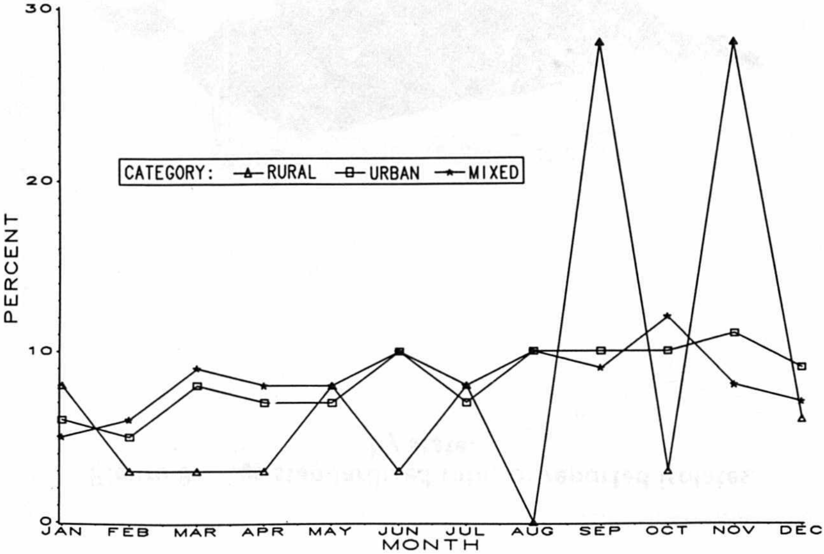
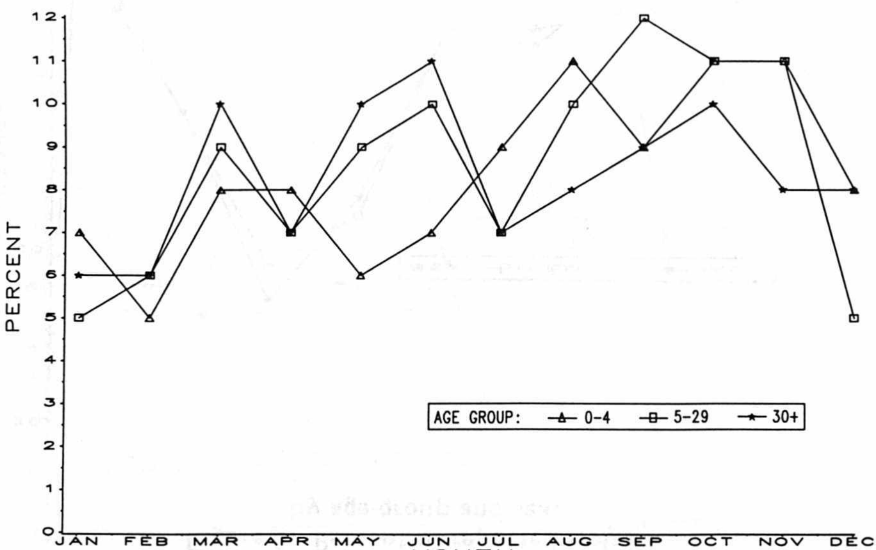


Figure 4. Percent of reported isolates, by age-group and month.



S. paratyphi—B

Figure 5. Median age of persons from whom isolates were reported, by year.

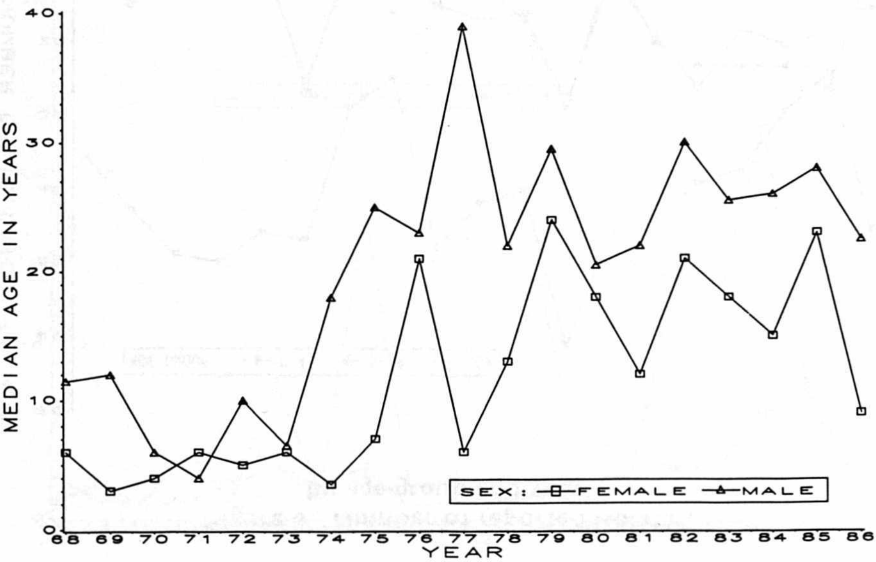


Figure 7. Reported nonhuman sources, by year.

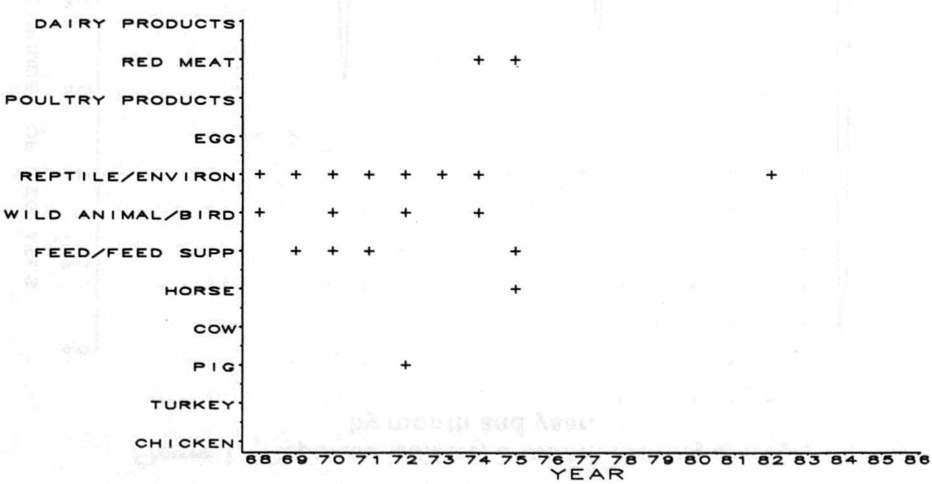


Figure 6. Percent of reported isolates, by age-group and sex.

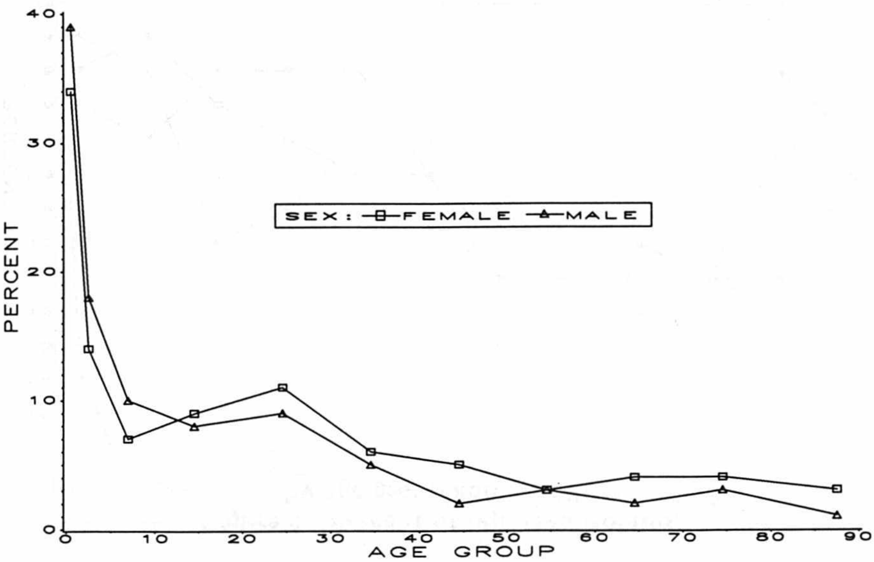


Figure 8. Age-standardized rates of reported isolates, by state.

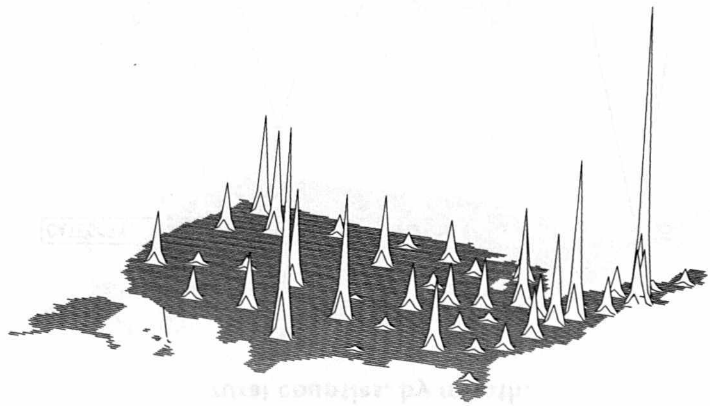


Figure 1. Reported isolates, 3-month moving average, by month and year.

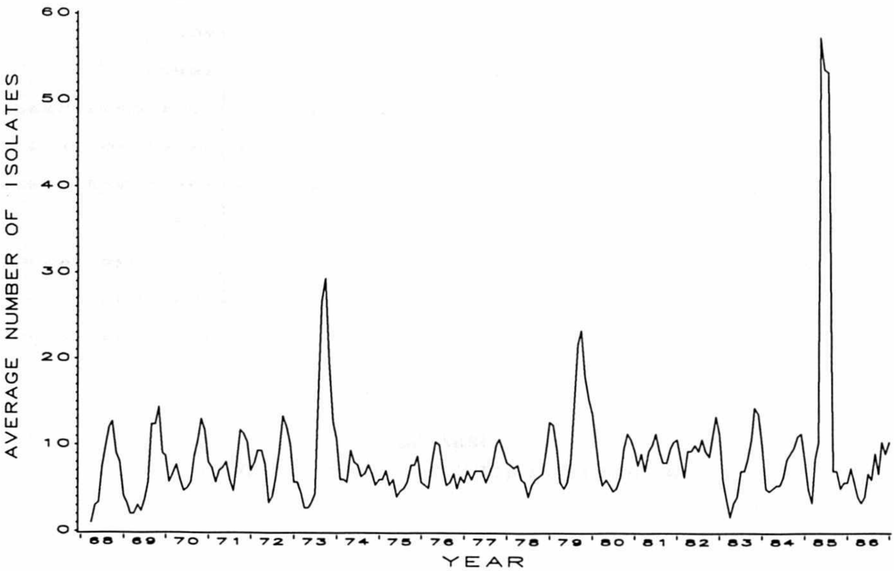


Figure 3. Number of reported isolates, by age-group and year.

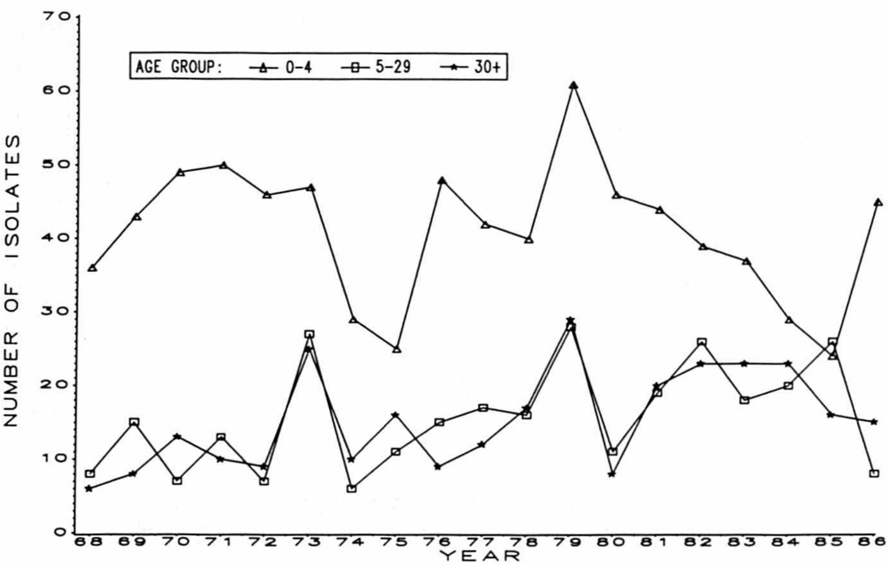


Figure 2. Percent of reported isolates from urban and rural counties, by month.

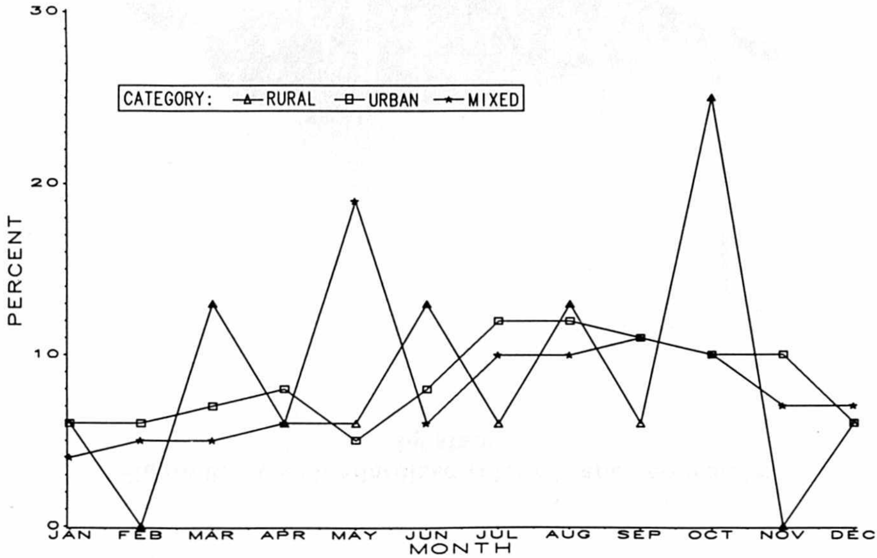
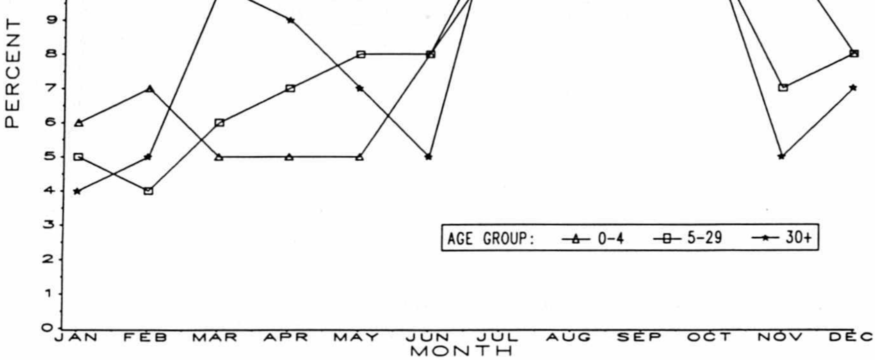


Figure 4. Percent of reported isolates, by age-group and month.



S. poona

Figure 5. Median age of persons from whom isolates were reported, by year.

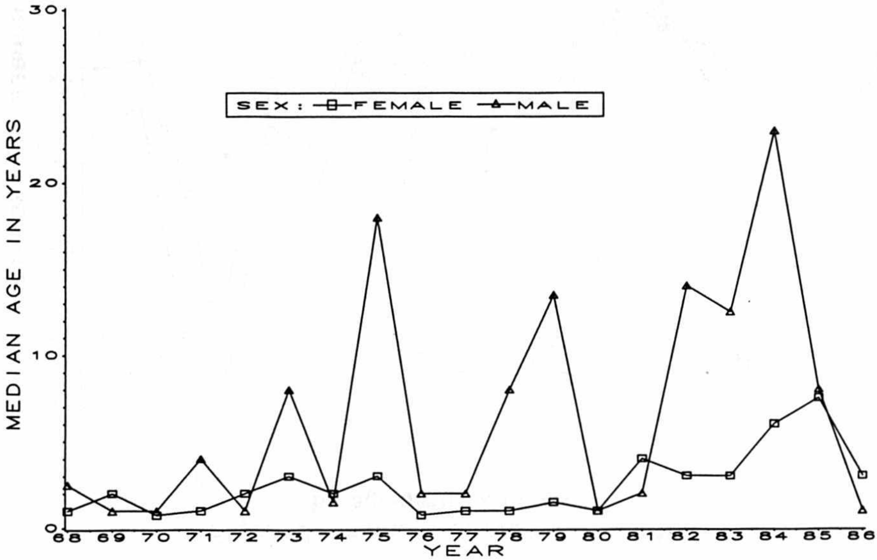


Figure 7. Reported nonhuman sources, by year.

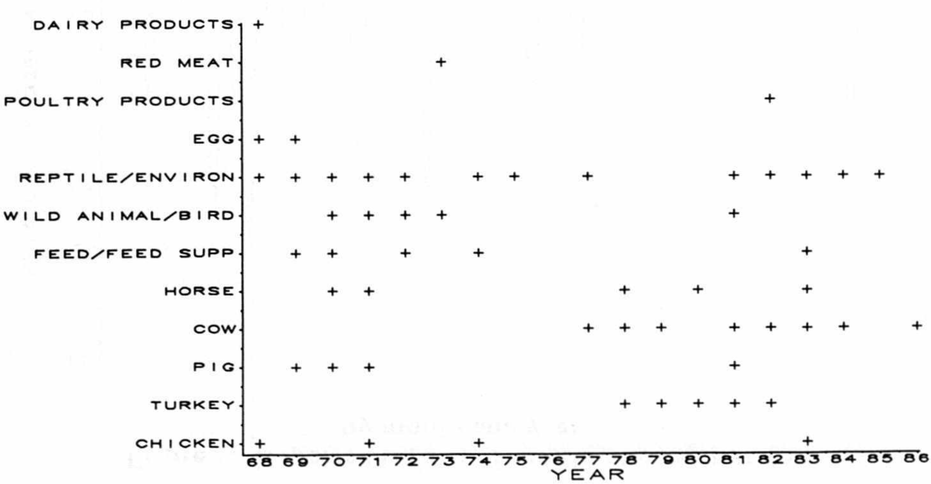


Figure 6. Percent of reported isolates, by age-group and sex.

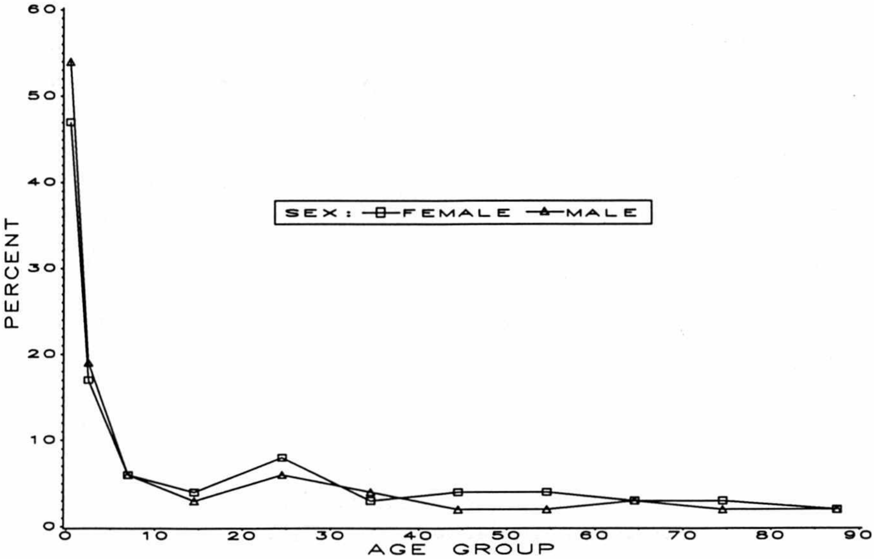
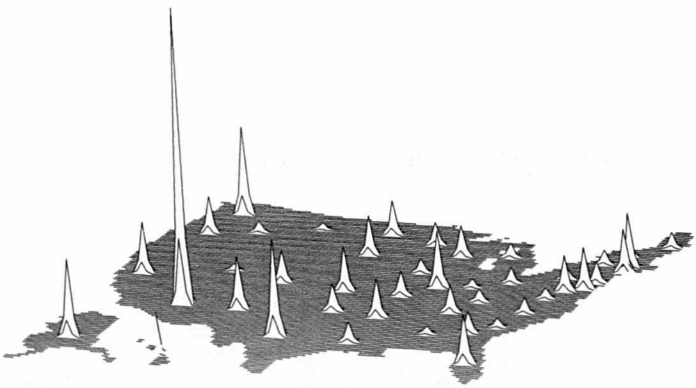


Figure 8. Age-standardized rates of reported isolates, by state.



S. poona

Figure 1. Reported isolates, 3-month moving average, by month and year.

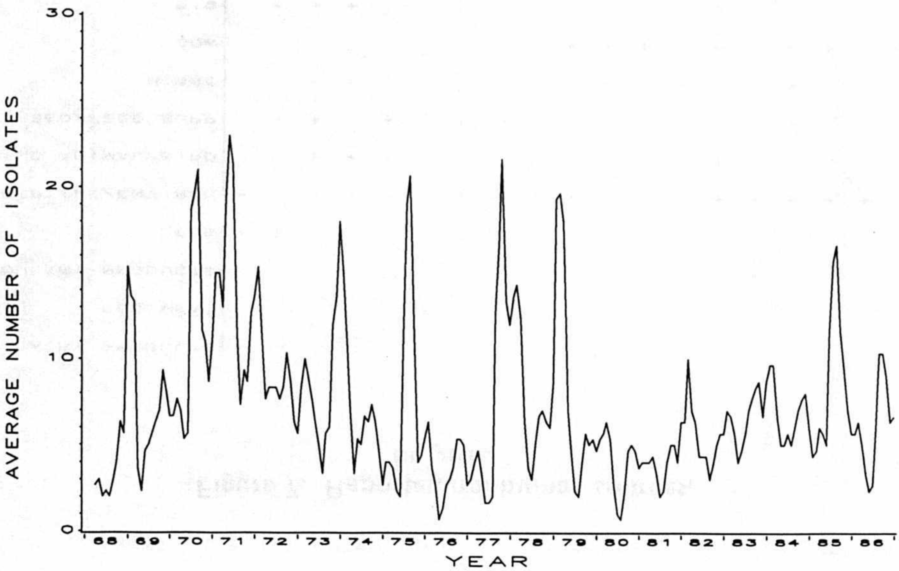


Figure 3. Number of reported isolates, by age-group and year.

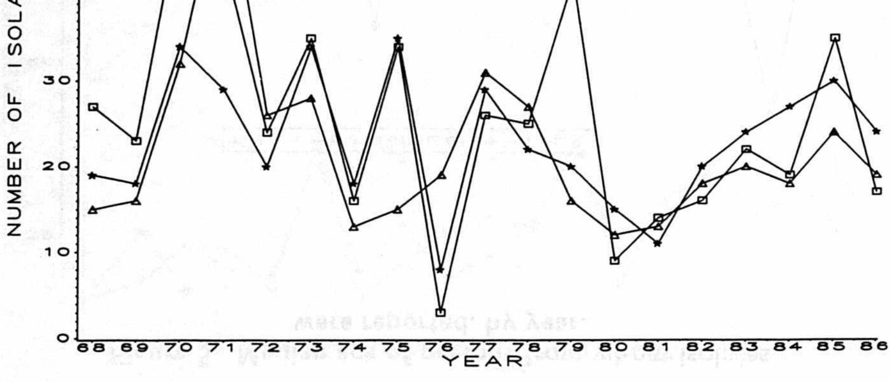


Figure 2. Percent of reported isolates from urban and rural counties, by month.

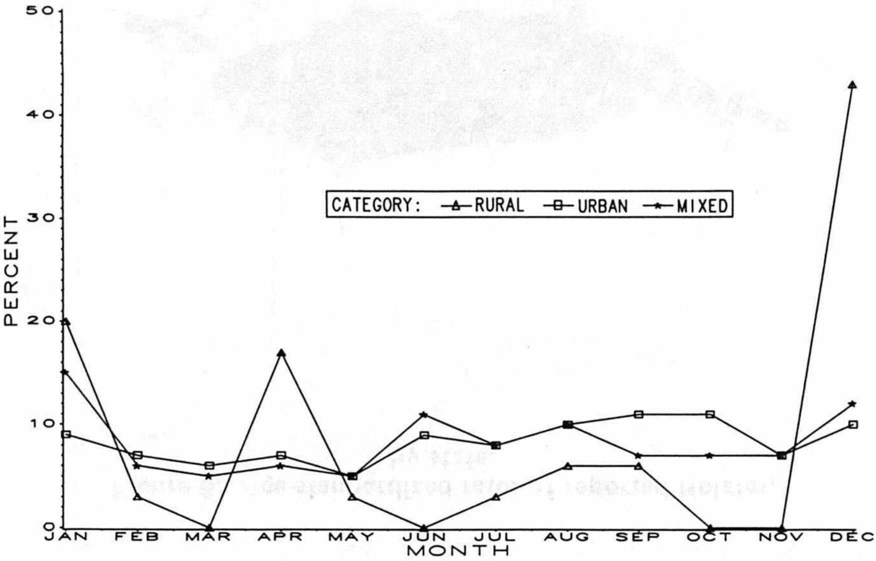
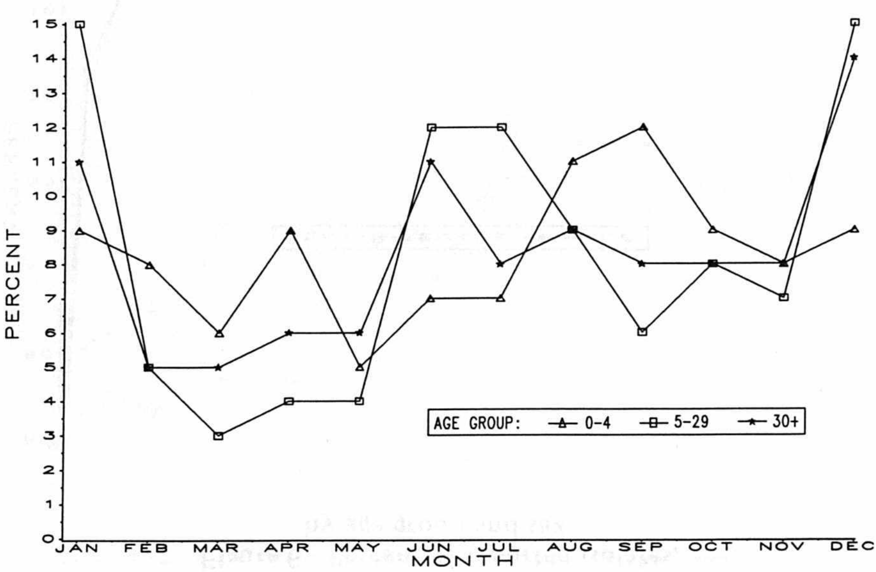


Figure 4. Percent of reported isolates, by age-group and month.



S. reading

Figure 5. Median age of persons from whom isolates were reported, by year.

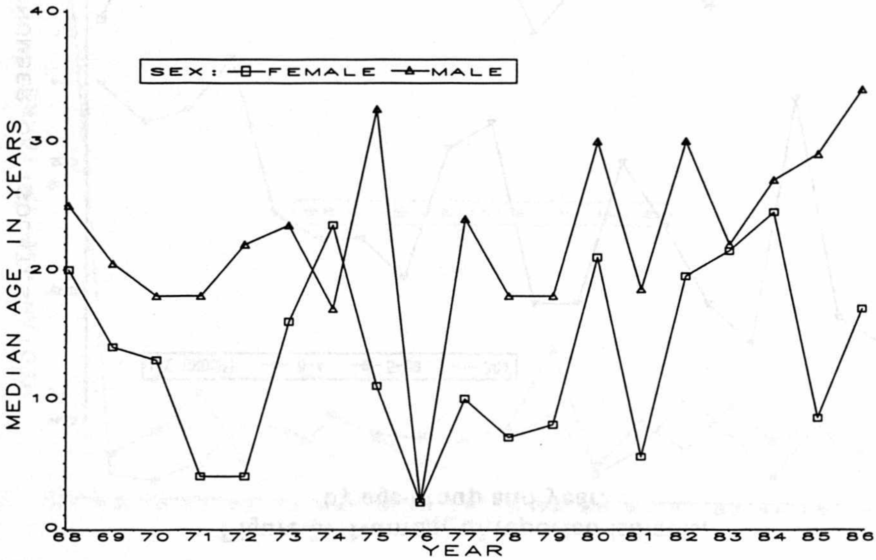


Figure 7. Reported nonhuman sources, by year.

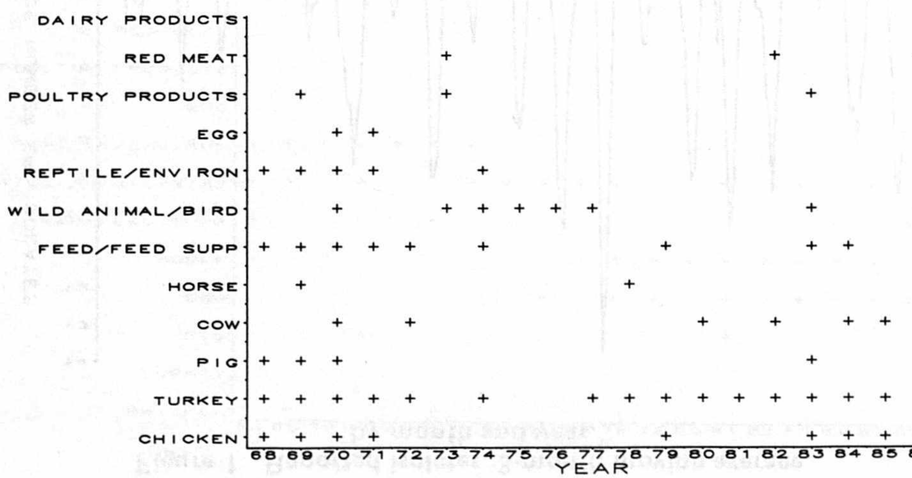


Figure 6. Percent of reported isolates, by age-group and sex.

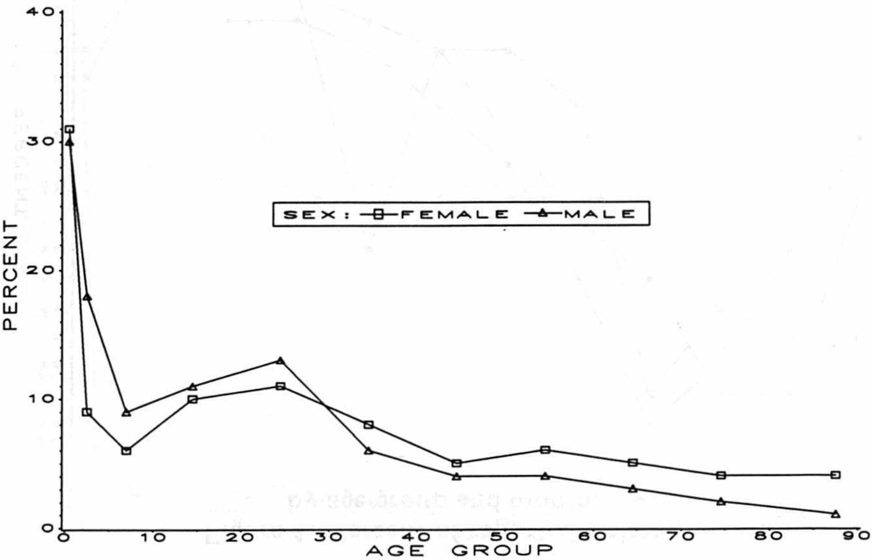
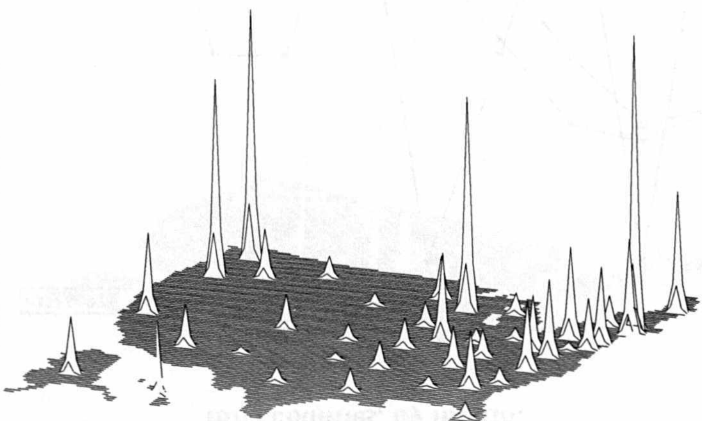


Figure 8. Age-standardized rates of reported isolates, by state.



S. reading

Figure 1. Reported isolates, 3-month moving average, by month and year.

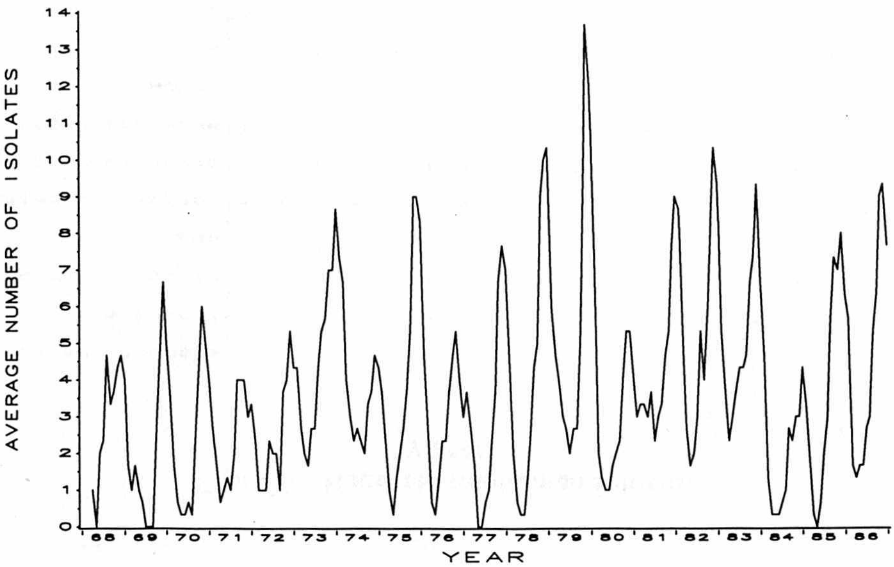


Figure 3. Number of reported isolates, by age-group and year.

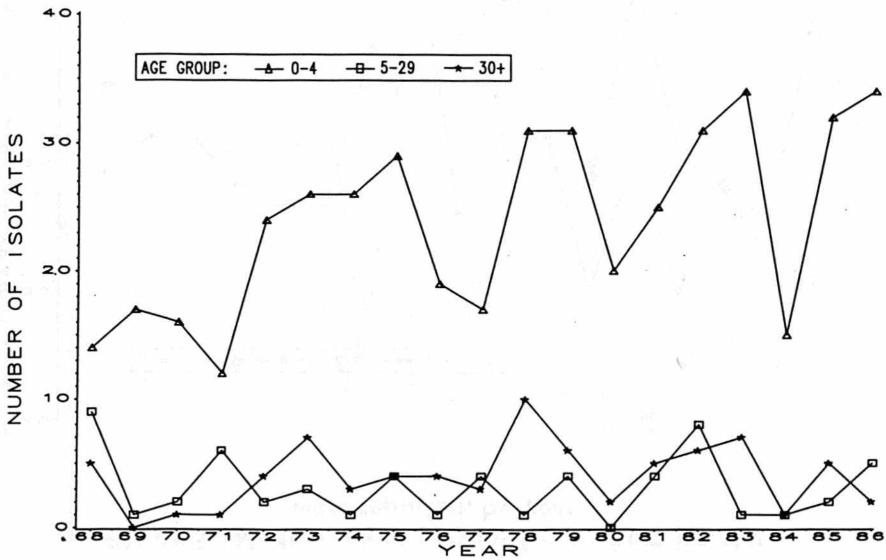


Figure 2. Percent of reported isolates from urban and rural counties, by month.

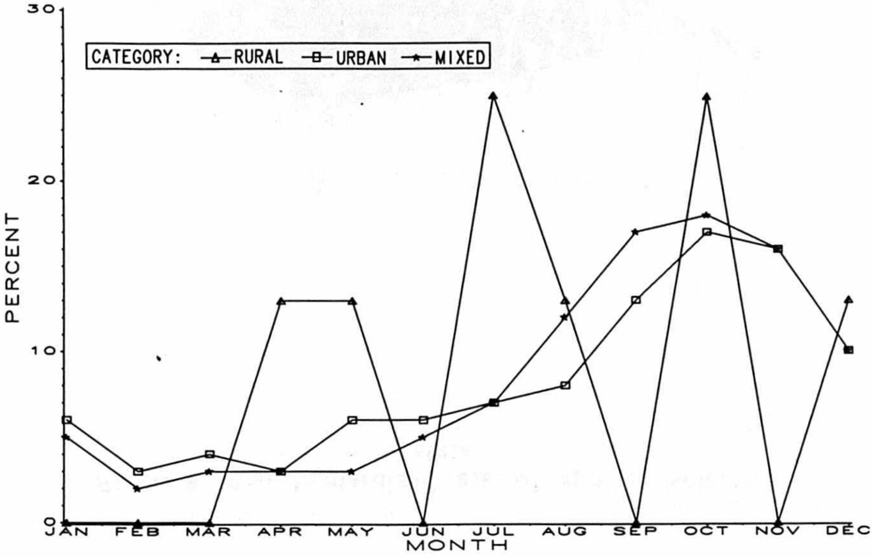


Figure 4. Percent of reported isolates, by age-group and month.

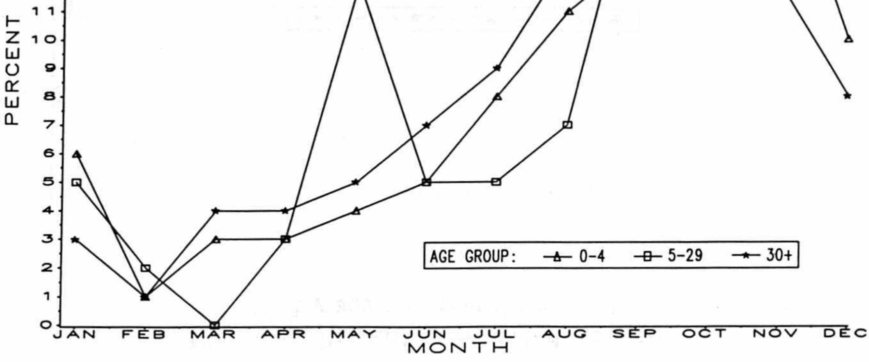


Figure 5. Median age of persons from whom isolates were reported, by year.

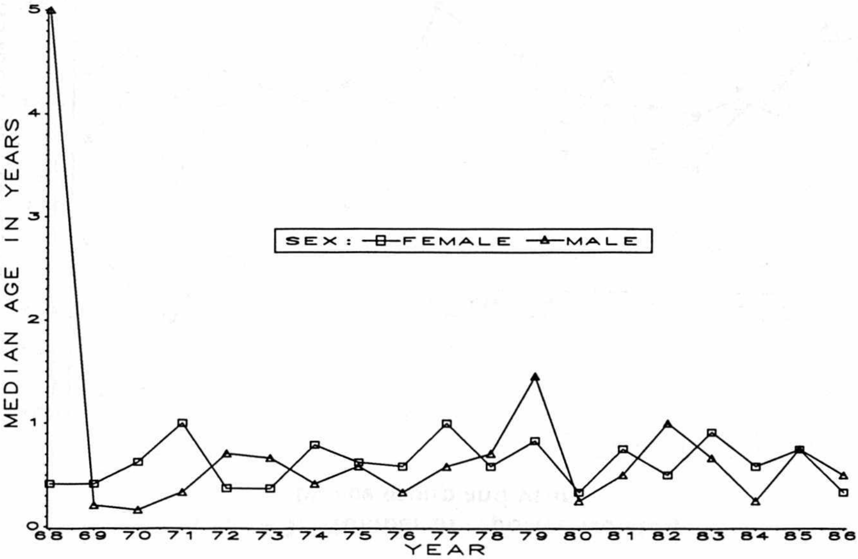
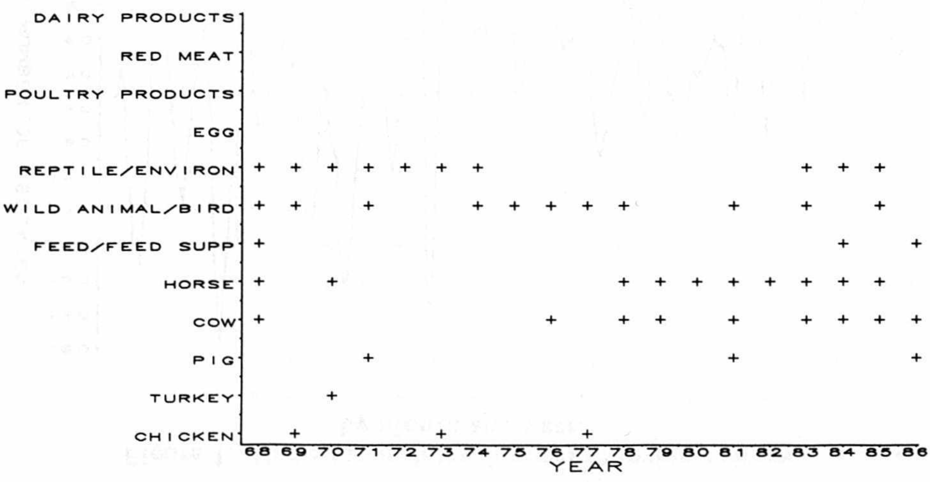


Figure 7. Reported nonhuman sources, by year.



S. rubislaw

Figure 6. Percent of reported isolates, by age-group and sex.

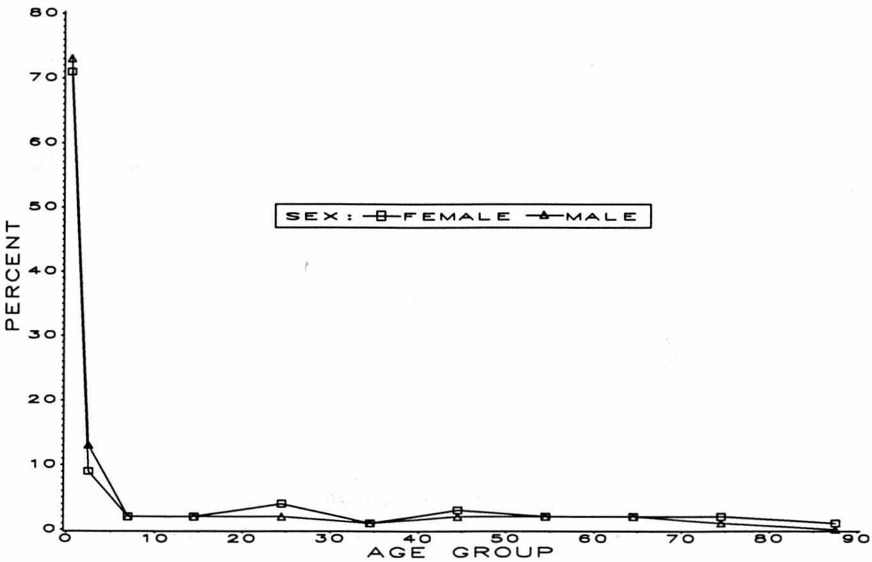


Figure 8. Age-standardized rates of reported isolates, by state.

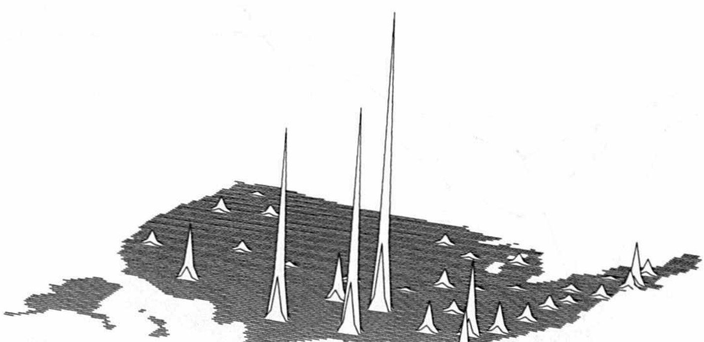


Figure 1. Reported isolates, 3-month moving average, by month and year.

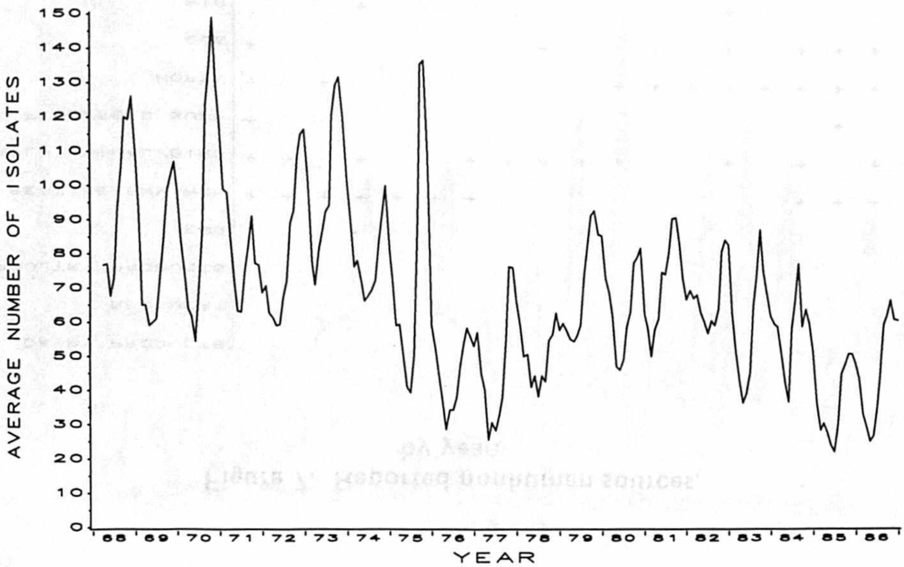


Figure 3. Number of reported isolates, by age-group and year.

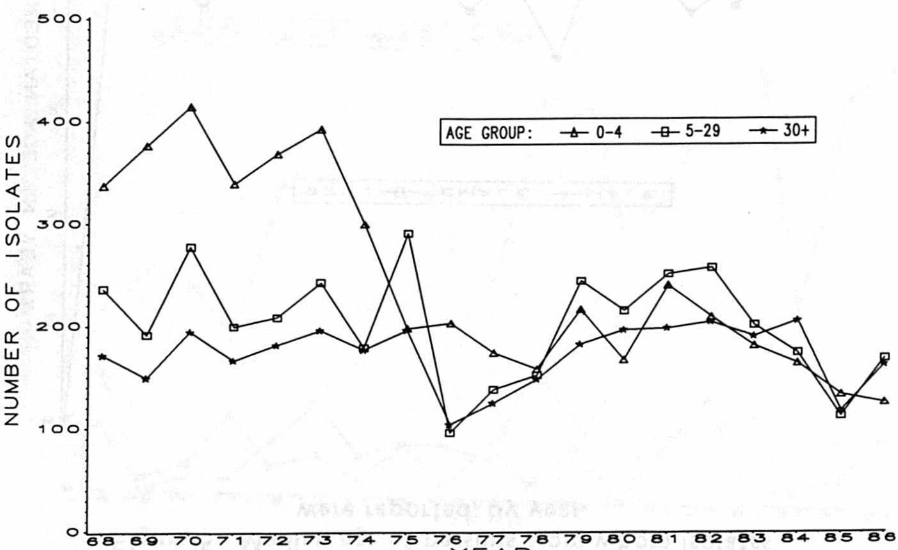


Figure 2. Percent of reported isolates from urban and rural counties, by month.

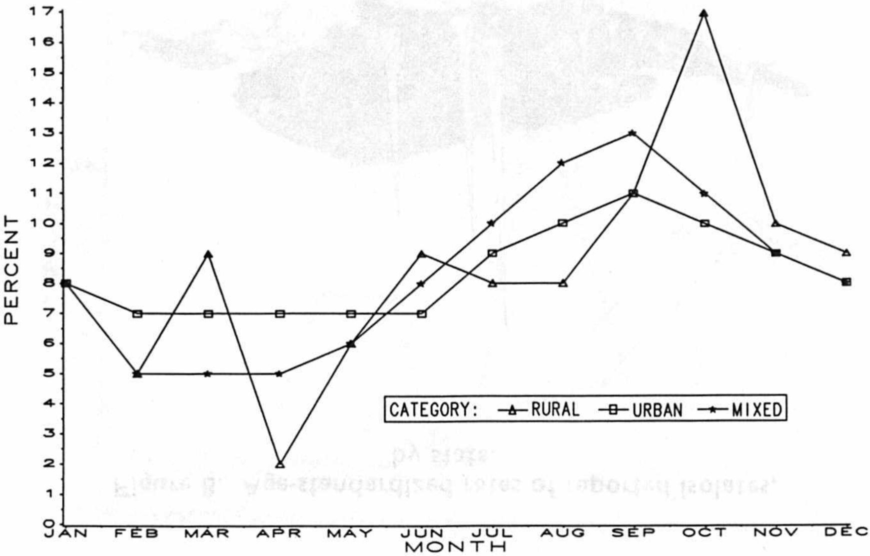
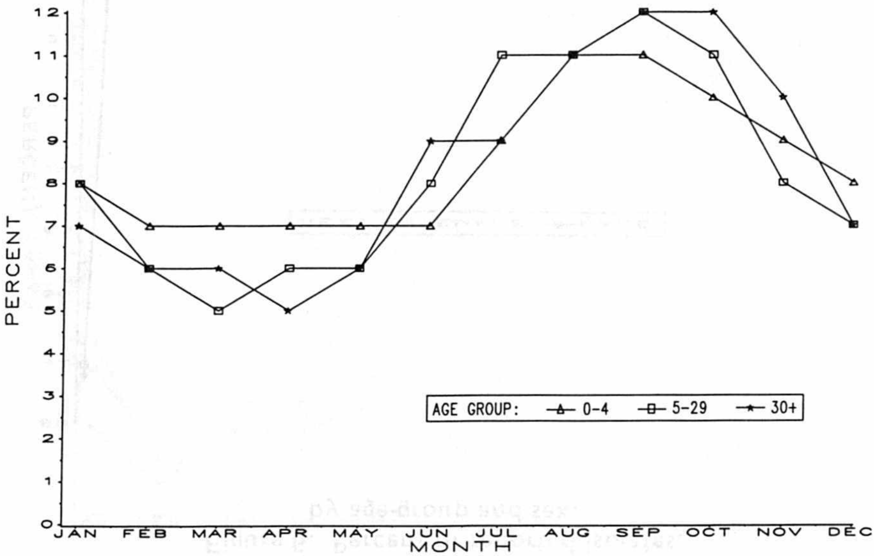


Figure 4. Percent of reported isolates, by age-group and month.



S.saintpaul

Figure 5. Median age of persons from whom isolates were reported, by year.

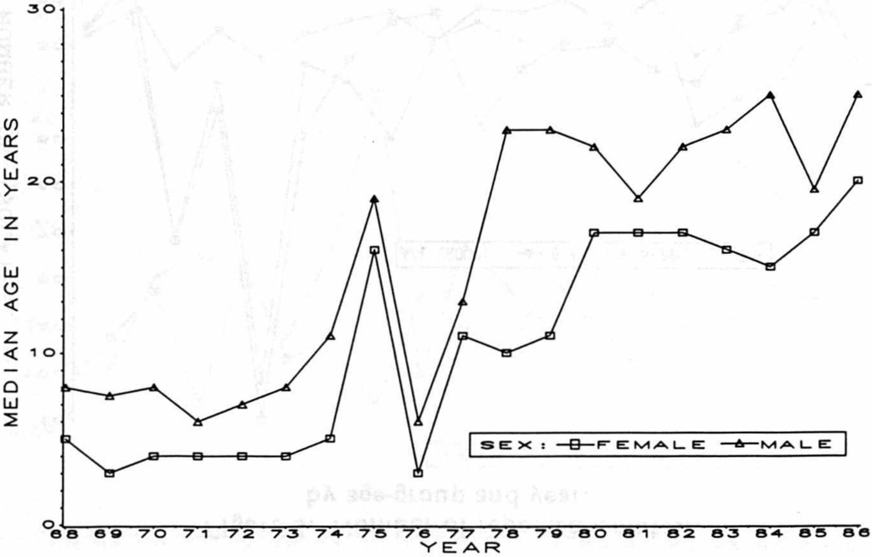


Figure 7. Reported nonhuman sources, by year.

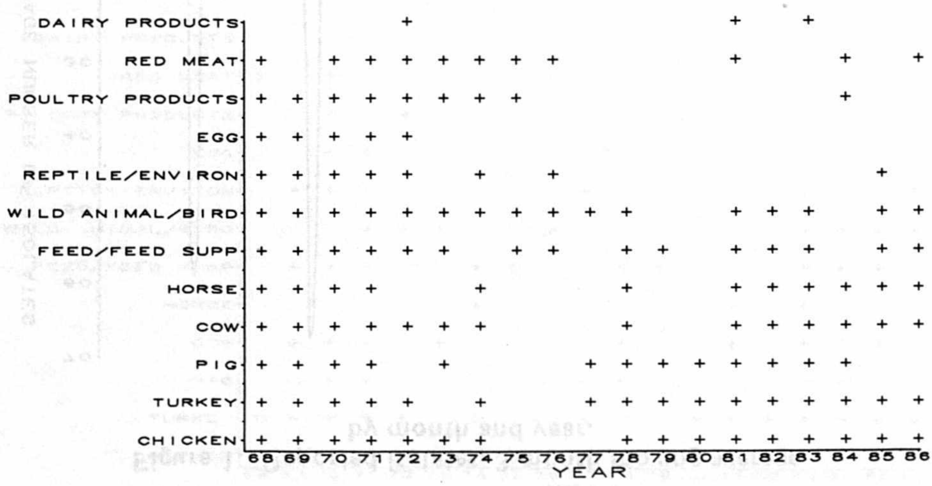


Figure 6. Percent of reported isolates, by age-group and sex.

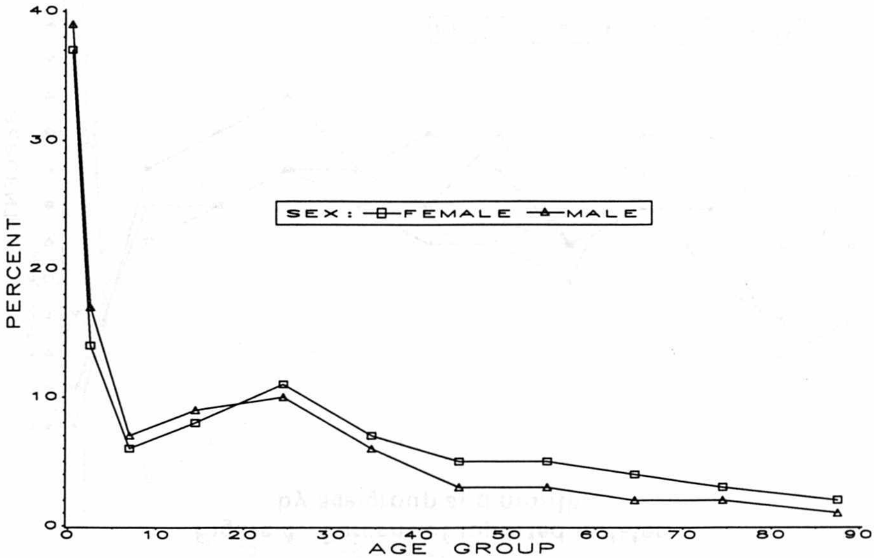
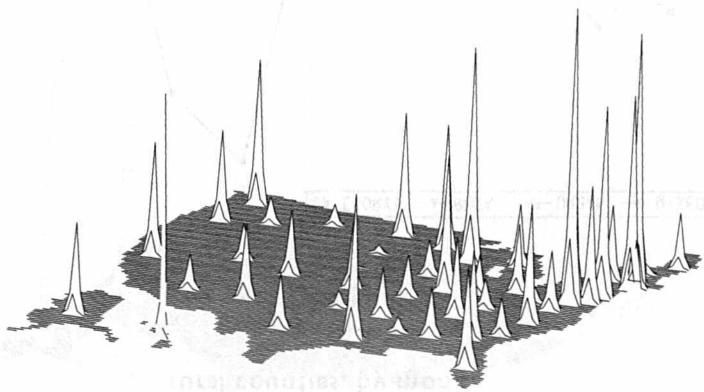


Figure 8. Age-standardized rates of reported isolates, by state.



S. saintpaul

Figure 1. Reported isolates, 3-month moving average, by month and year.

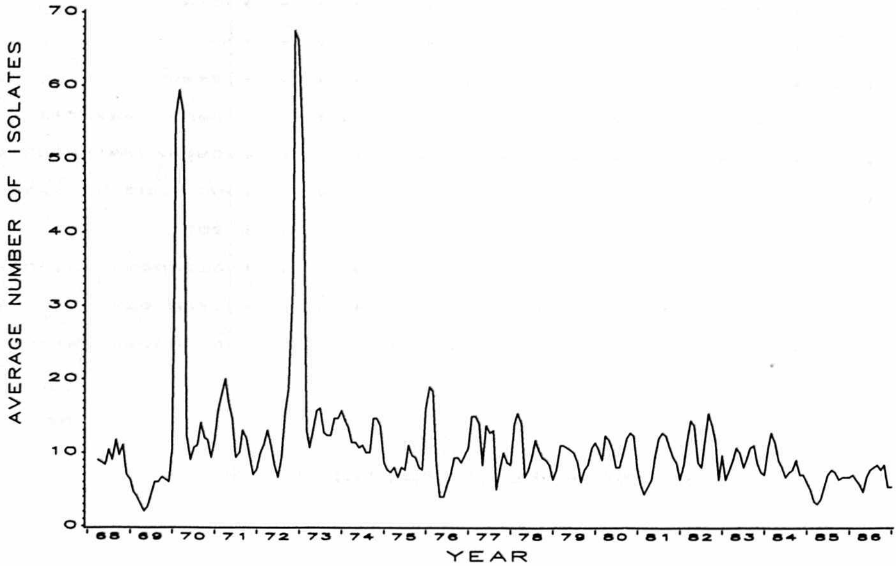


Figure 3. Number of reported isolates, by age-group and year.

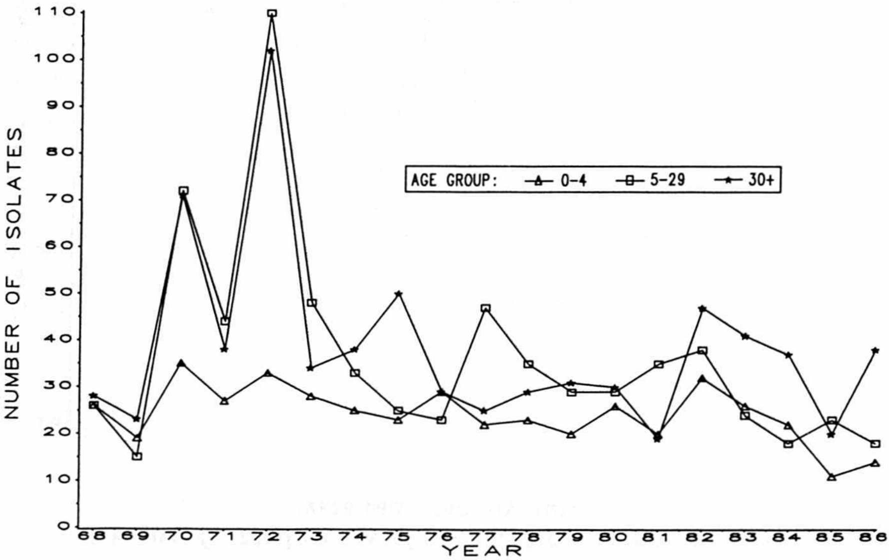


Figure 2. Percent of reported isolates from urban and rural counties, by month.

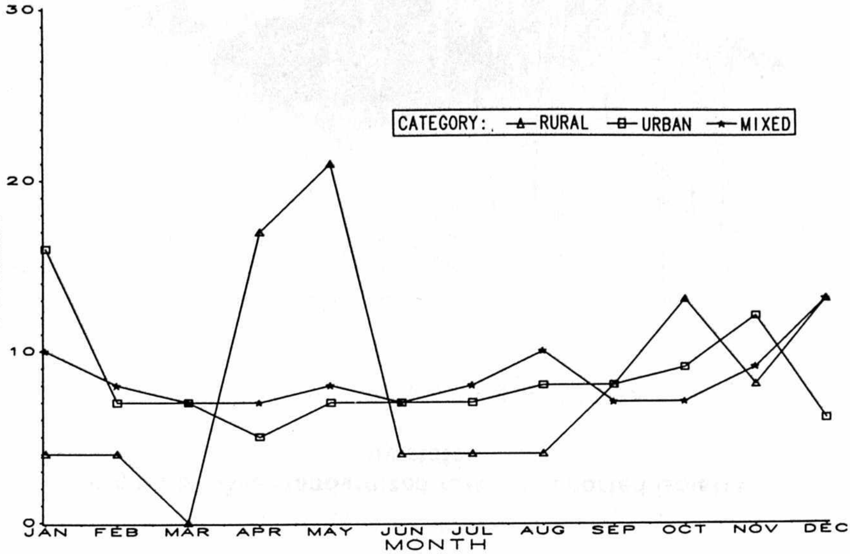
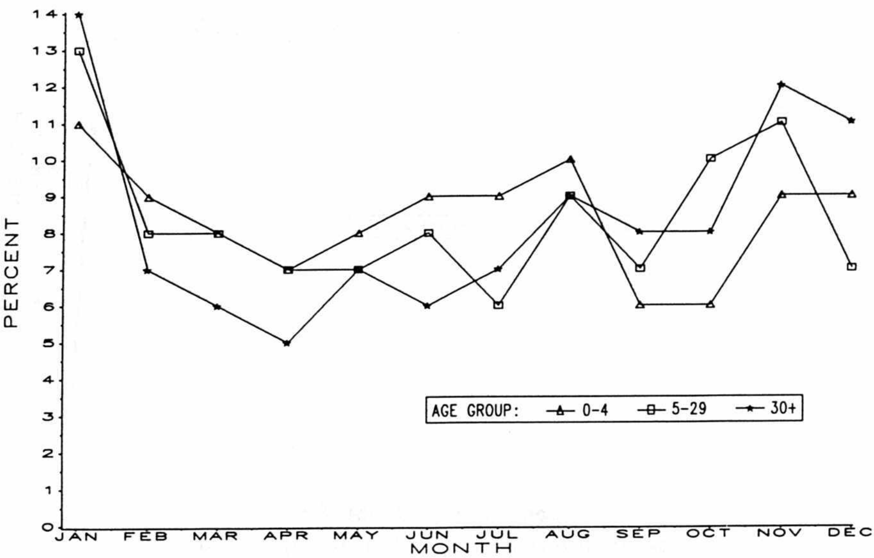


Figure 4. Percent of reported isolates, by age-group and month.



S. sandiego

Figure 5. Median age of persons from whom isolates were reported, by year.

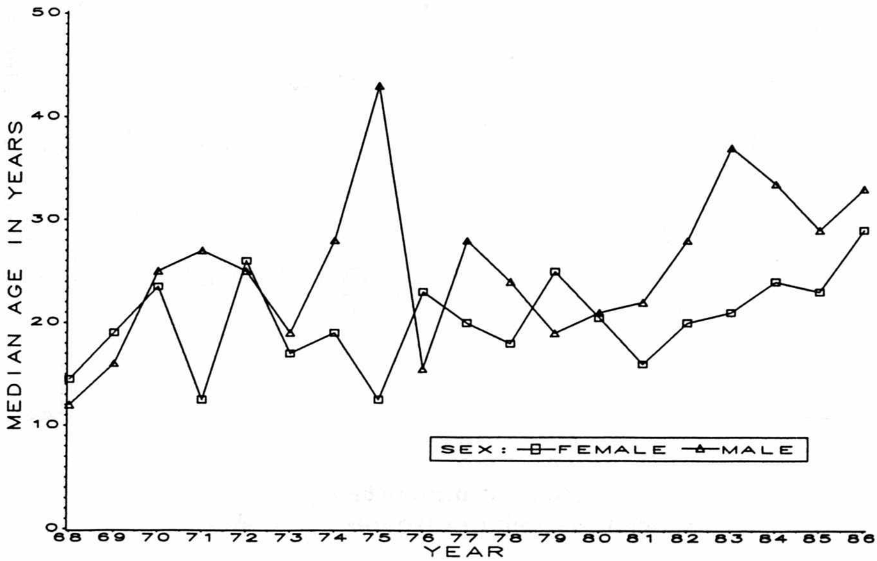


Figure 7. Reported nonhuman sources, by year.

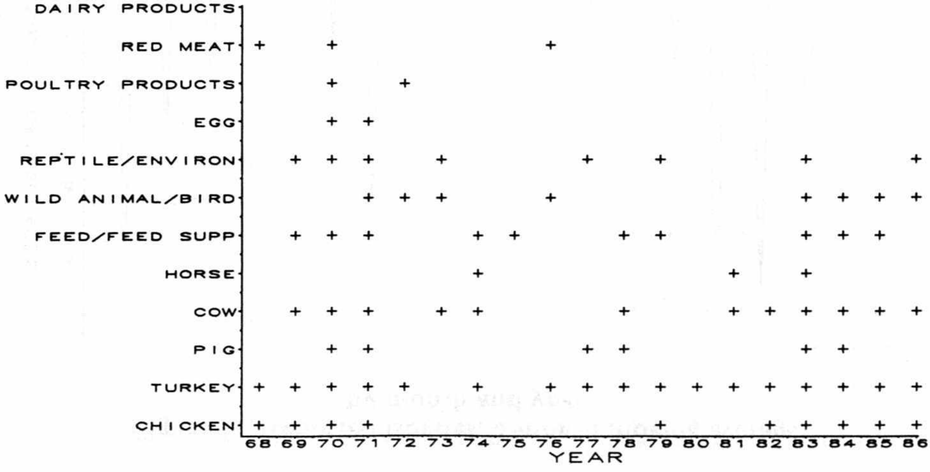


Figure 6. Percent of reported isolates, by age-group and sex.

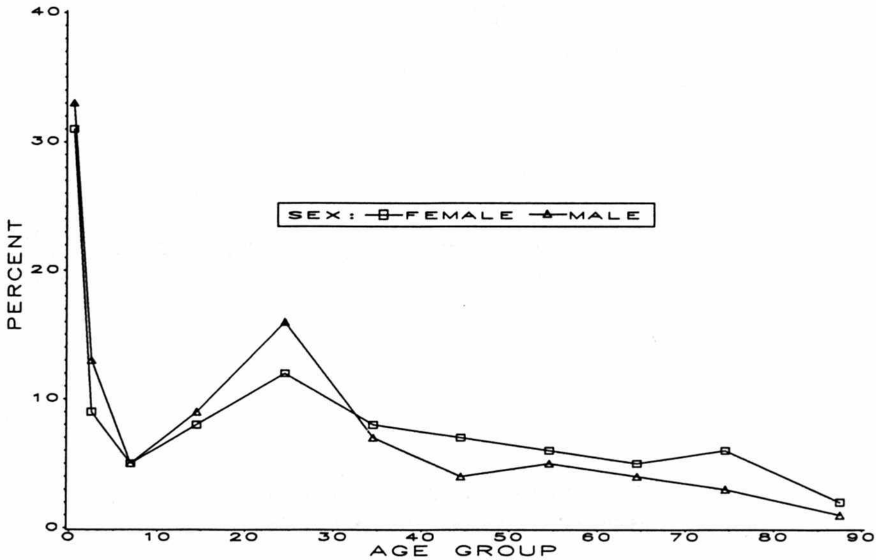
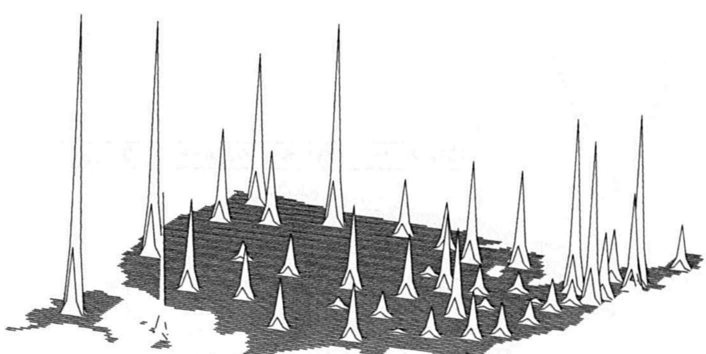


Figure 8. Age-standardized rates of reported isolates, by state.



S. sandiego

Figure 1. Reported isolates, 3-month moving average, by month and year.

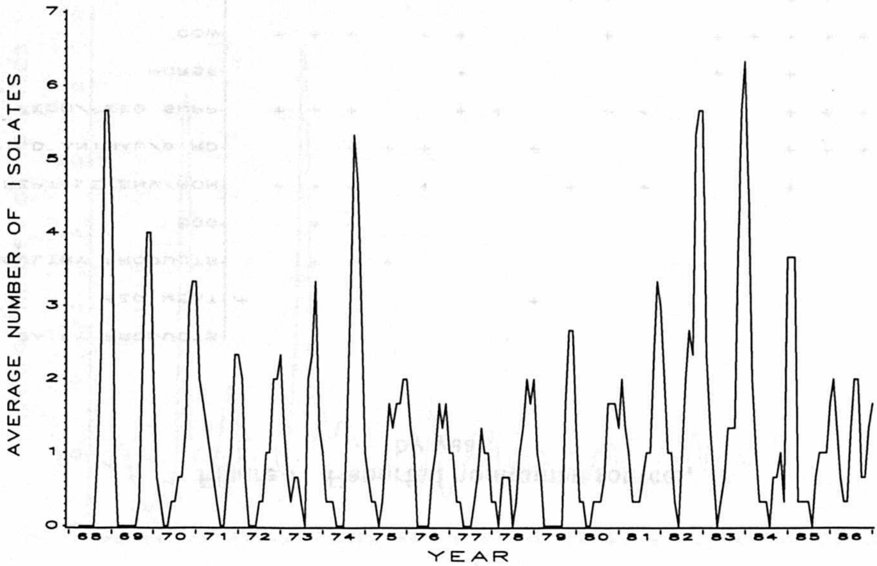


Figure 3. Number of reported isolates, by age-group and year.

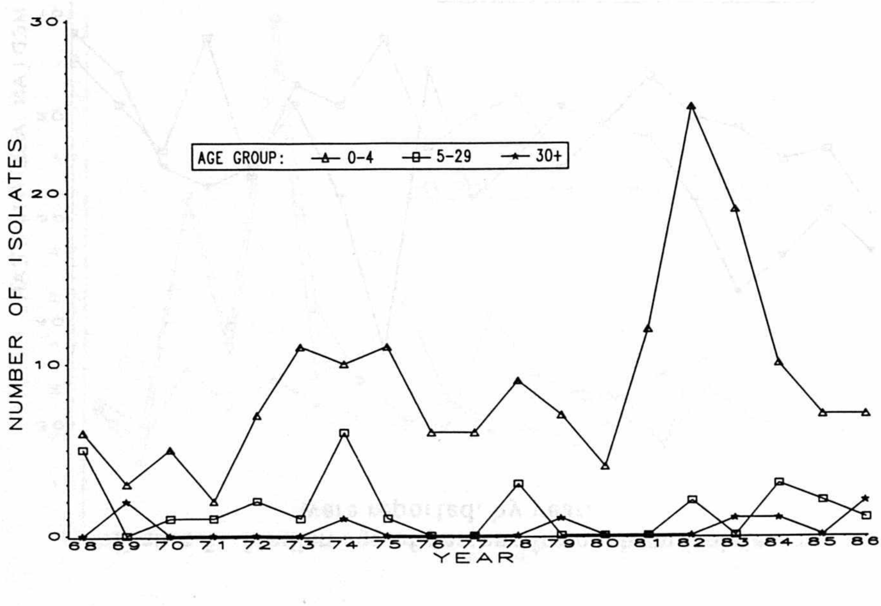


Figure 2. Percent of reported isolates from urban and rural counties, by month.

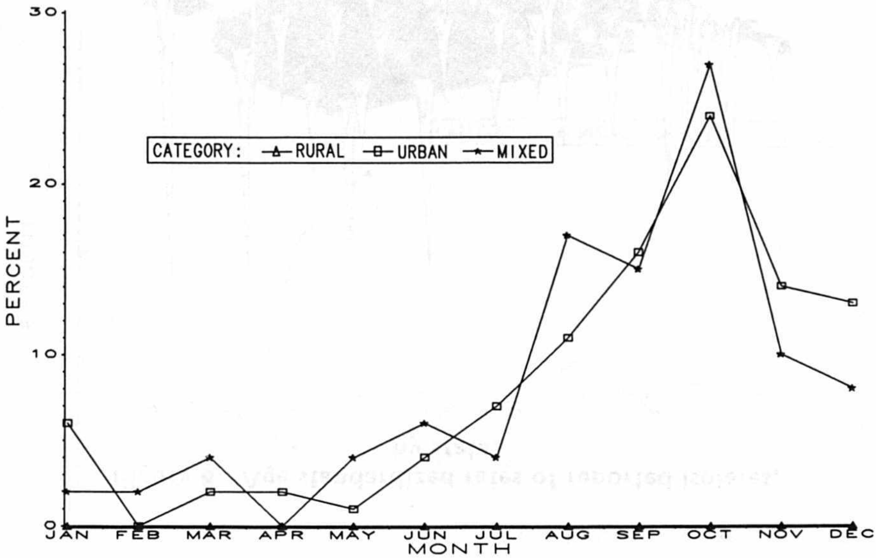
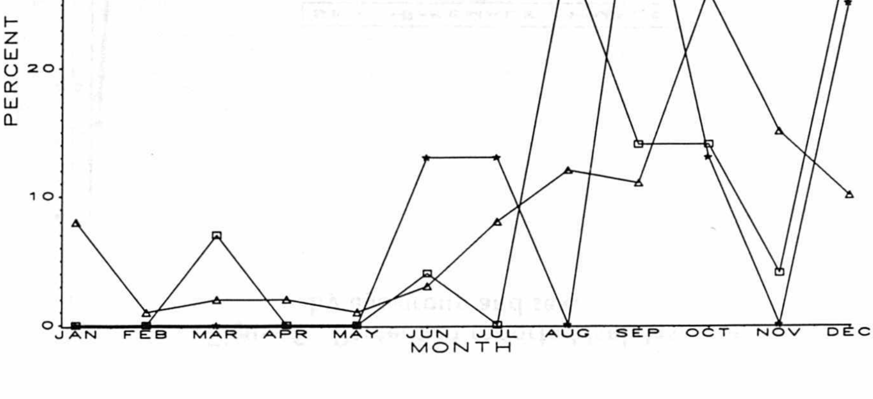


Figure 4. Percent of reported isolates, by age-group and month.



S. saphra

Figure 5. Median age of persons from whom isolates were reported, by year.

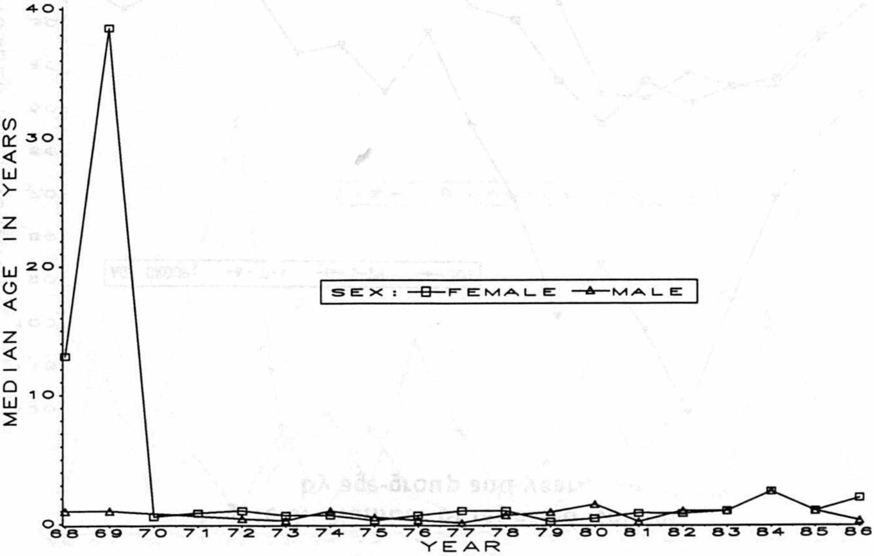


Figure 7. Reported nonhuman sources, by year.

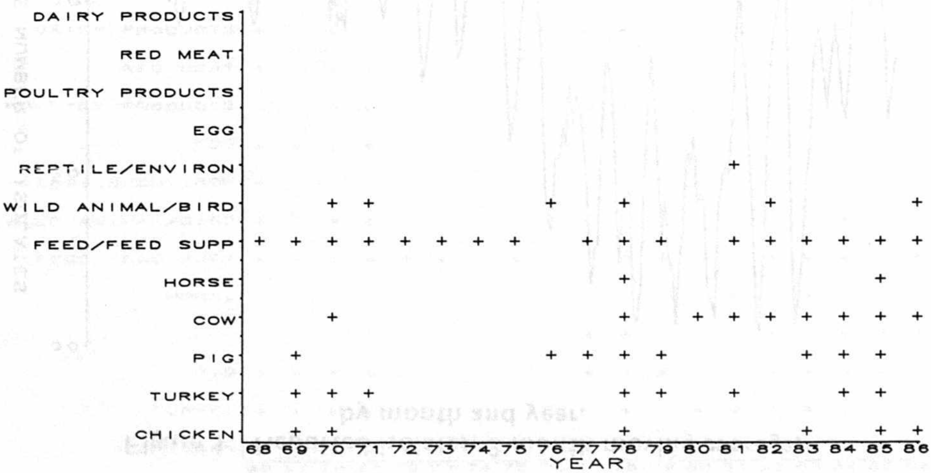


Figure 6. Percent of reported isolates, by age-group and sex.

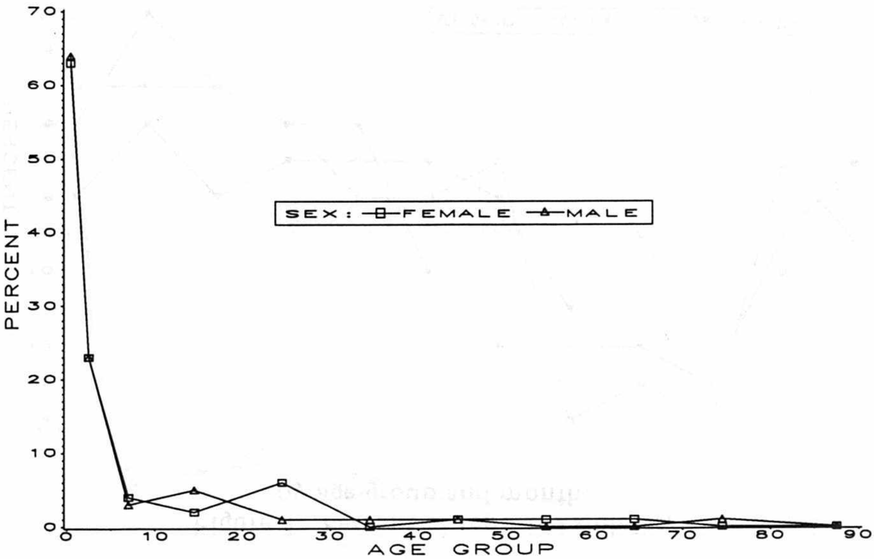


Figure 8. Age-standardized rates of reported isolates, by state.

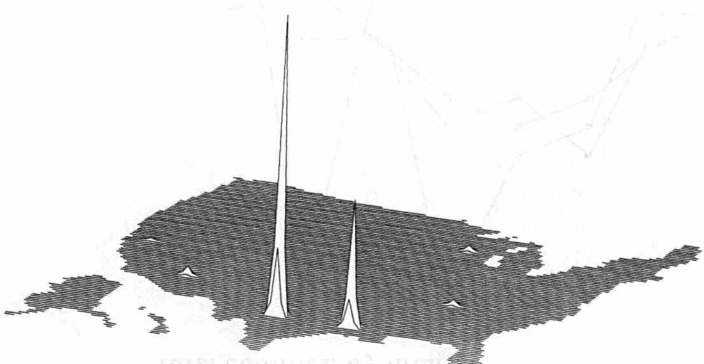


Figure 1. Reported isolates, 3-month moving average, by month and year.

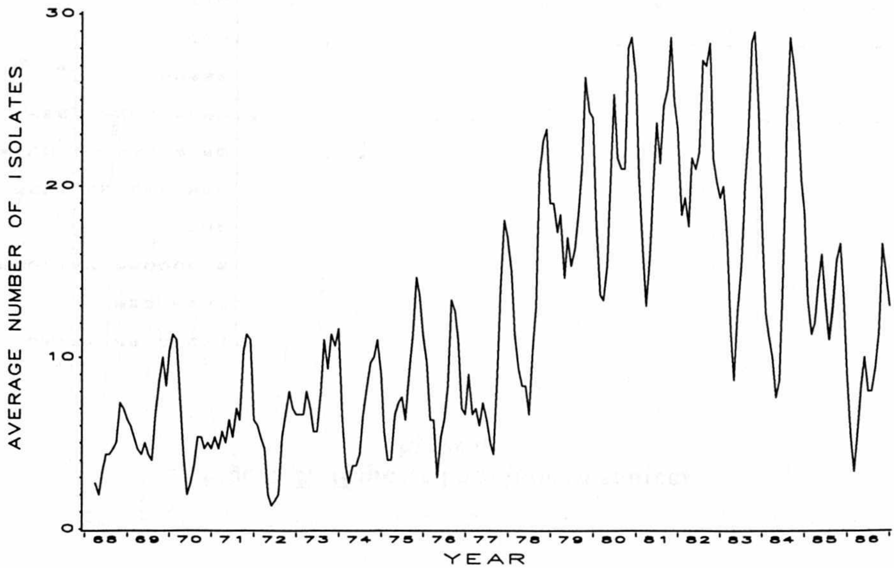


Figure 3. Number of reported isolates, by age-group and year.

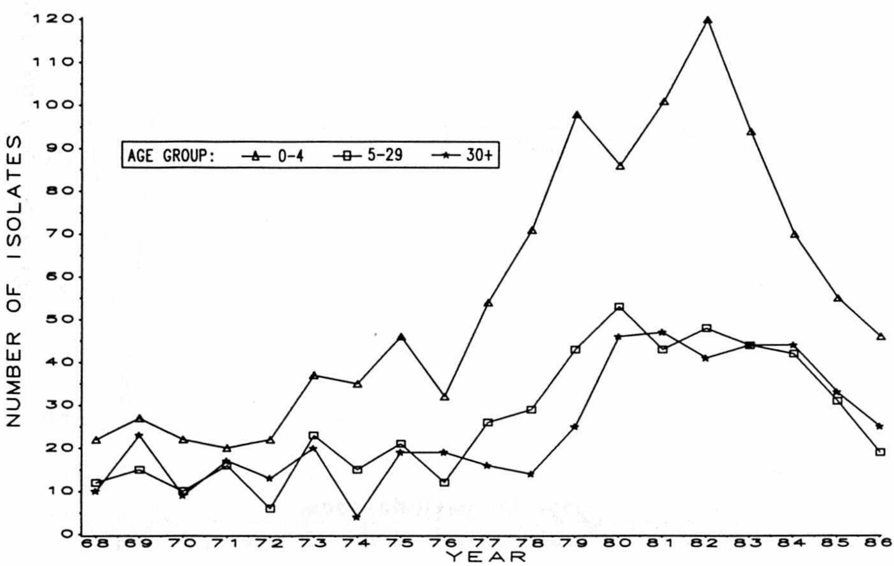


Figure 2. Percent of reported isolates from urban and rural counties, by month.

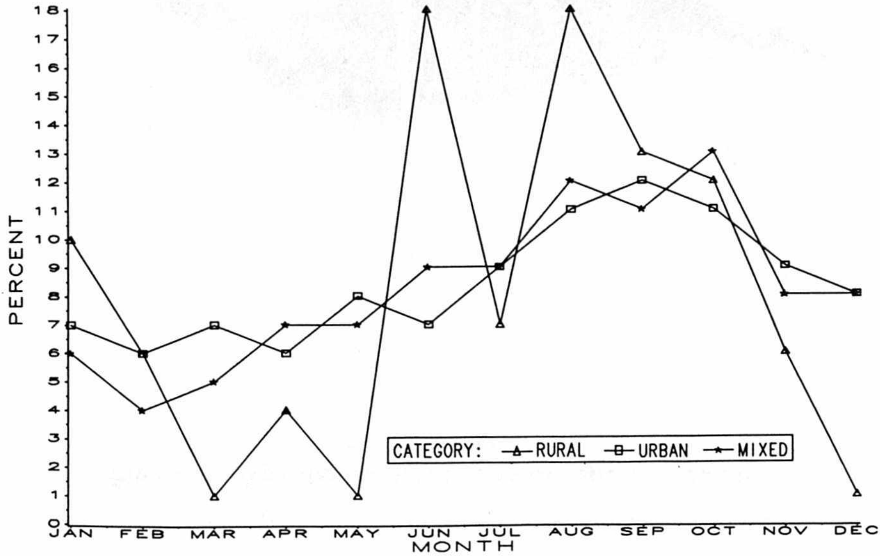
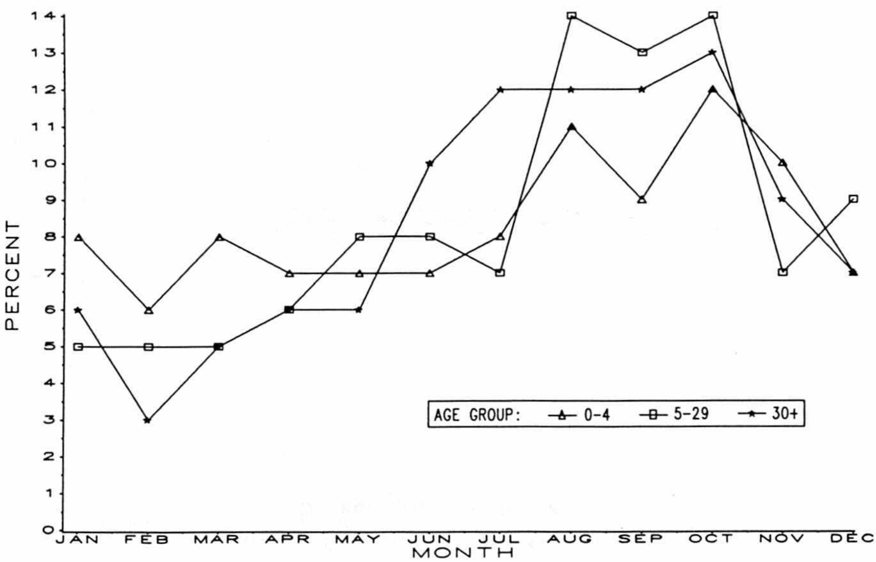


Figure 4. Percent of reported isolates, by age-group and month.



S. schwarzengrund

Figure 5. Median age of persons from whom isolates were reported, by year.

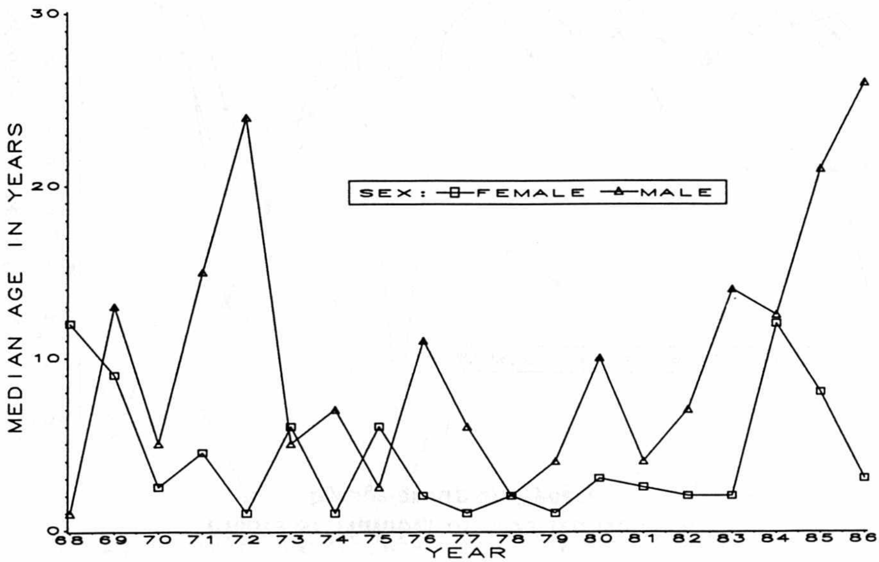


Figure 7. Reported nonhuman sources, by year.

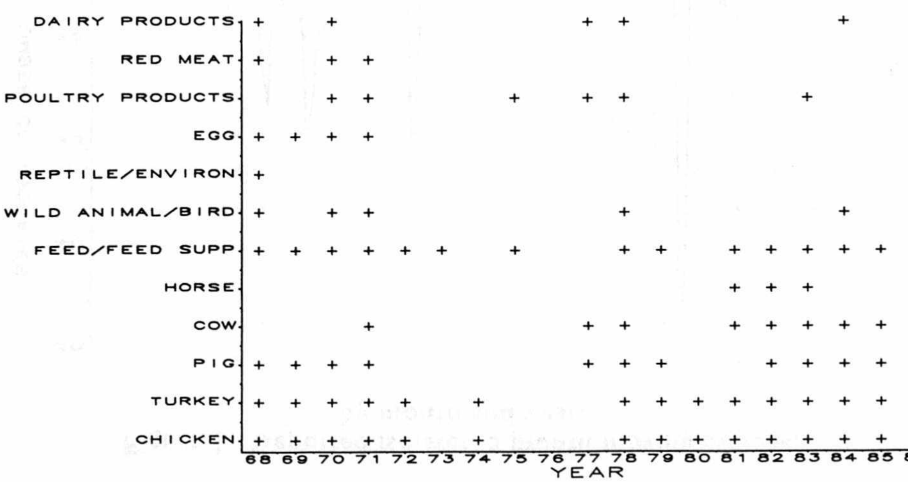


Figure 6. Percent of reported isolates, by age-group and sex.

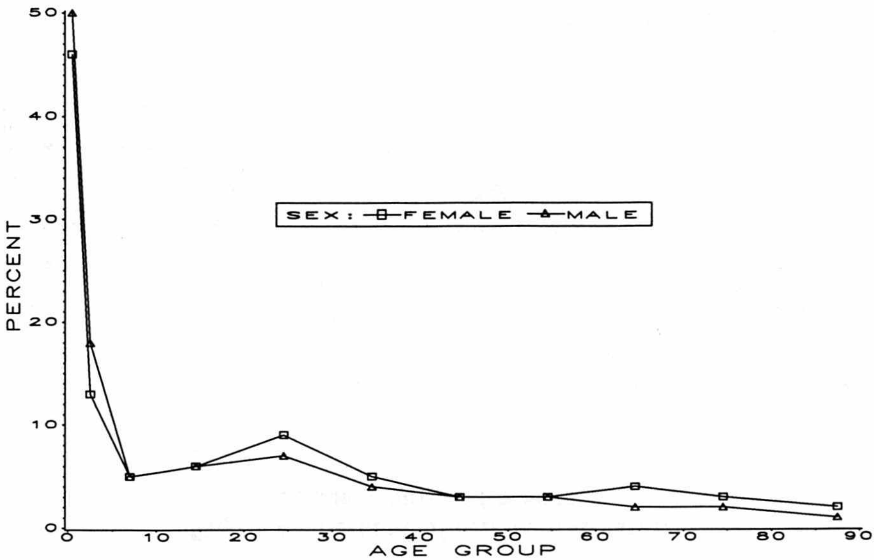
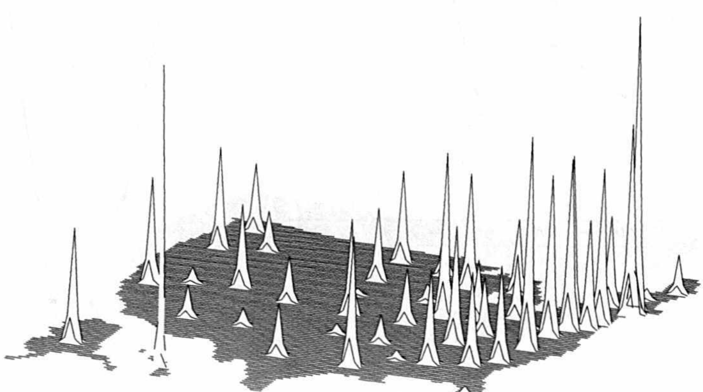


Figure 8. Age-standardized rates of reported isolates, by state.



S. schwarzengrund

Figure 1. Reported isolates, 3-month moving average, by month and year.

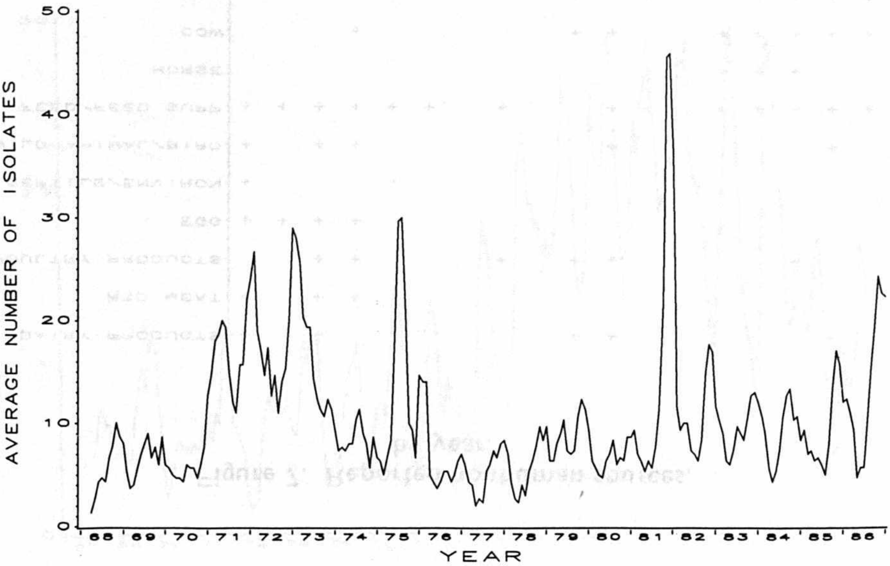


Figure 3. Number of reported isolates, by age-group and year.

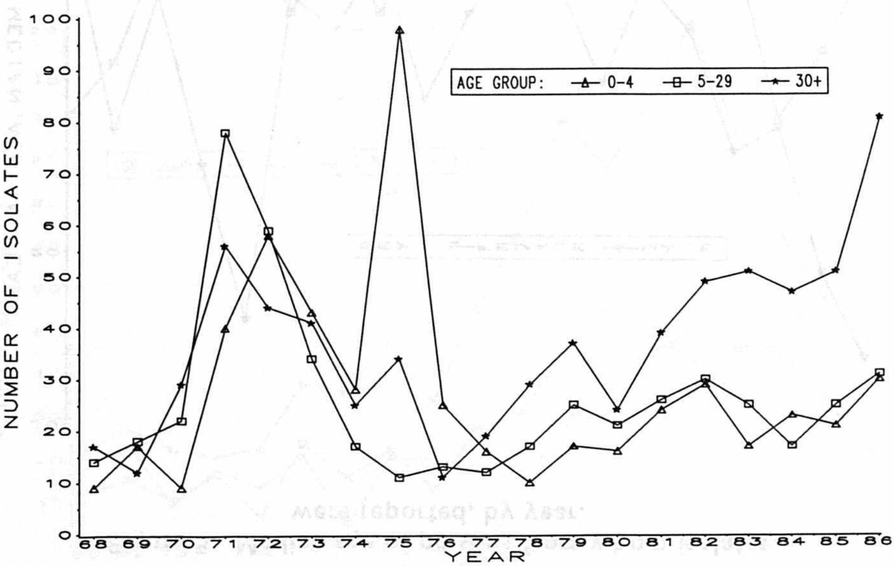


Figure 2. Percent of reported isolates from urban and rural counties, by month.

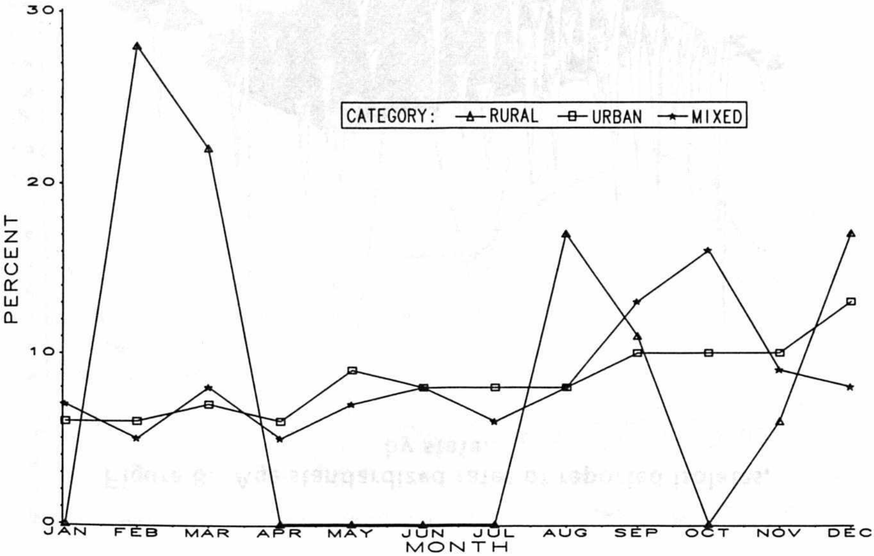
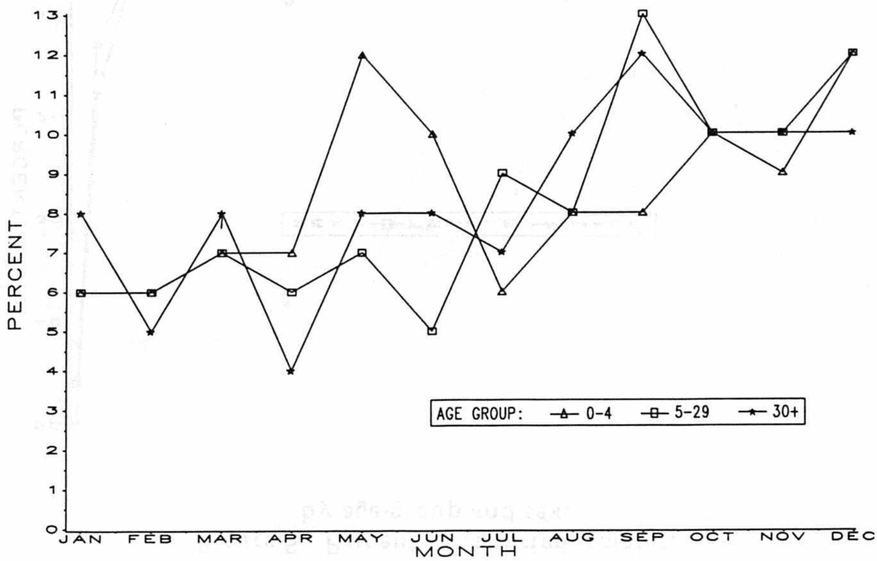


Figure 4. Percent of reported isolates, by age-group and month.



S. senftenberg

Figure 5. Median age of persons from whom isolates were reported, by year.

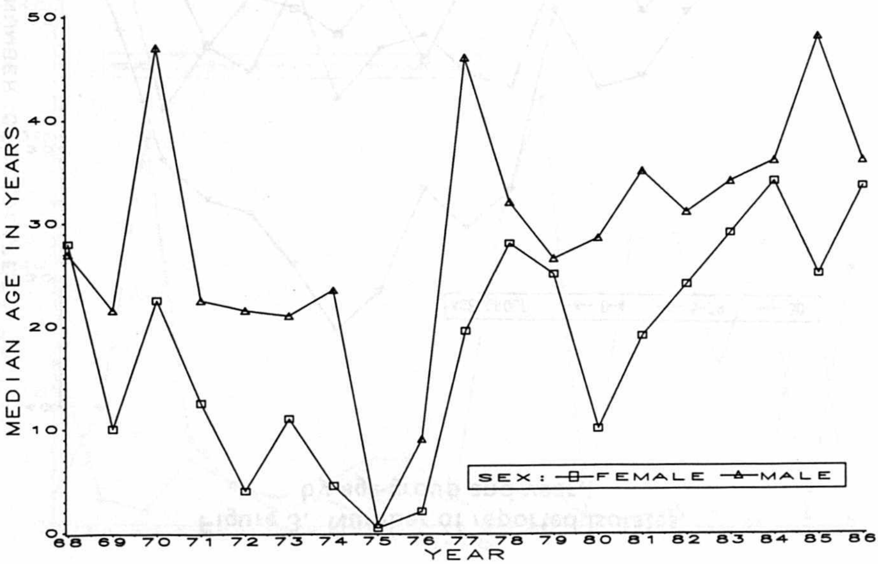


Figure 7. Reported nonhuman sources, by year.

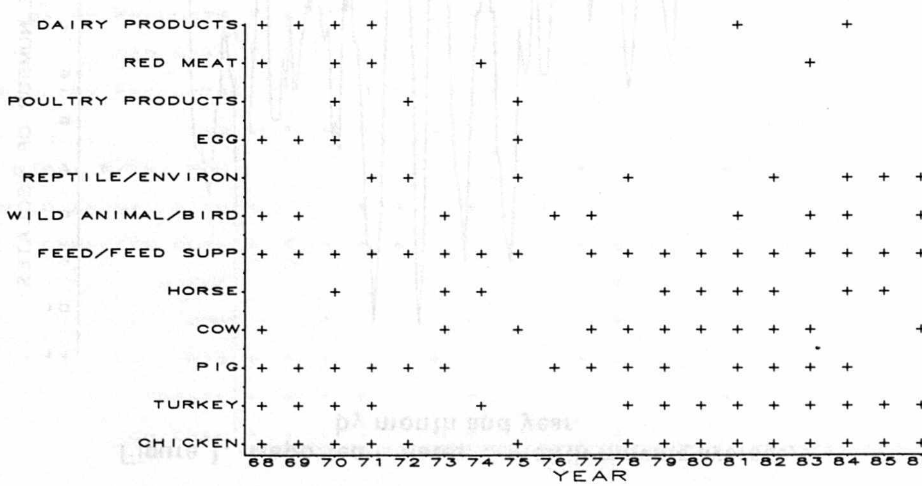


Figure 6. Percent of reported isolates, by age-group and sex.

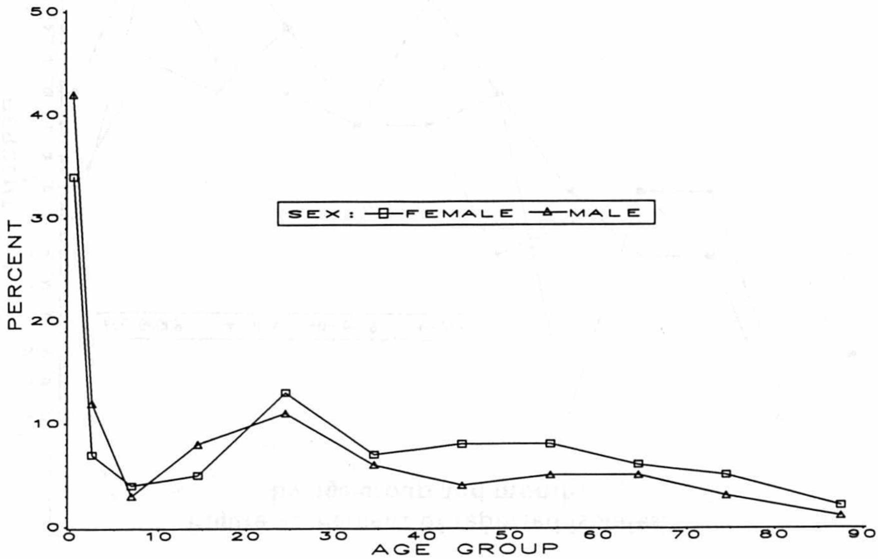
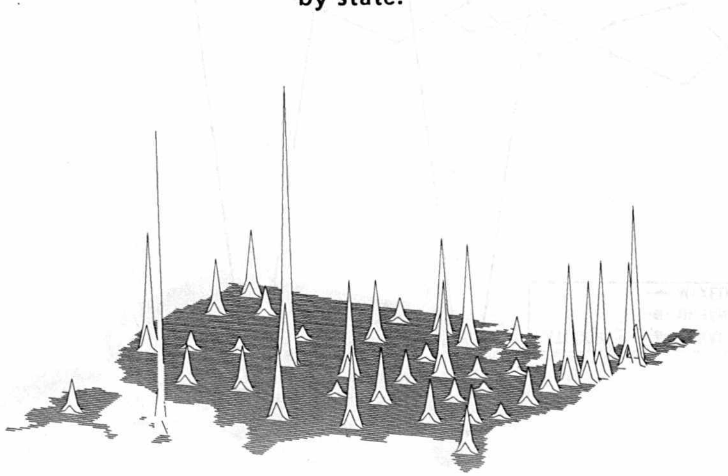


Figure 8. Age-standardized rates of reported isolates, by state.



S. senftenberg

Figure 1. Reported isolates, 3-month moving average, by month and year.

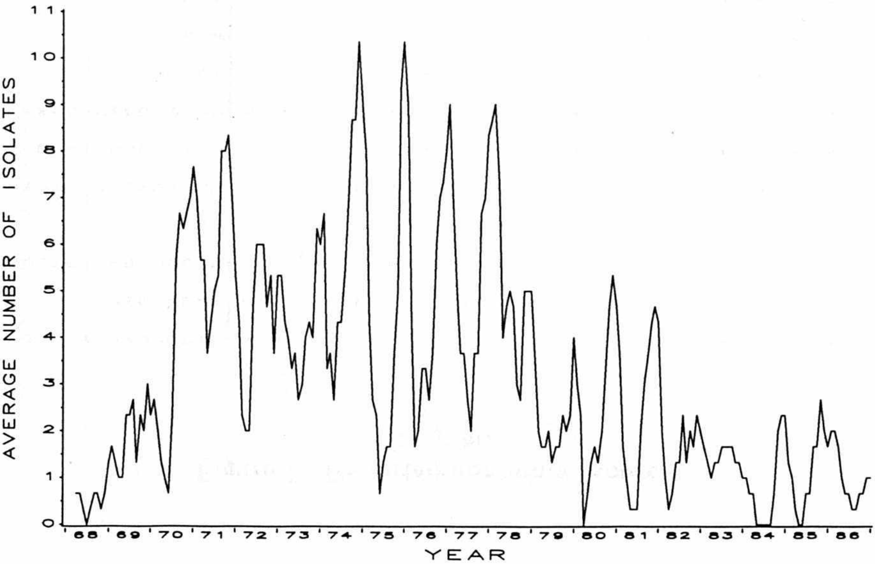


Figure 3. Number of reported isolates, by age-group and year.

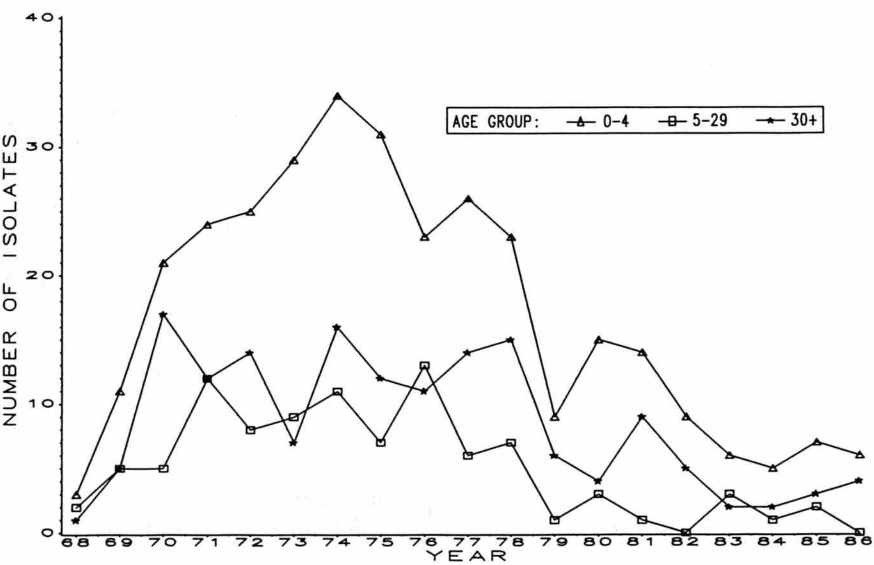


Figure 2. Percent of reported isolates from urban and rural counties, by month.

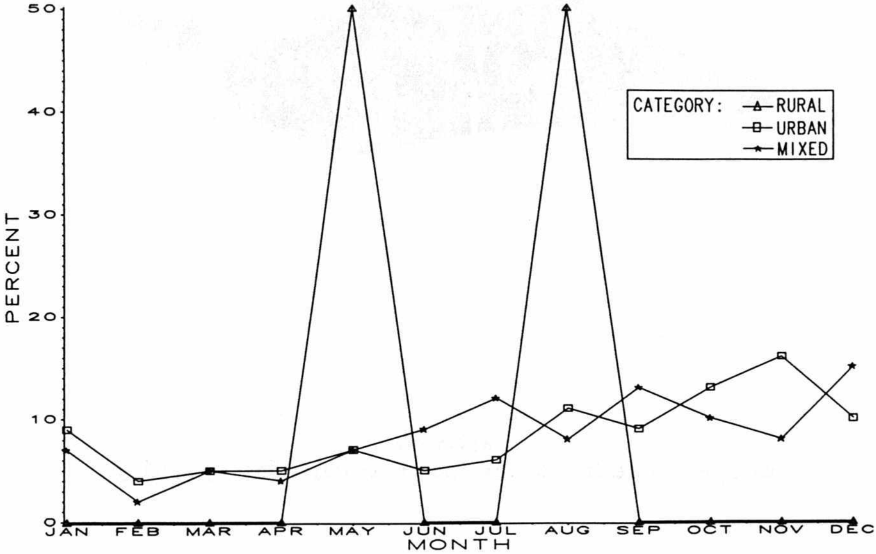
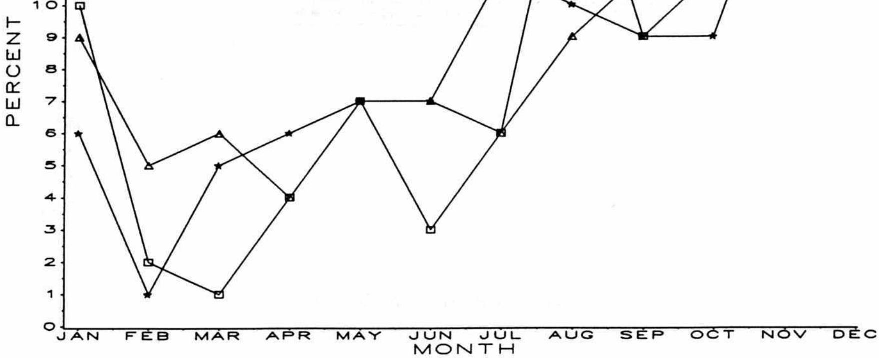


Figure 4. Percent of reported isolates, by age-group and month.



S. siegburg

Figure 5. Median age of persons from whom isolates were reported, by year.

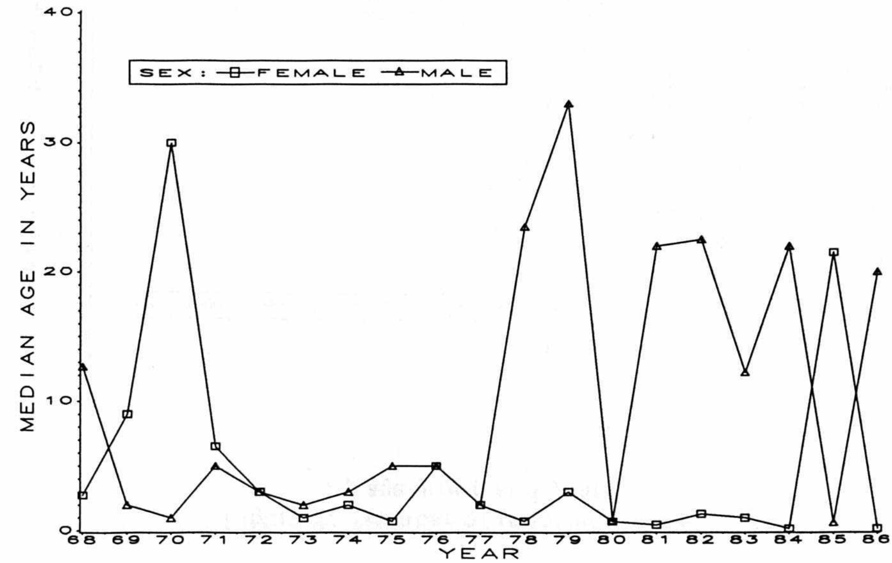


Figure 7. Reported nonhuman sources, by year.

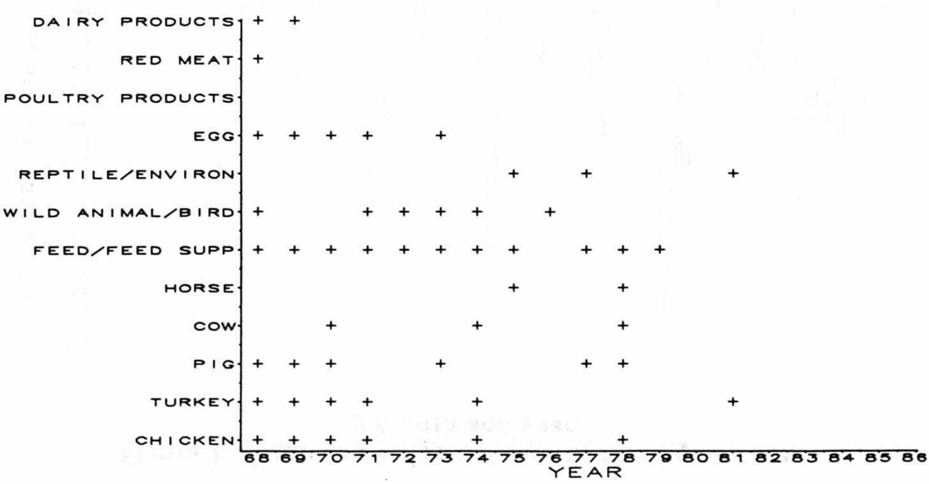


Figure 6. Percent of reported isolates, by age-group and sex.

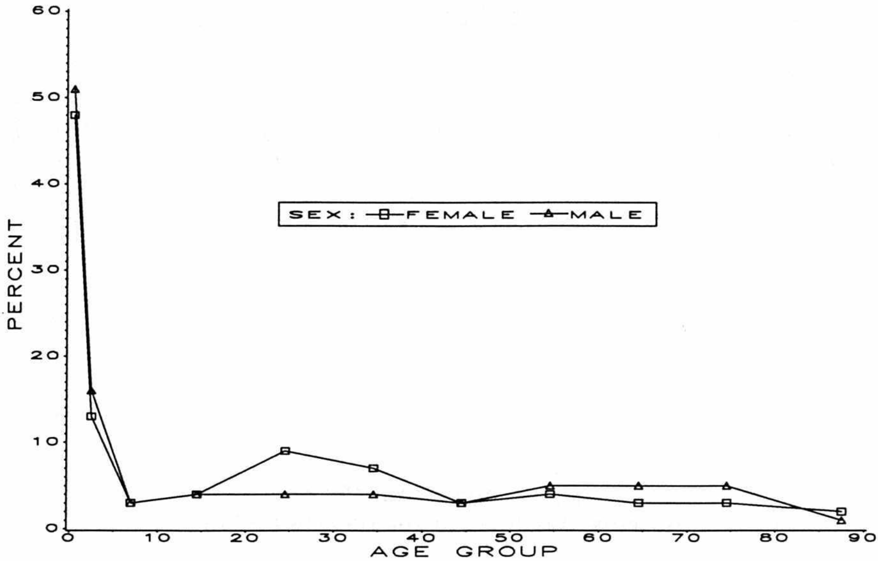
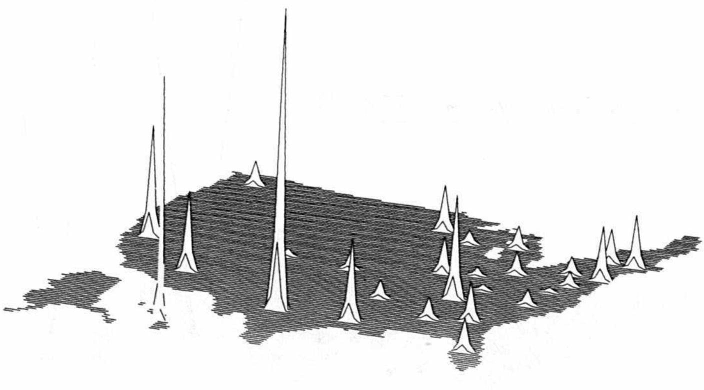


Figure 8. Age-standardized rates of reported isolates, by state.



S. siegburg

Figure 1. Reported isolates, 3-month moving average, by month and year.

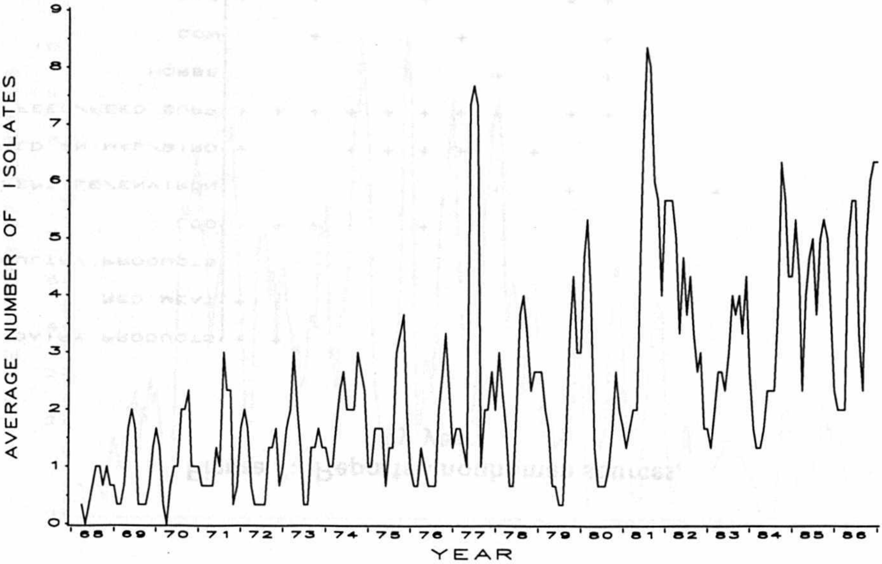


Figure 3. Number of reported isolates, by age-group and year.

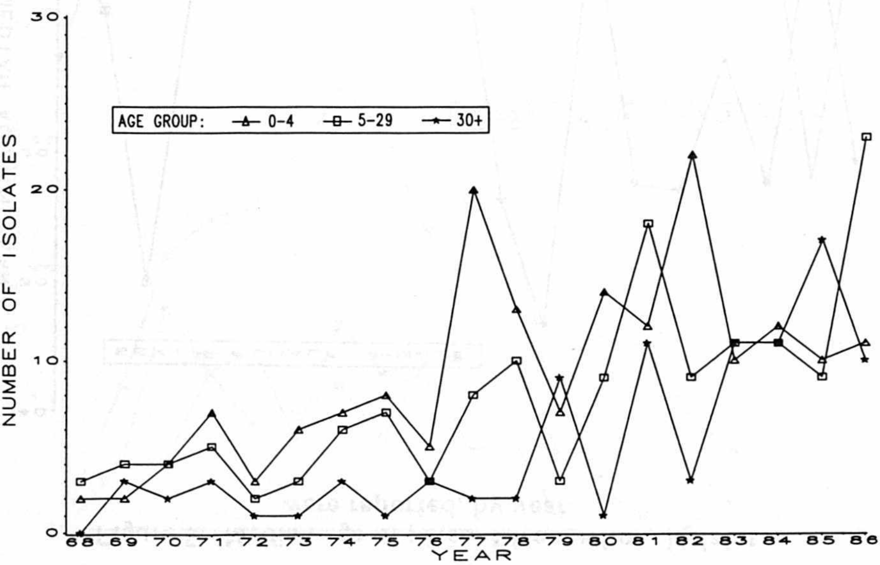


Figure 2. Percent of reported isolates from urban and rural counties, by month.

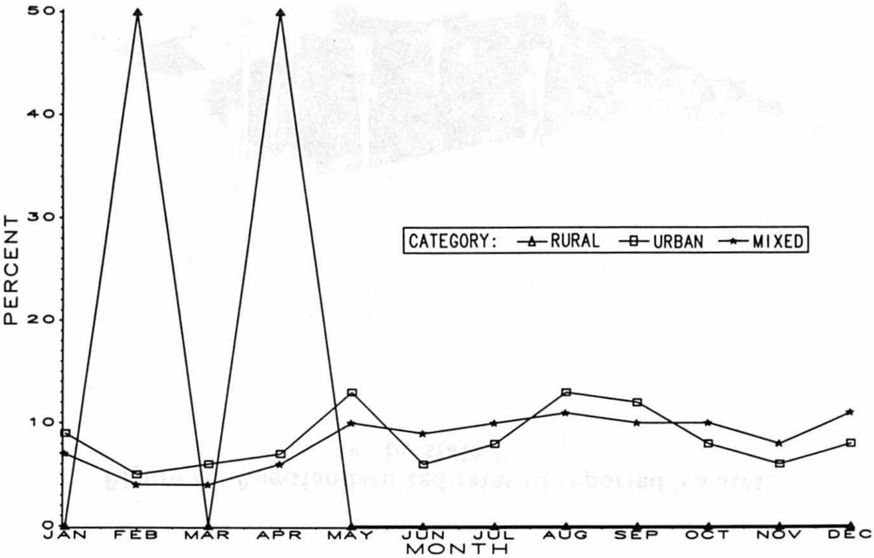
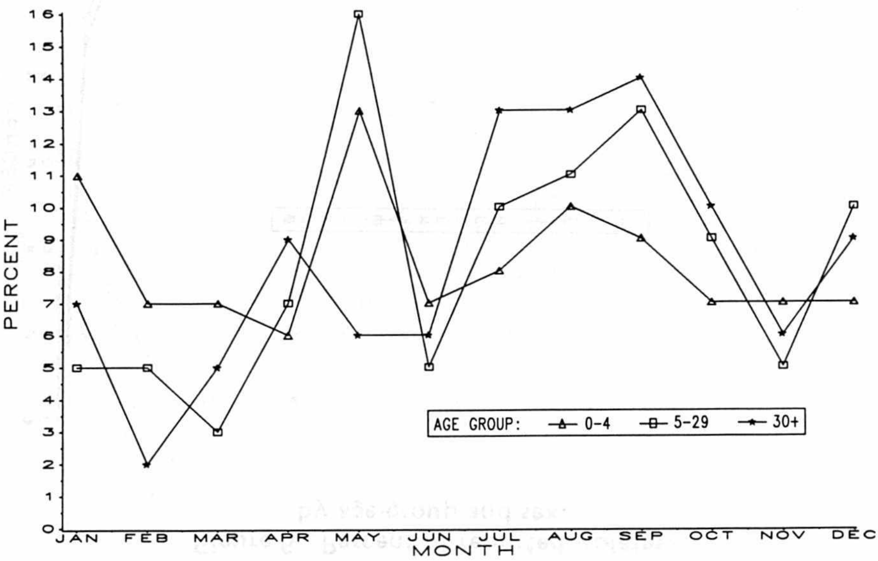


Figure 4. Percent of reported isolates, by age-group and month.



S. stanley

Figure 5. Median age of persons from whom isolates were reported, by year.

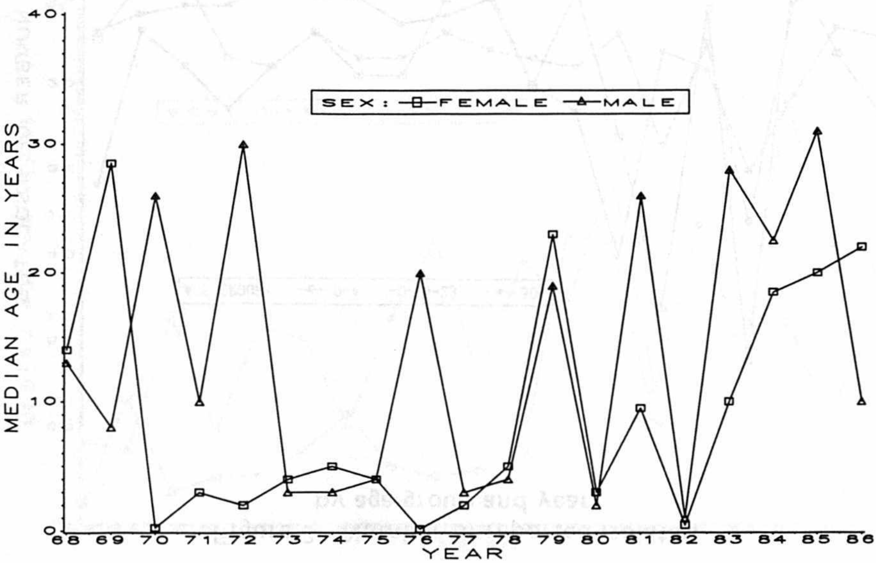
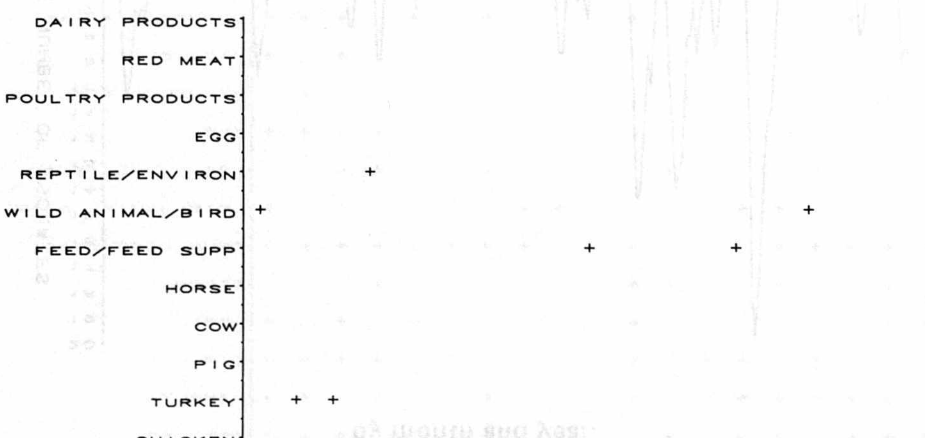


Figure 7. Reported nonhuman sources, by year.



S. stanley

Figure 6. Percent of reported isolates, by age-group and sex.

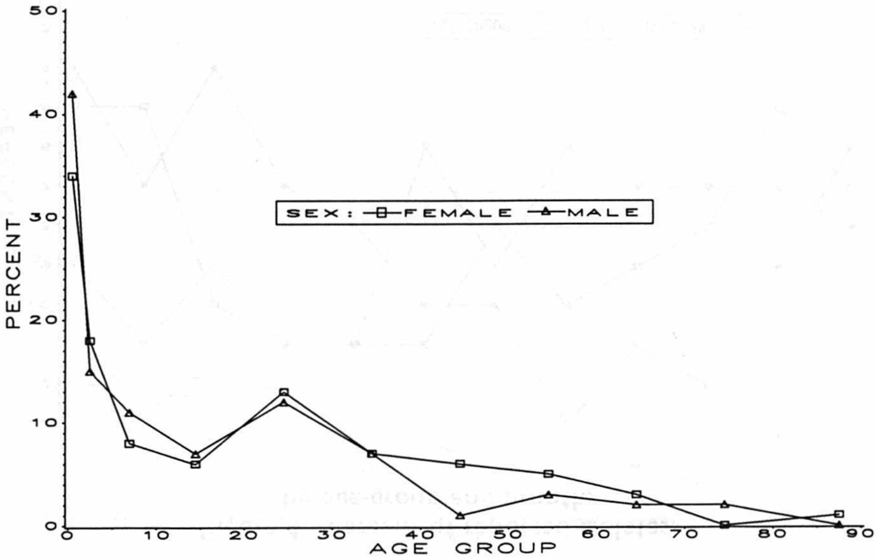


Figure 8. Age-standardized rates of reported isolates, by state.

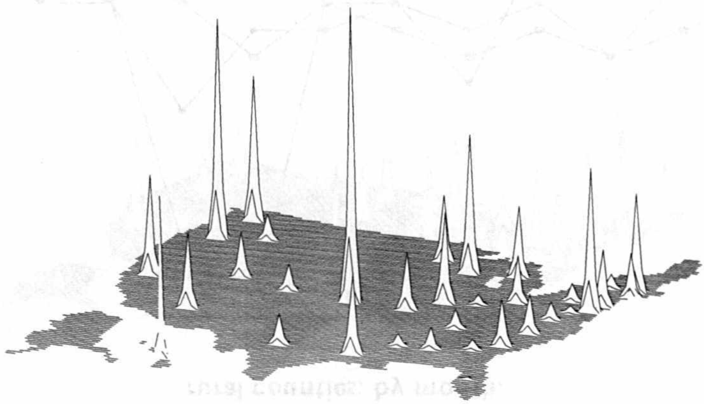


Figure 1. Reported isolates, 3-month moving average, by month and year.

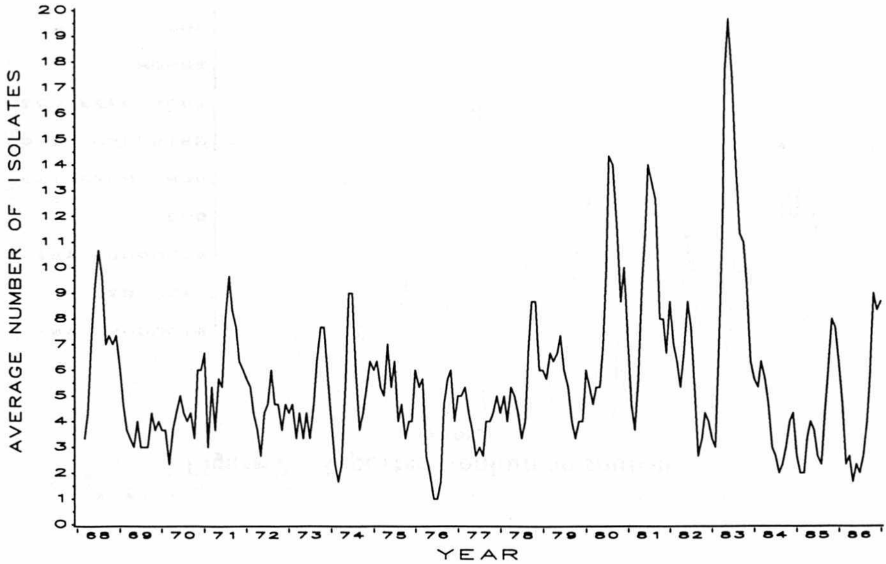


Figure 3. Number of reported isolates, by age-group and year.

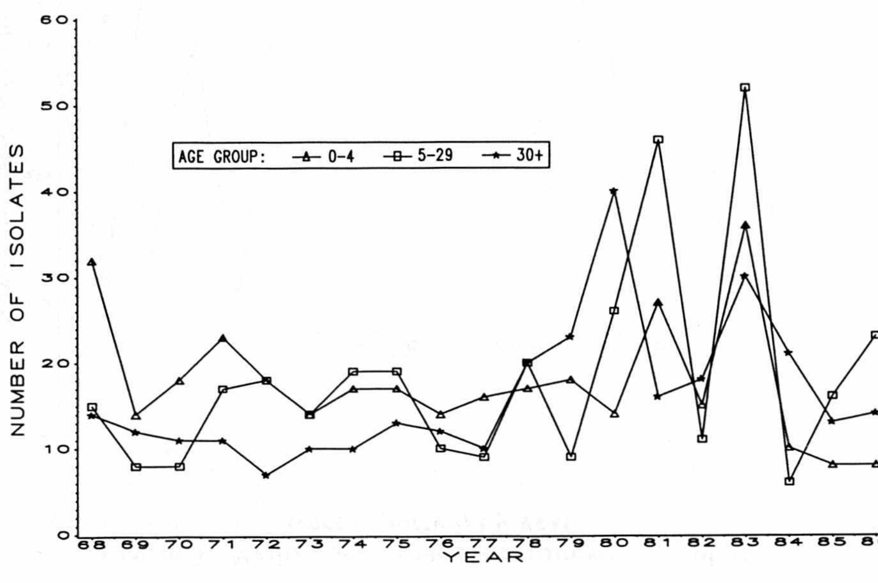


Figure 2. Percent of reported isolates from urban and rural counties, by month.

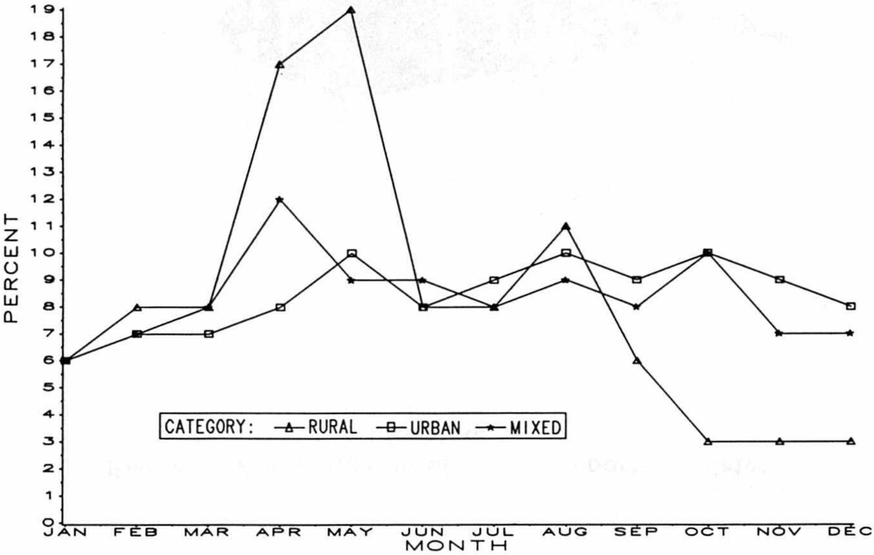
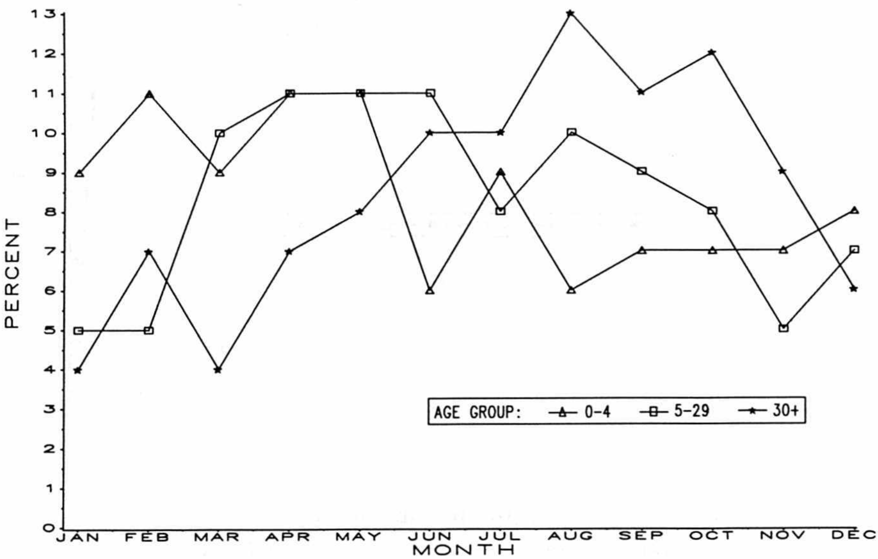


Figure 4. Percent of reported isolates, by age-group and month.



S. tennessee

Figure 5. Median age of persons from whom isolates were reported, by year.

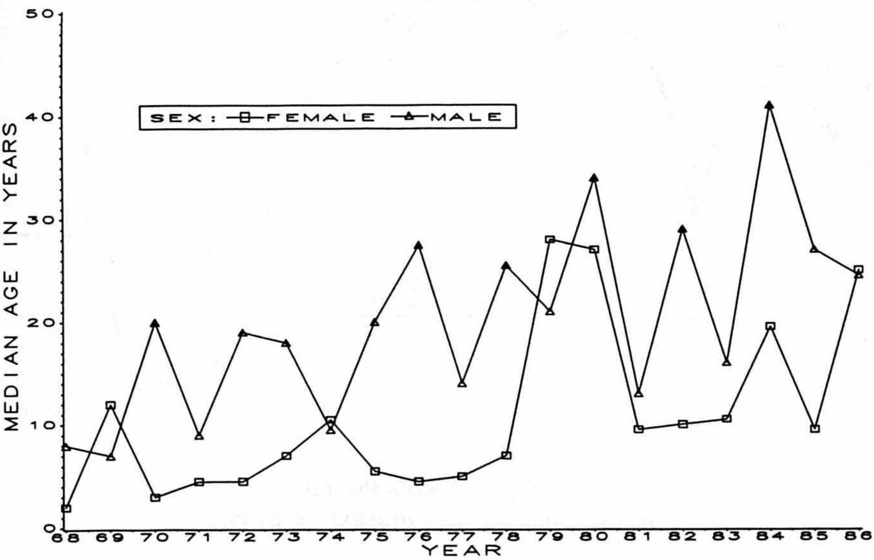


Figure 7. Reported nonhuman sources, by year.

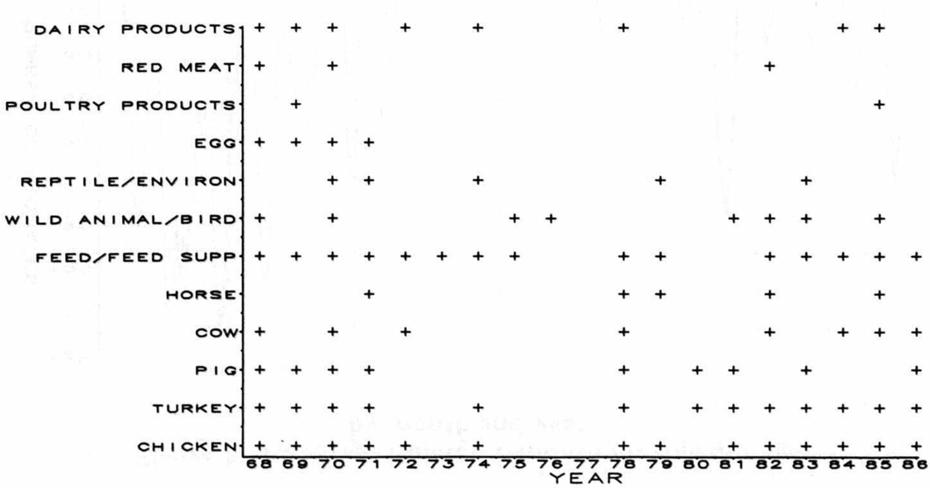
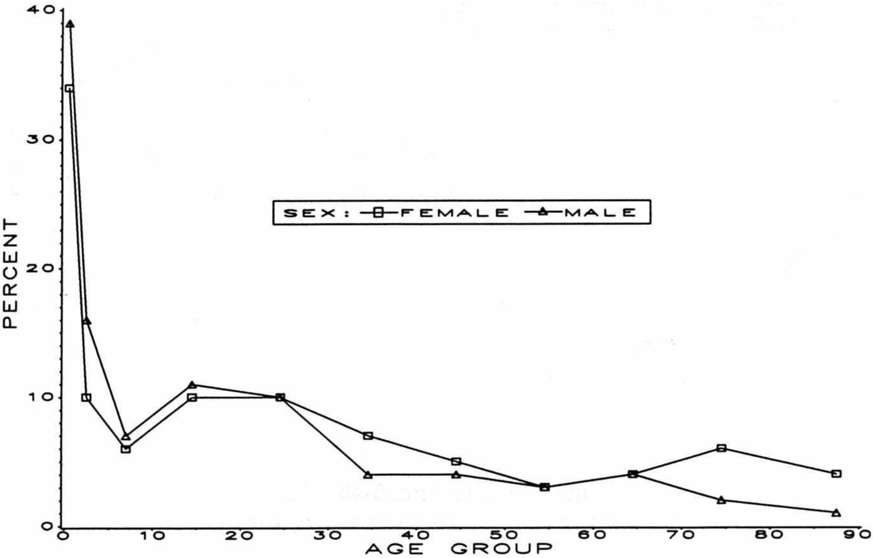


Figure 6. Percent of reported isolates, by age-group and sex.



S. tennessee

Figure 8. Age-standardized rates of reported isolates, by state.

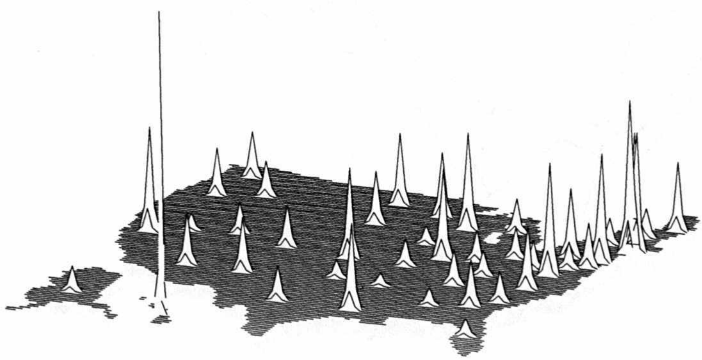


Figure 1. Reported isolates, 3-month moving average, by month and year.

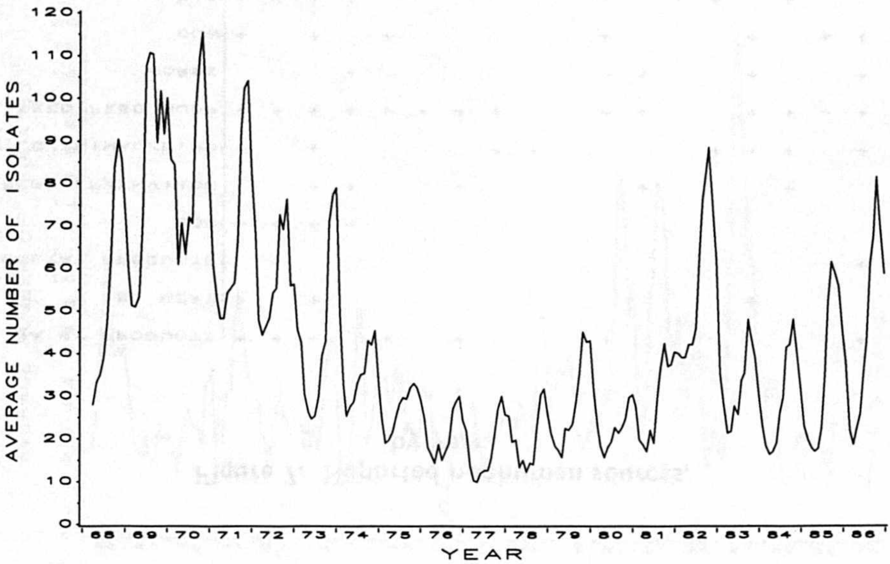


Figure 3. Number of reported isolates, by age-group and year.

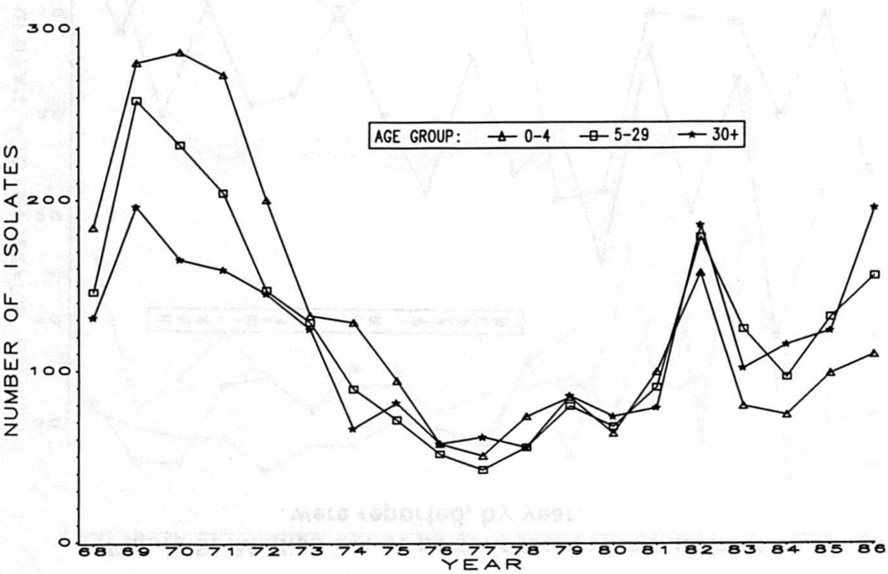


Figure 2. Percent of reported isolates from urban and rural counties, by month.

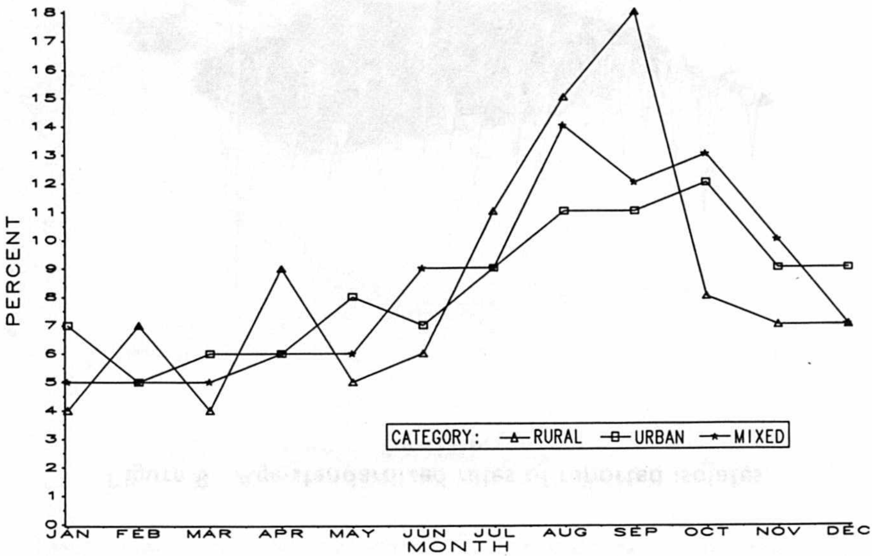
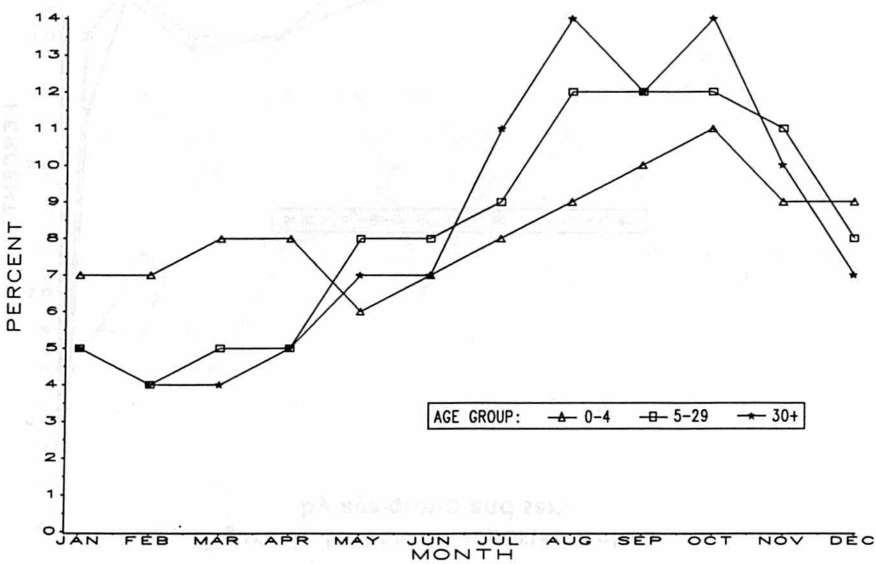


Figure 4. Percent of reported isolates, by age-group and month.



S. thompson

Figure 5. Median age of persons from whom isolates were reported, by year.

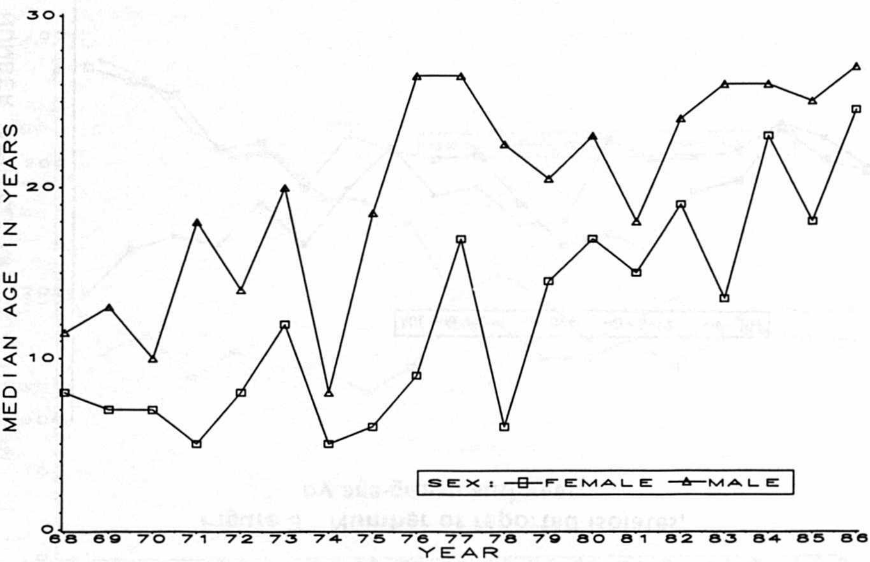
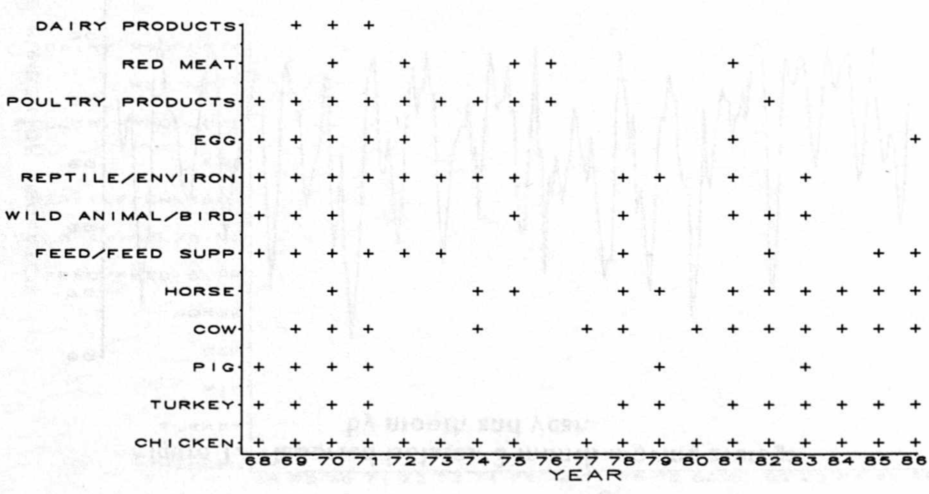


Figure 7. Reported nonhuman sources, by year.



S. thompson

Figure 6. Percent of reported isolates, by age-group and sex.

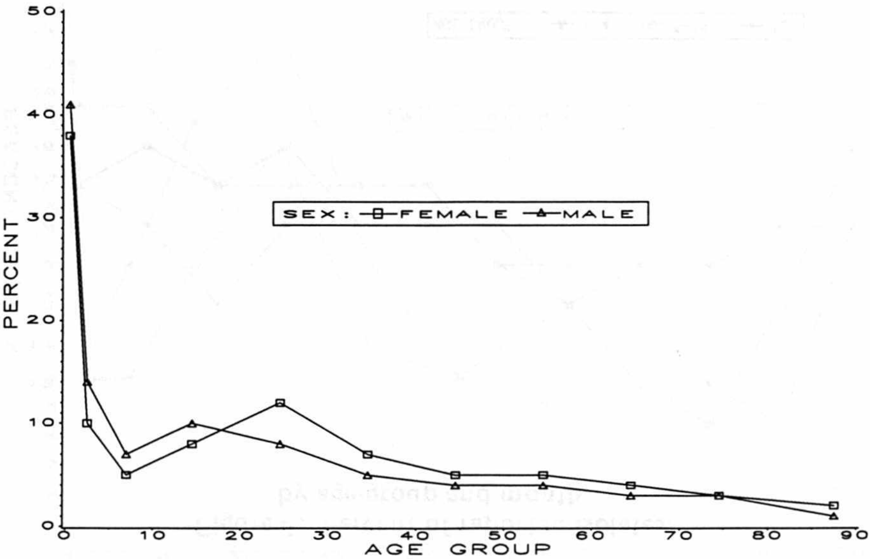


Figure 8. Age-standardized rates of reported isolates, by state.

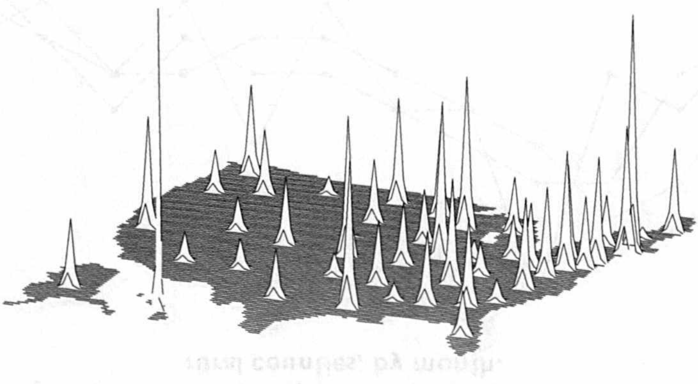


Figure 1. Reported isolates, 3-month moving average, by month and year.

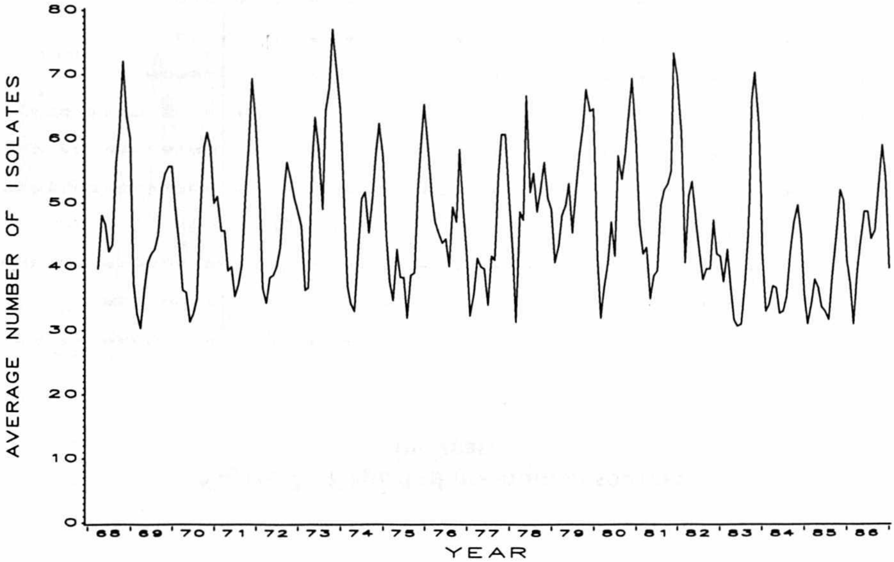


Figure 3. Number of reported isolates, by age-group and year.

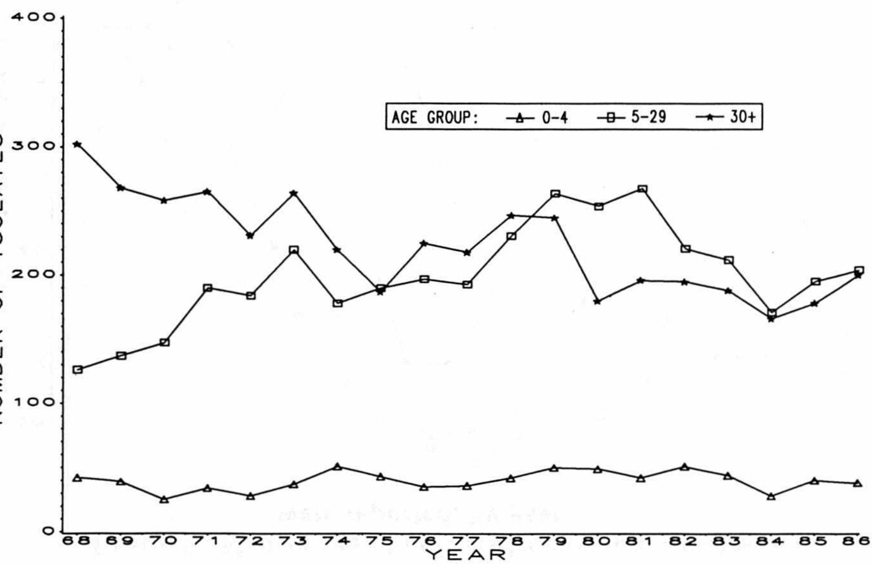


Figure 2. Percent of reported isolates from urban and rural counties, by month.

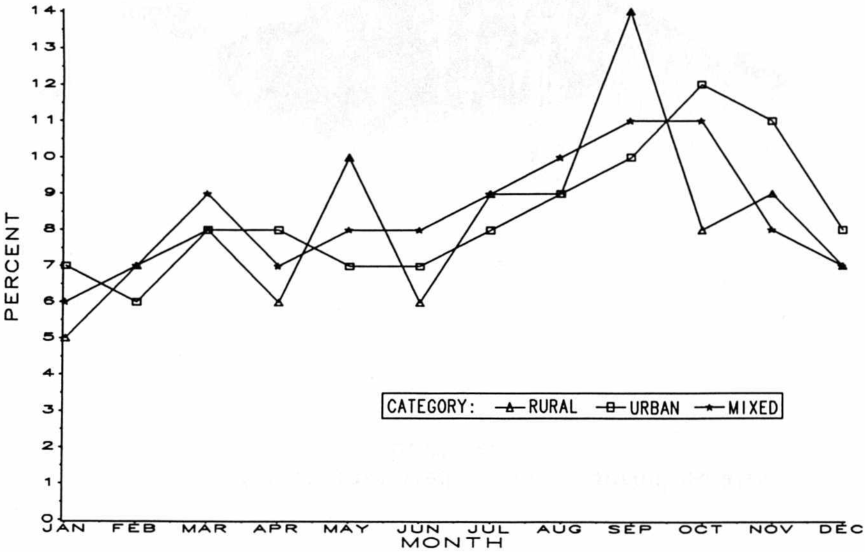


Figure 4. Percent of reported isolates, by age-group and month.

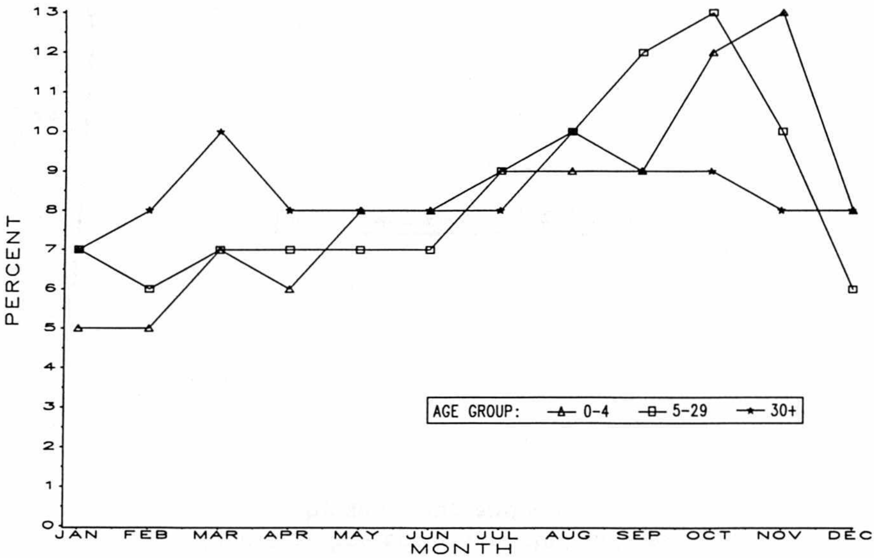


Figure 5. Median age of persons from whom isolates were reported, by year.

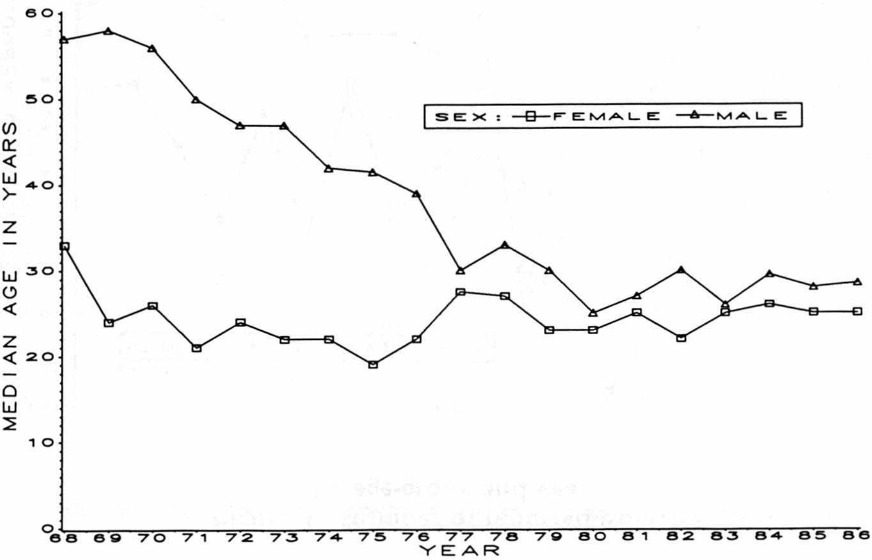


Figure 7. Reported nonhuman sources, by year.

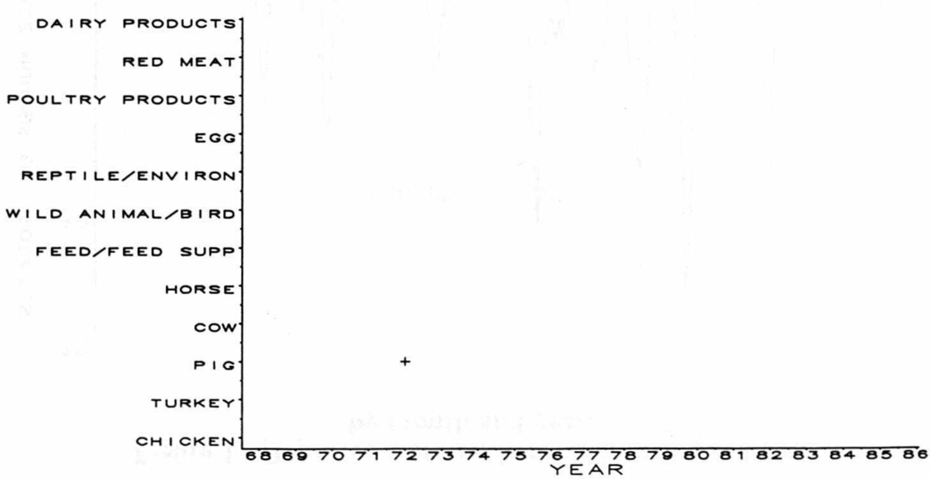


Figure 6. Percent of reported isolates, by age-group and sex.

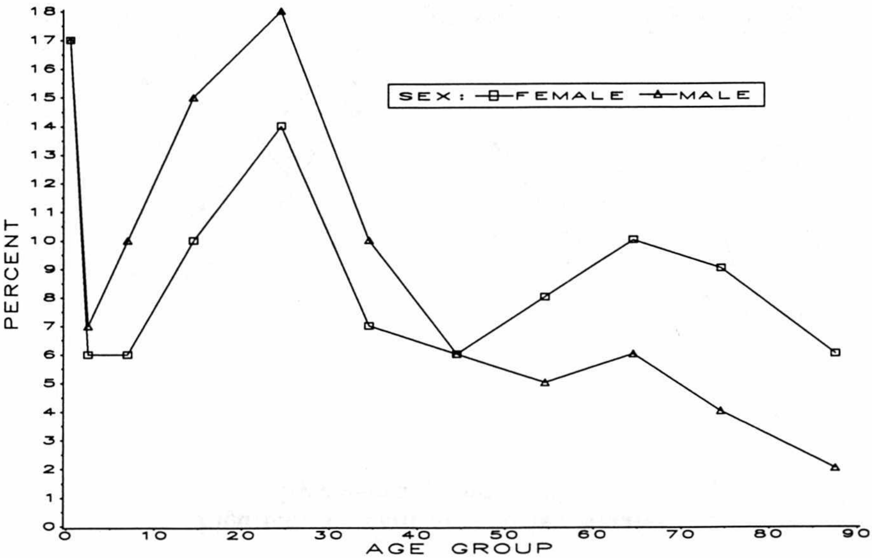


Figure 8. Age-standardized rates of reported isolates, by state.

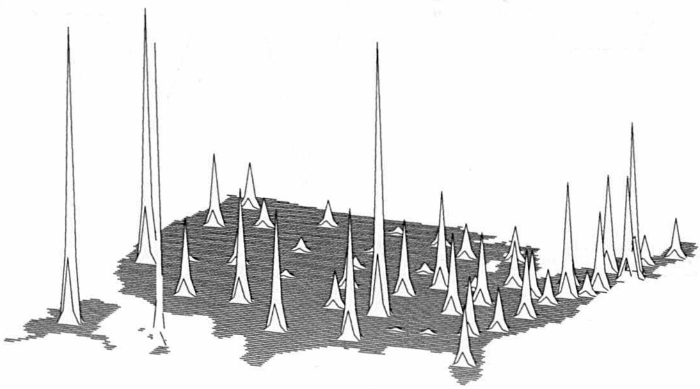


Figure 1. Reported isolates, 3-month moving average, by month and year.

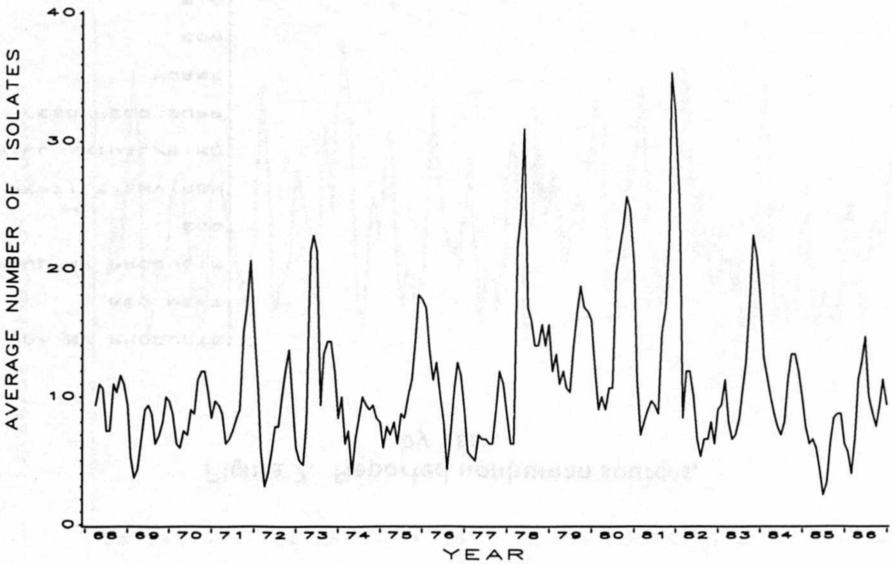
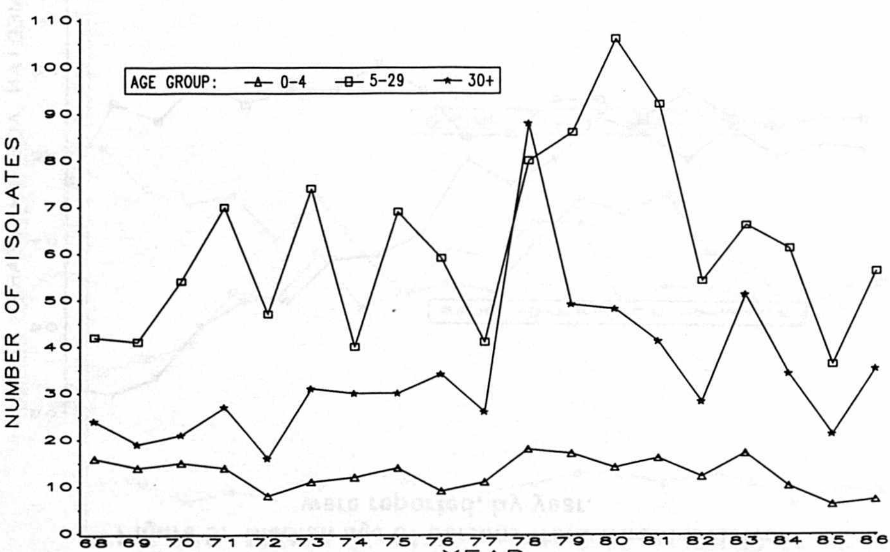


Figure 3. Number of reported isolates, by age-group and year.



S. typhi (cases only)

Figure 2. Percent of reported isolates from urban and rural counties, by month.

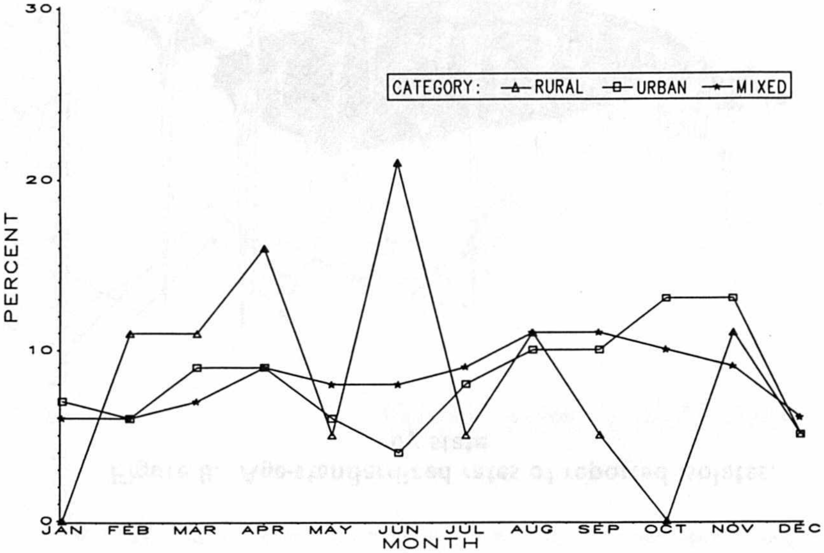


Figure 4. Percent of reported isolates, by age-group and month.

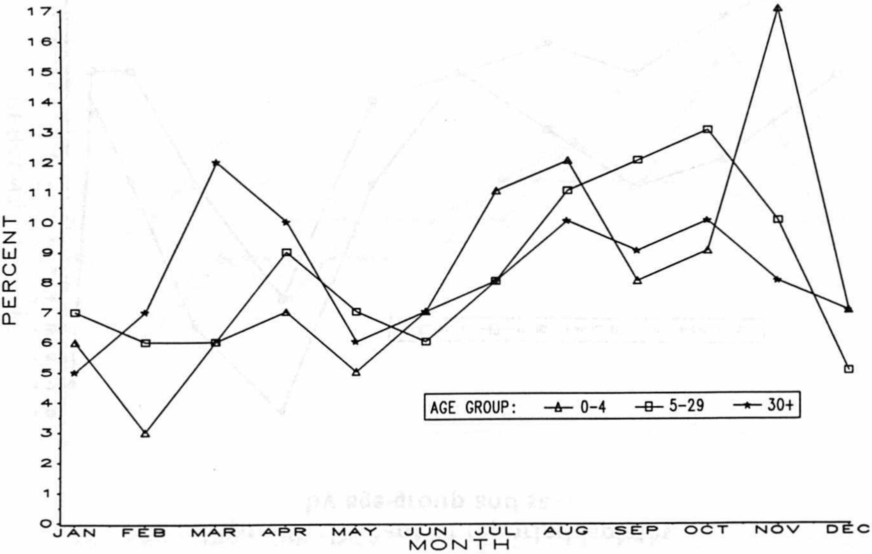


Figure 5. Median age of persons from whom isolates were reported, by year.

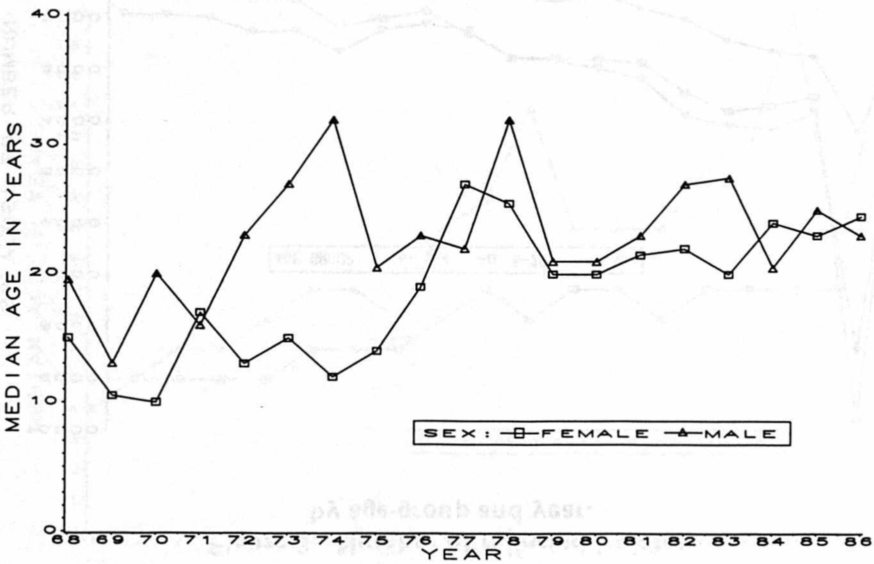


Figure 7. Reported nonhuman sources, by year.

(Not applicable)

Figure 6. Percent of reported isolates, by age-group and sex.

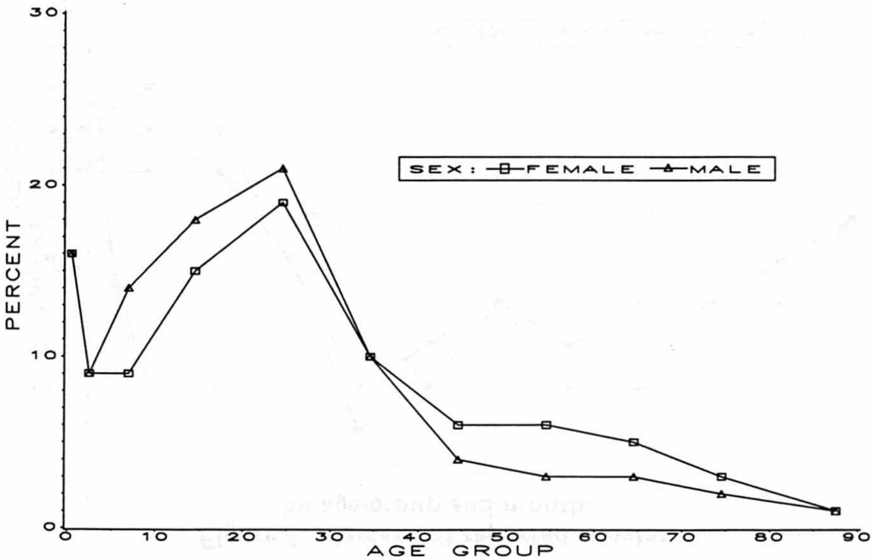
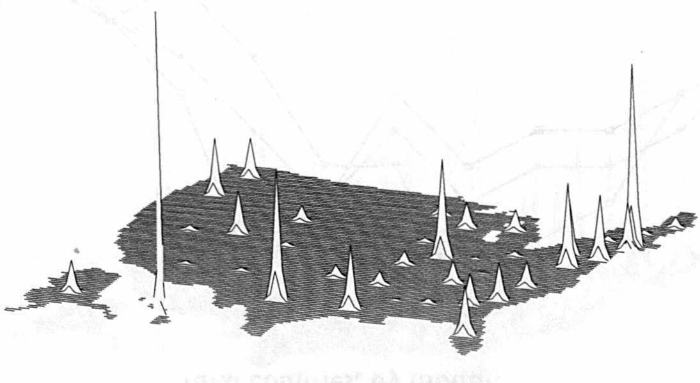


Figure 8. Age-standardized rates of reported isolates, by state.



S. typhi (cases only)

Figure 1. Reported isolates, 3-month moving average, by month and year.

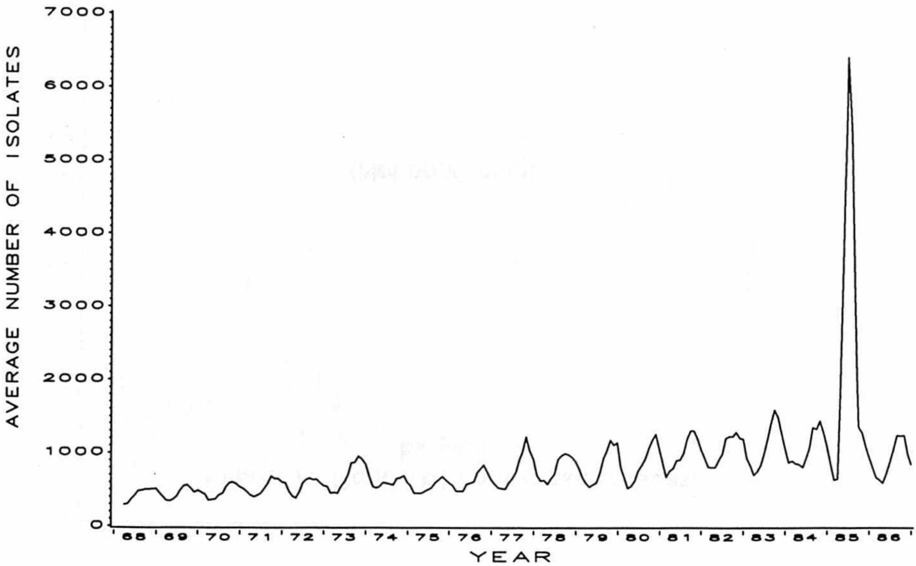


Figure 3. Number of reported isolates, by age-group and year.

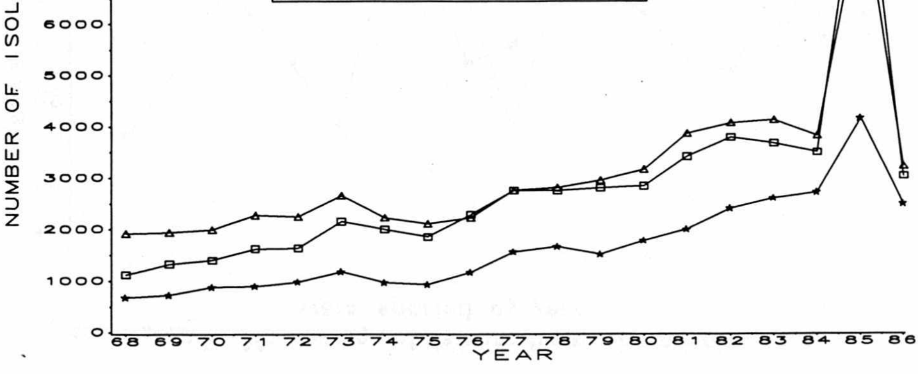


Figure 2. Percent of reported isolates from urban and rural counties, by month.

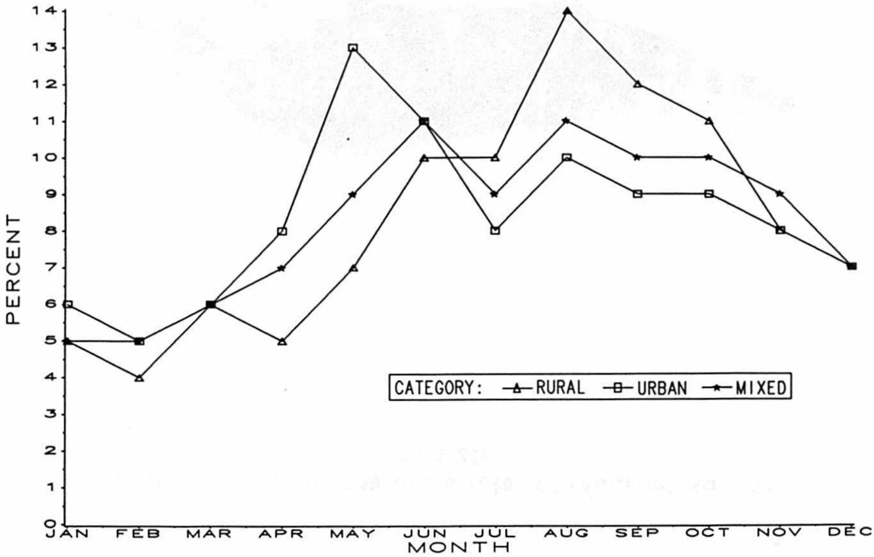
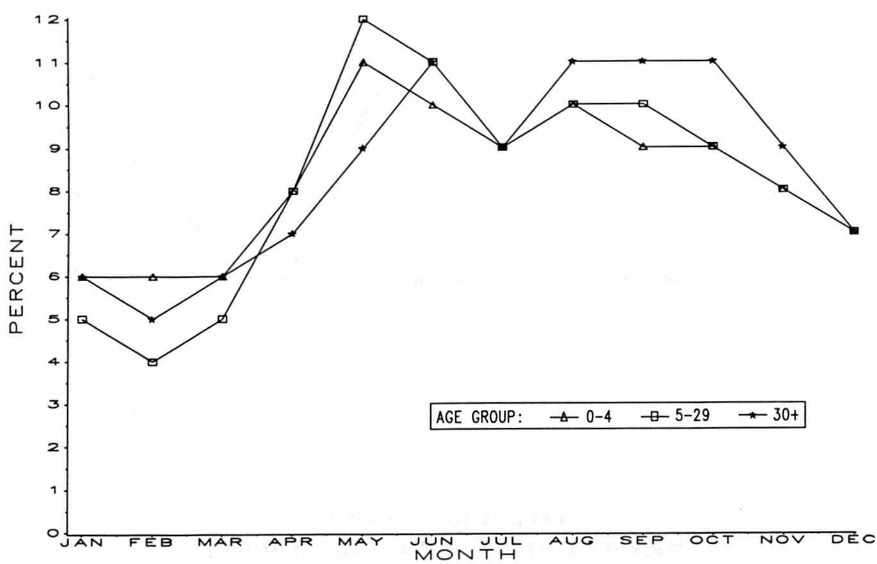


Figure 4. Percent of reported isolates, by age-group and month.



S. typhimurium

Figure 5. Median age of persons from whom isolates were reported, by year.

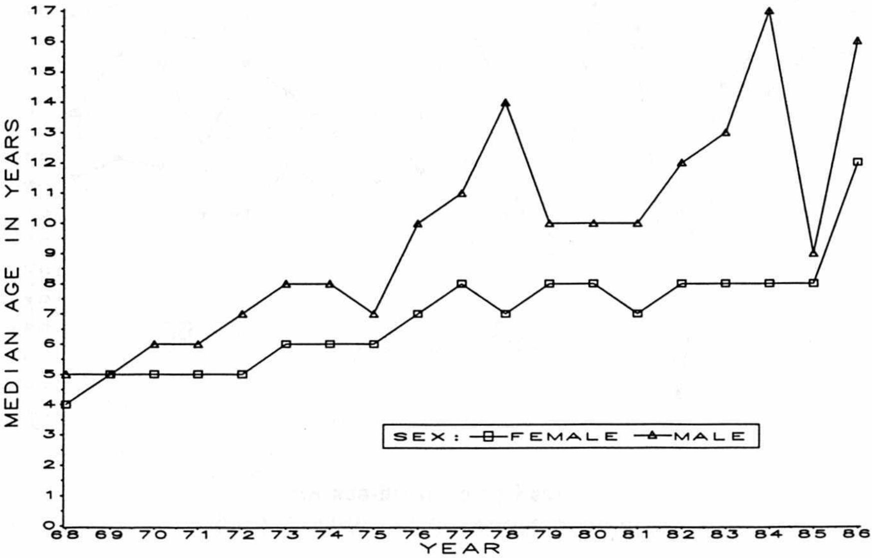


Figure 7. Reported nonhuman sources, by year.

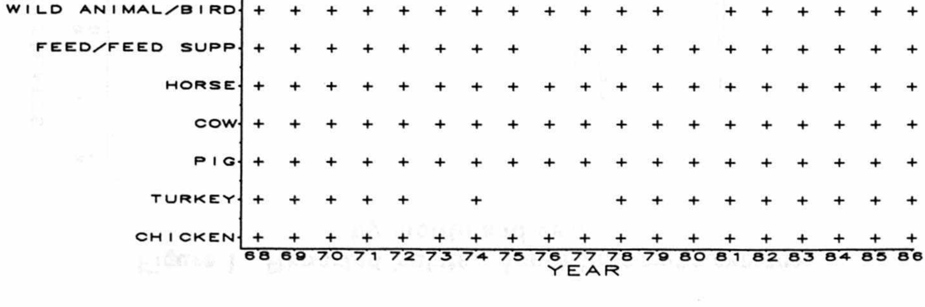


Figure 6. Percent of reported isolates, by age-group and sex.

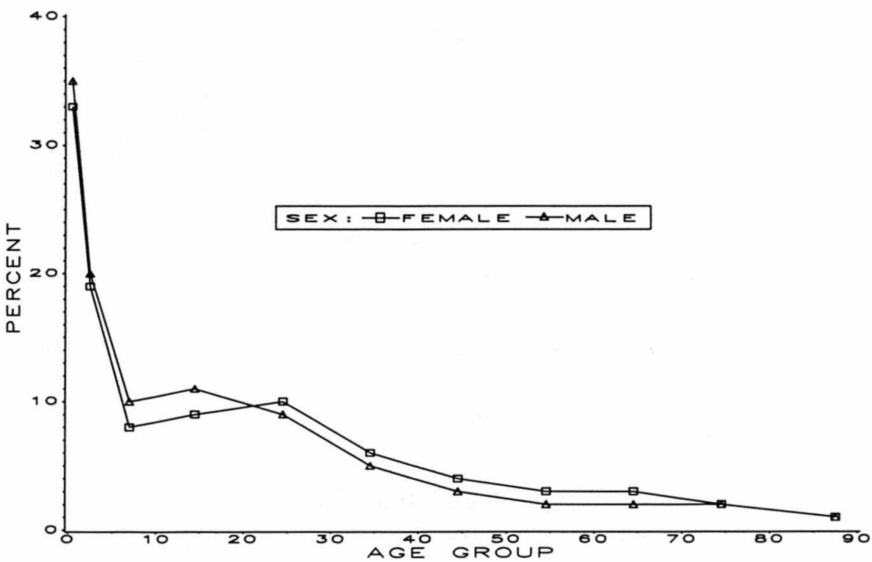
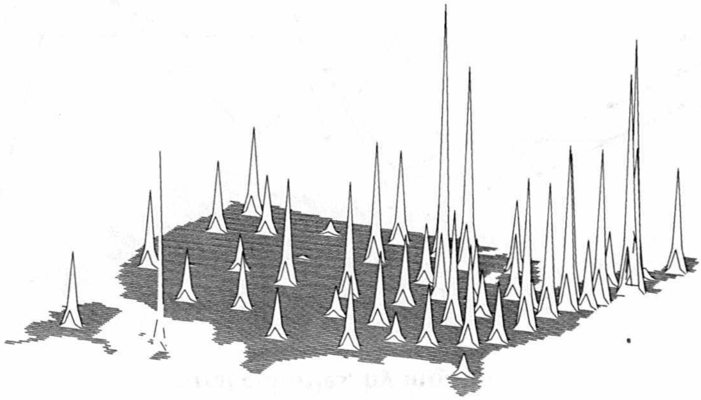


Figure 8. Age-standardized rates of reported isolates, by state.



S. typhimurium

Figure 1. Reported isolates, 3-month moving average, by month and year.

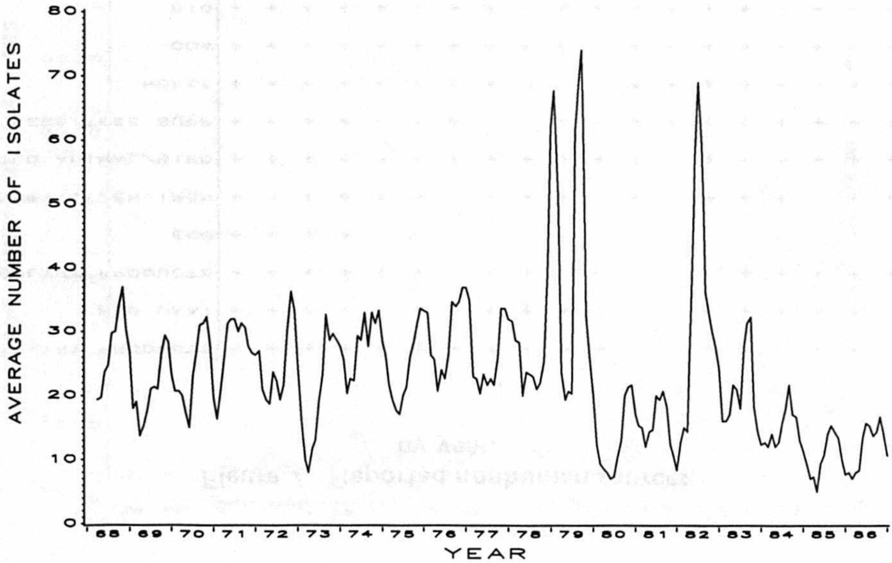


Figure 3. Number of reported isolates, by age-group and year.

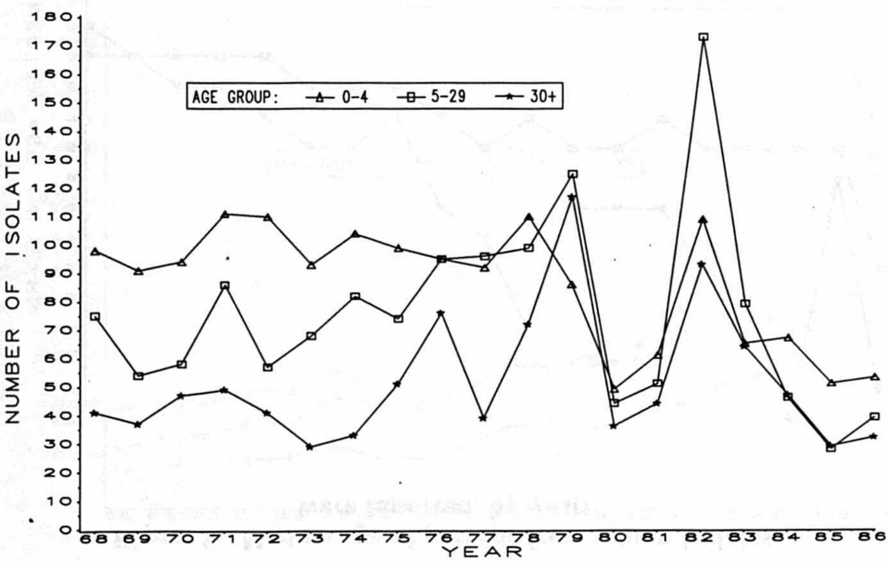


Figure 2. Percent of reported isolates from urban and rural counties, by month.

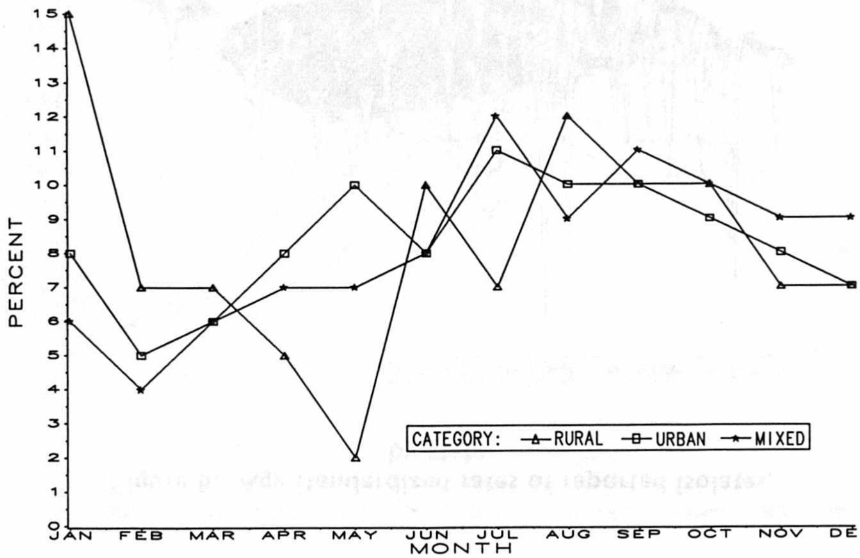
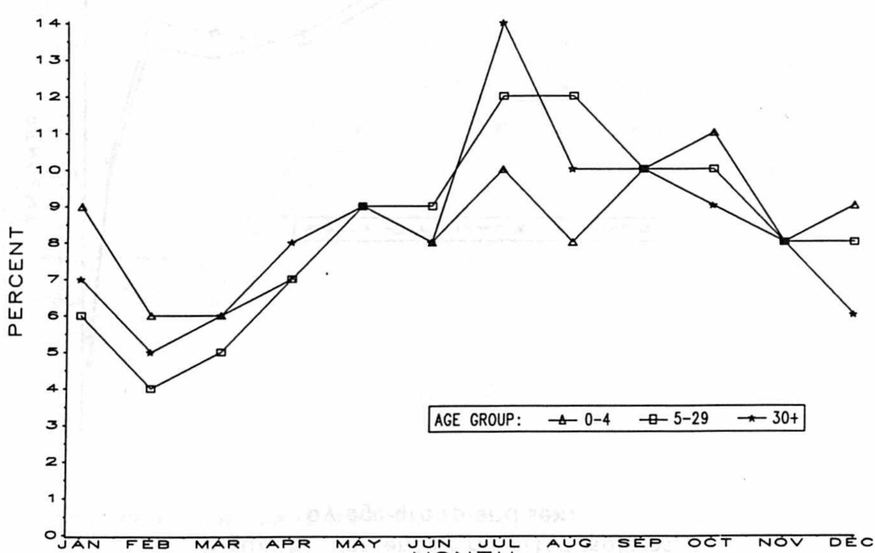


Figure 4. Percent of reported isolates, by age-group and month.



S. typhimurium var. copenhagen

Figure 5. Median age of persons from whom isolates were reported, by year.

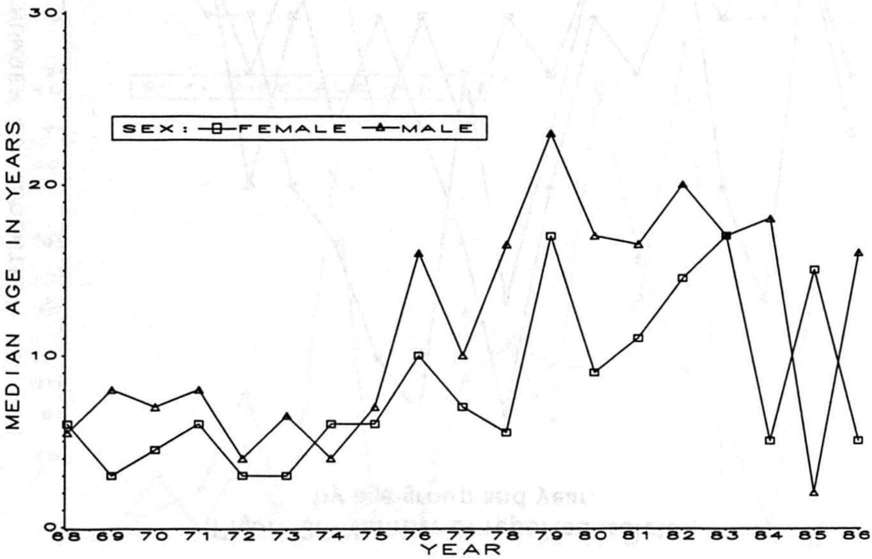
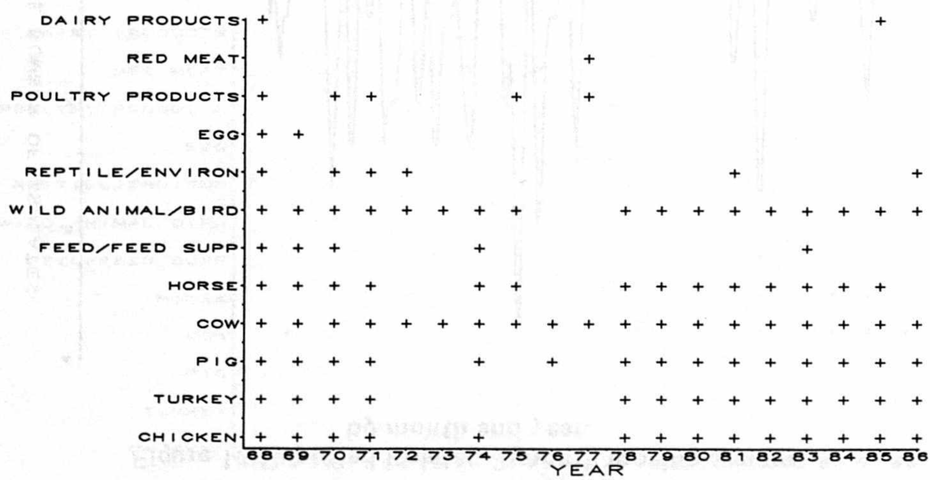


Figure 7. Reported nonhuman sources, by year.



S. typhimurium var. copenhagen

Figure 6. Percent of reported isolates, by age-group and sex.

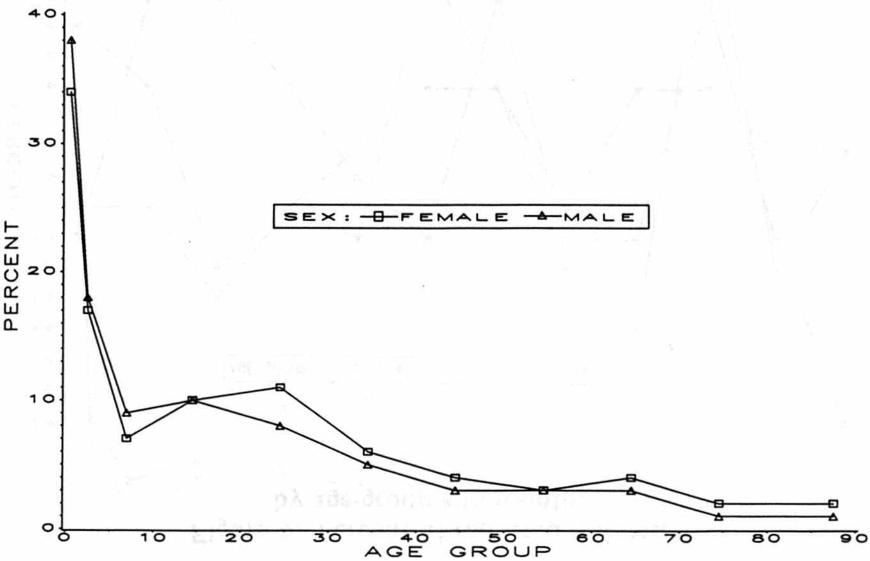


Figure 8. Age-standardized rates of reported isolates, by state.

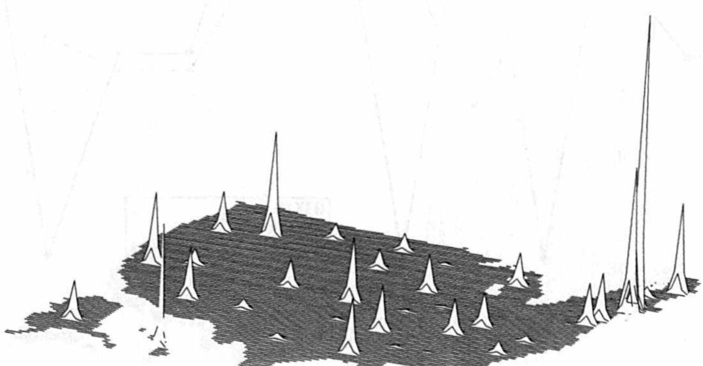


Figure 1. Reported isolates, 3-month moving average, by month and year.

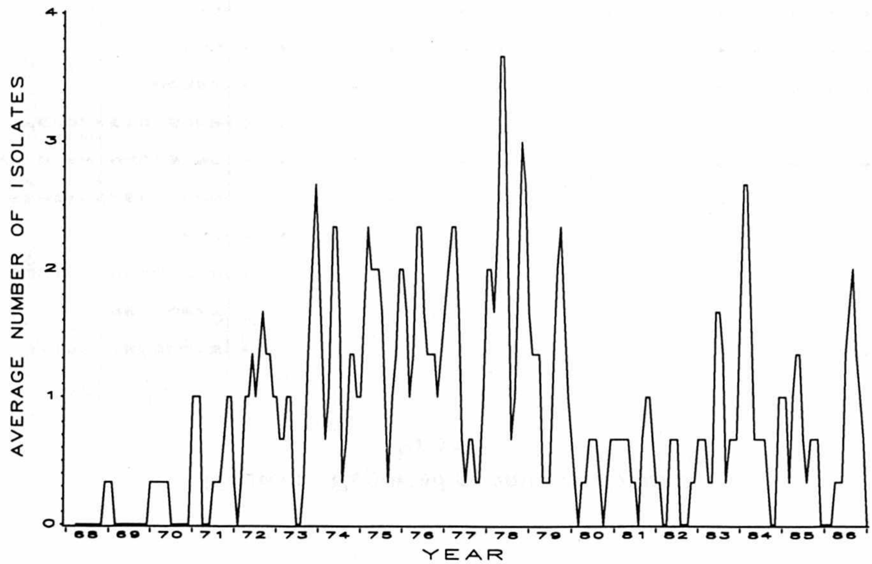


Figure 3. Number of reported isolates, by age-group and year.

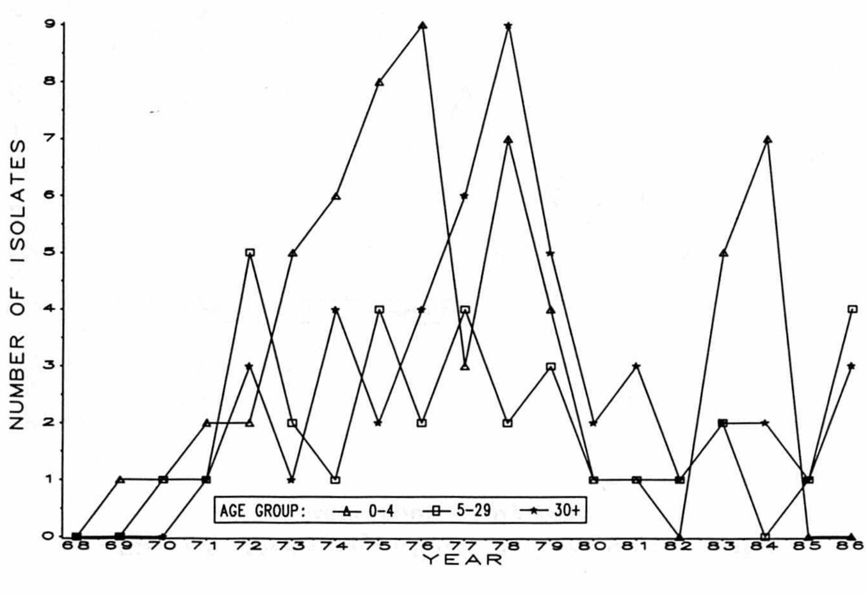


Figure 2. Percent of reported isolates from urban and rural counties, by month.

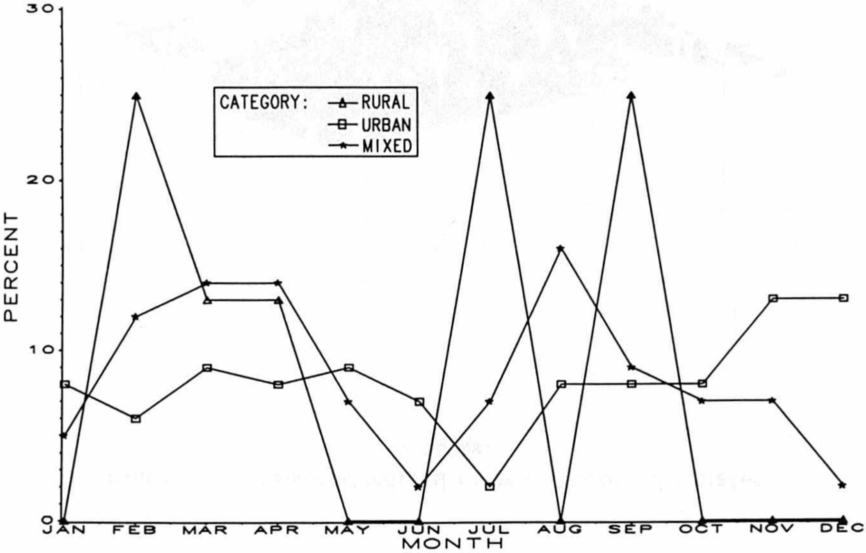
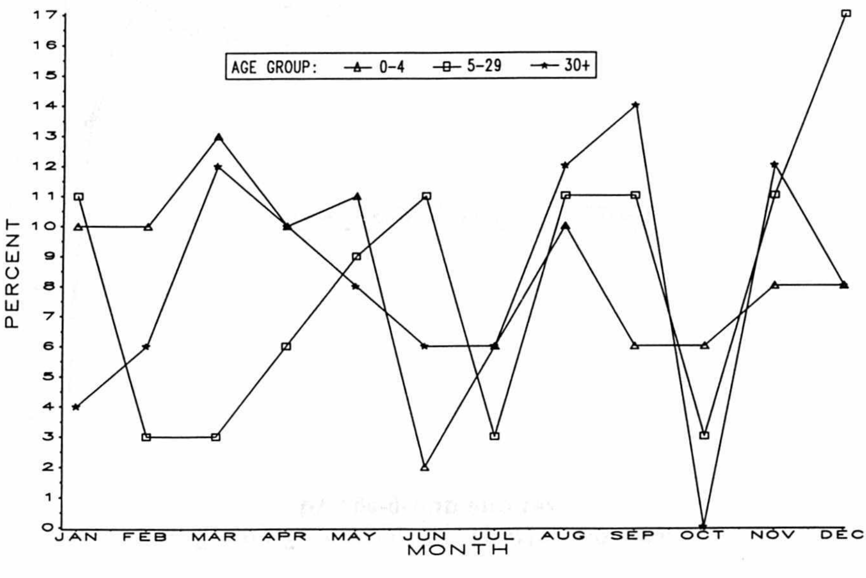


Figure 4. Percent of reported isolates, by age-group and month.



S. uganda

Figure 5. Median age of persons from whom isolates were reported, by year.

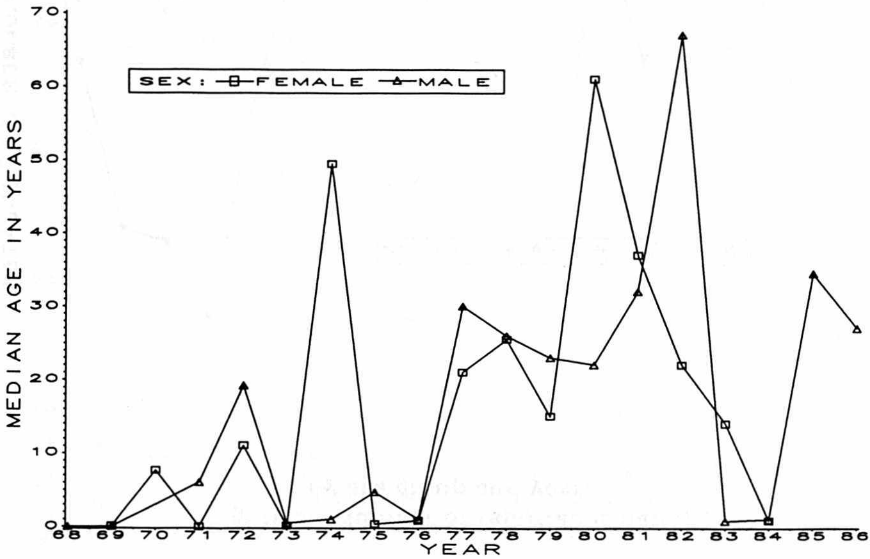


Figure 7. Reported nonhuman sources, by year.

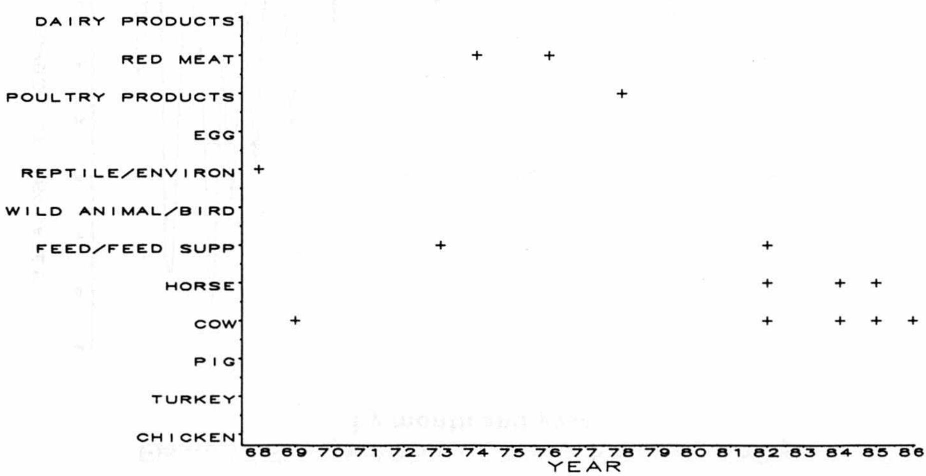


Figure 6. Percent of reported isolates, by age-group and sex.

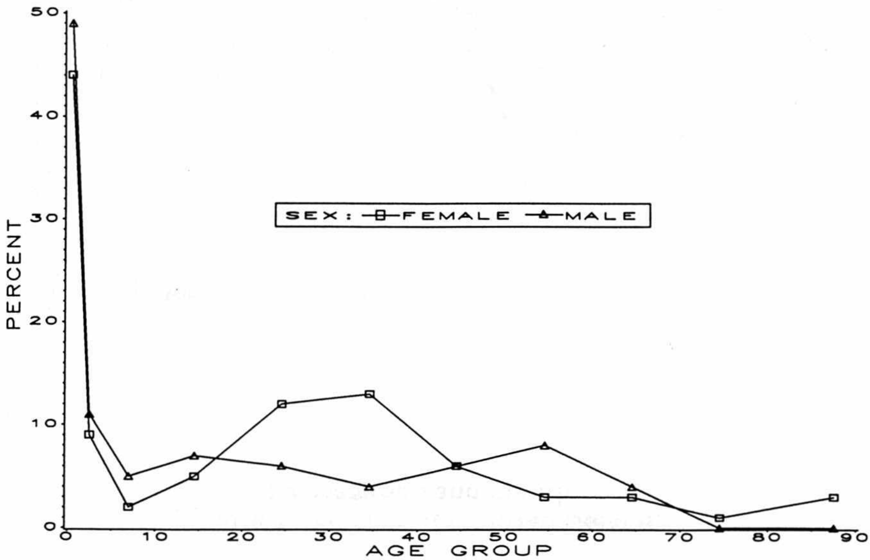


Figure 8. Age-standardized rates of reported isolates, by state.

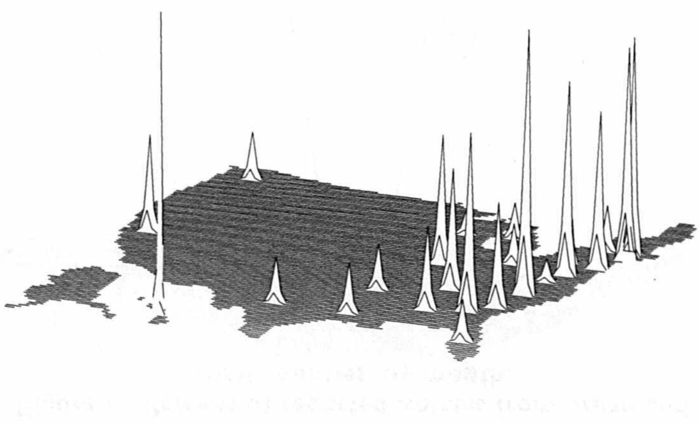


Figure 1. Reported isolates, 3-month moving average, by month and year.

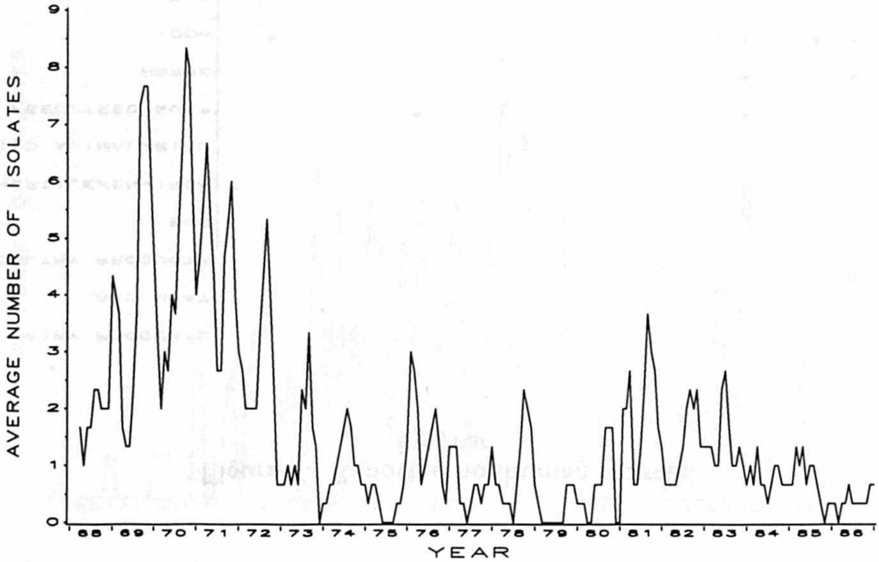


Figure 3. Number of reported isolates, by age-group and year.

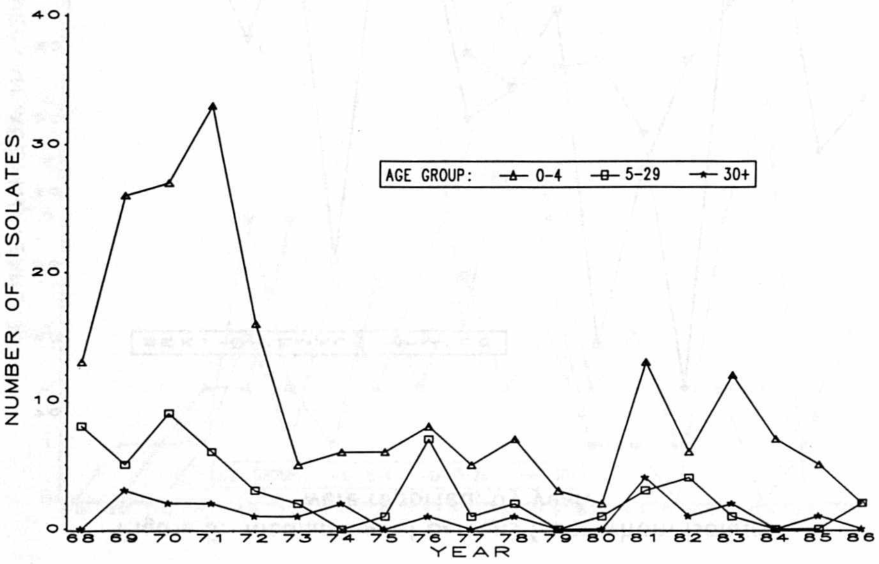


Figure 2. Percent of reported isolates from urban and rural counties, by month.

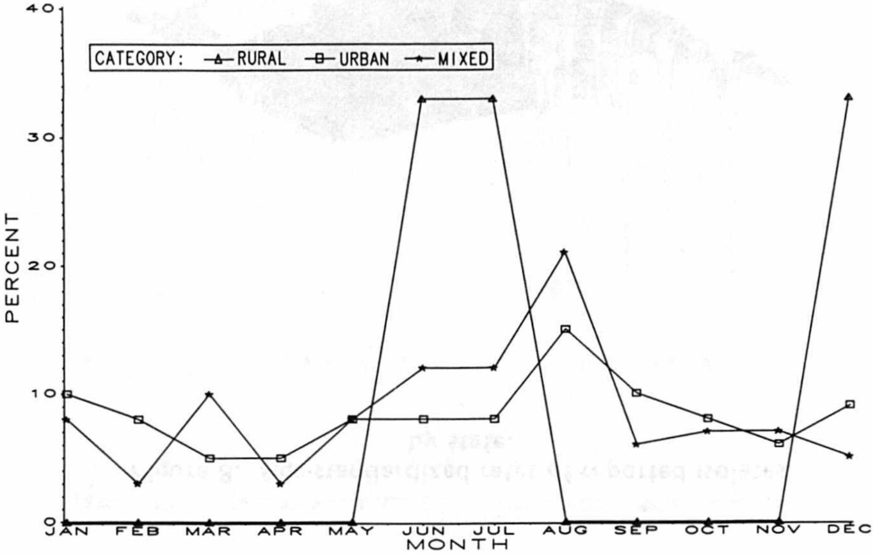
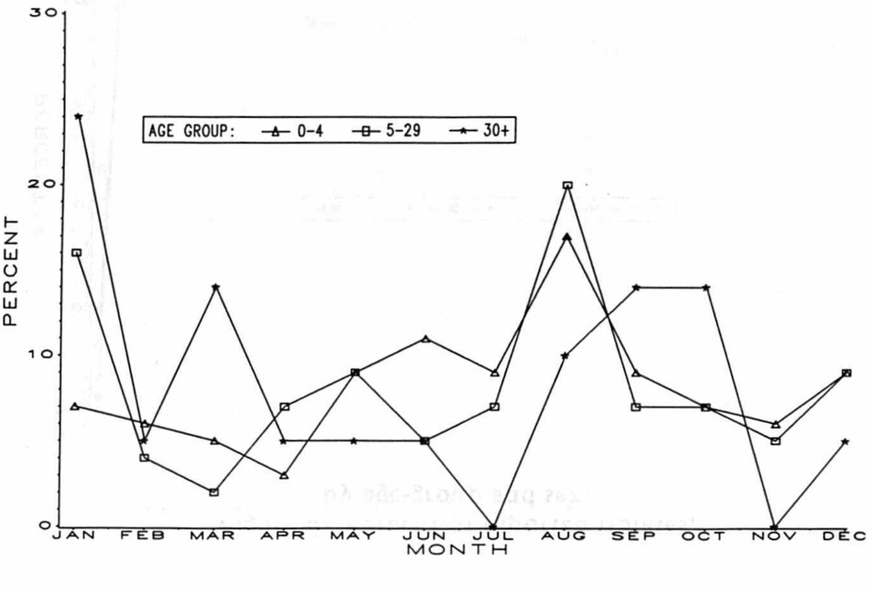


Figure 4. Percent of reported isolates, by age-group and month.



S. urbana

Figure 5. Median age of persons from whom isolates were reported, by year.

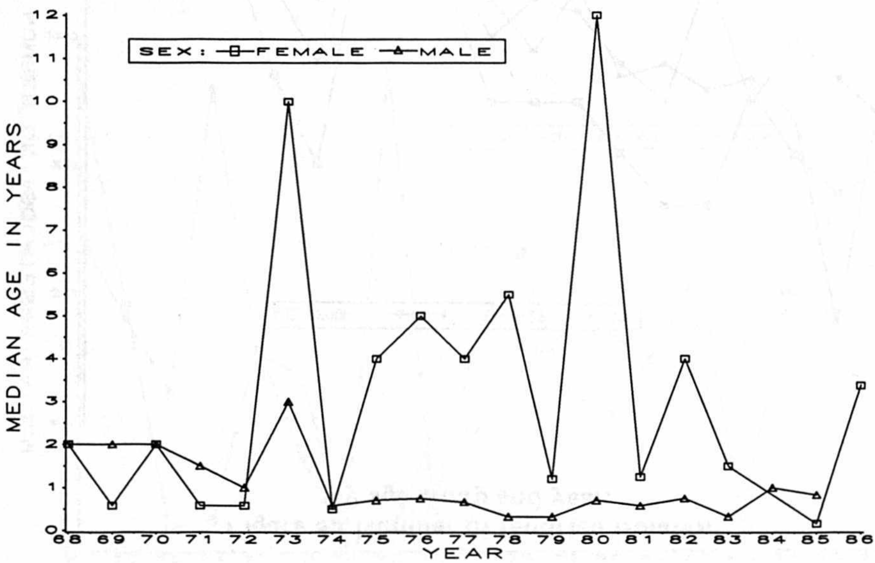


Figure 7. Reported nonhuman sources, by year.

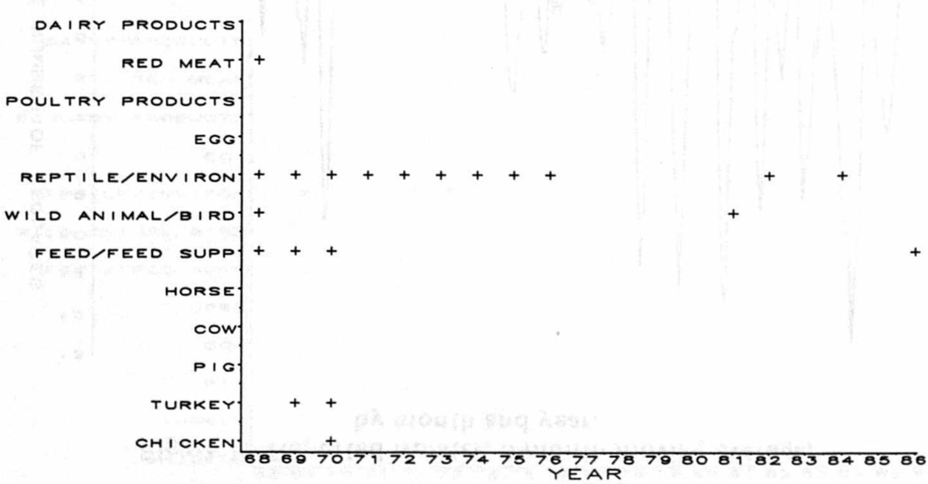


Figure 6. Percent of reported isolates, by age-group and sex.

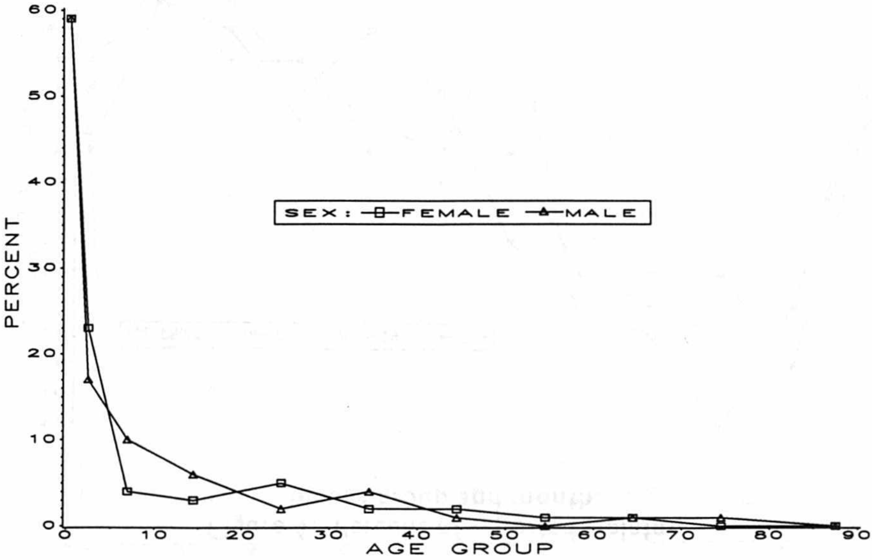


Figure 8. Age-standardized rates of reported isolates, by state.

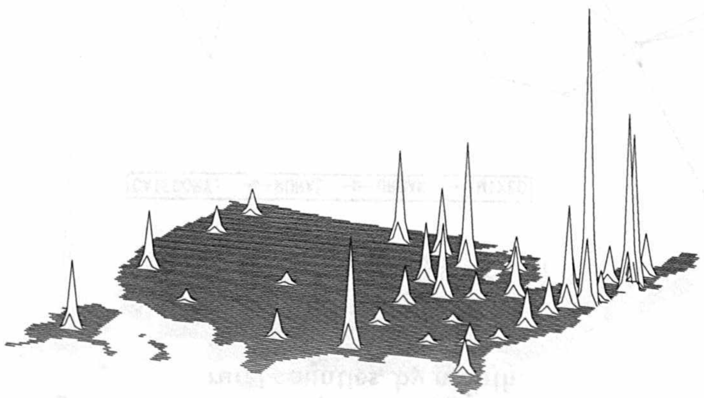


Figure 1. Reported isolates, 3-month moving average, by month and year.

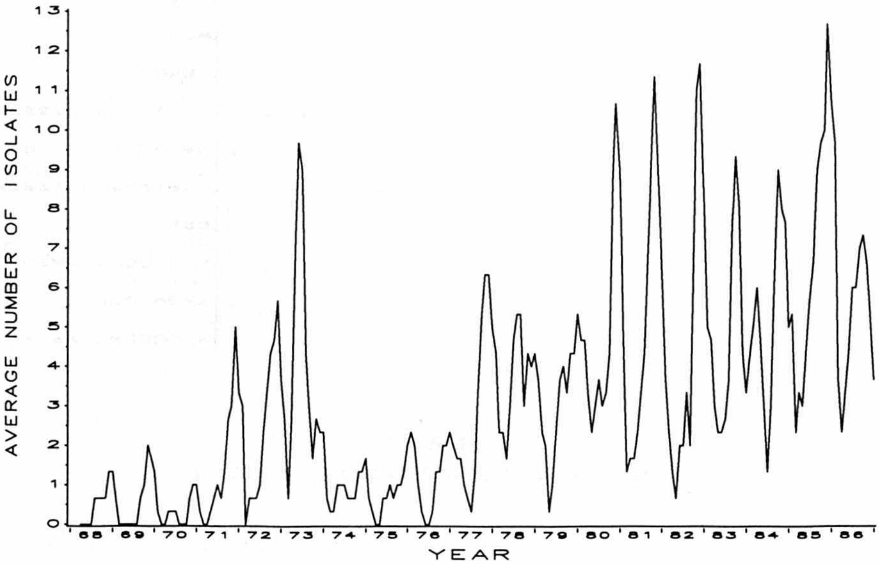


Figure 3. Number of reported isolates, by age-group and year.

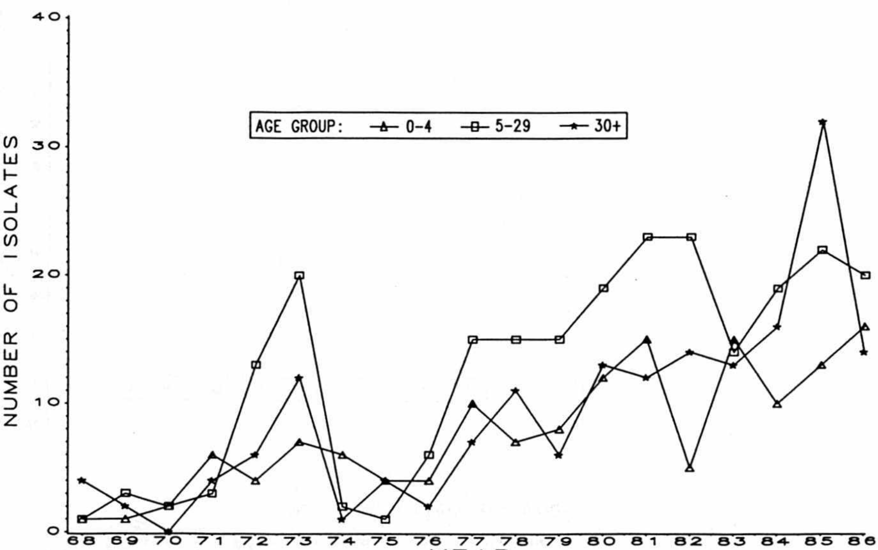


Figure 2. Percent of reported isolates from urban and rural counties, by month.

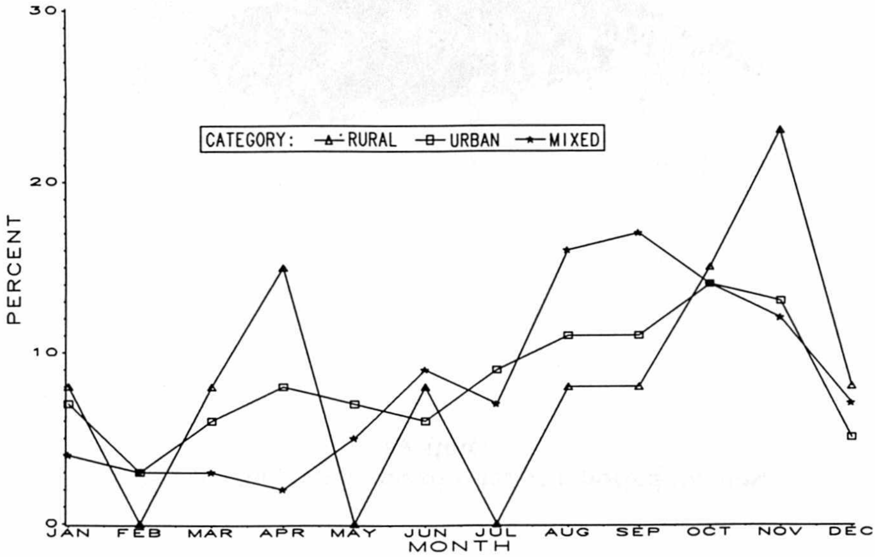


Figure 4. Percent of reported isolates, by age-group and month.

S. virchow

Figure 5. Median age of persons from whom isolates were reported, by year.

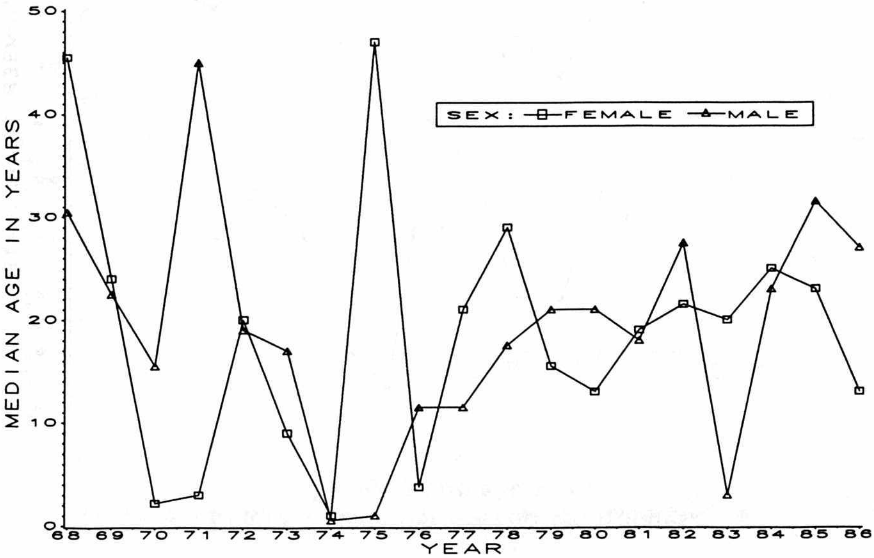


Figure 7. Reported nonhuman sources, by year.

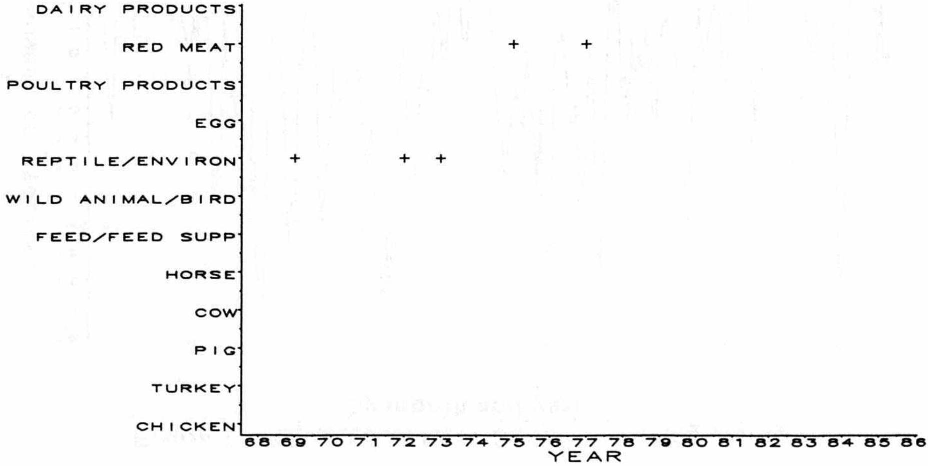


Figure 6. Percent of reported isolates, by age-group and sex.

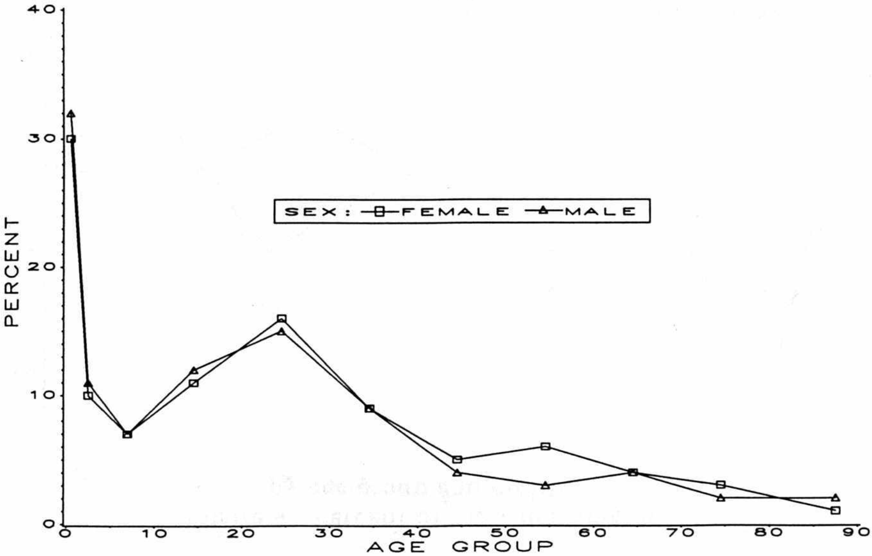


Figure 8. Age-standardized rates of reported isolates, by state.

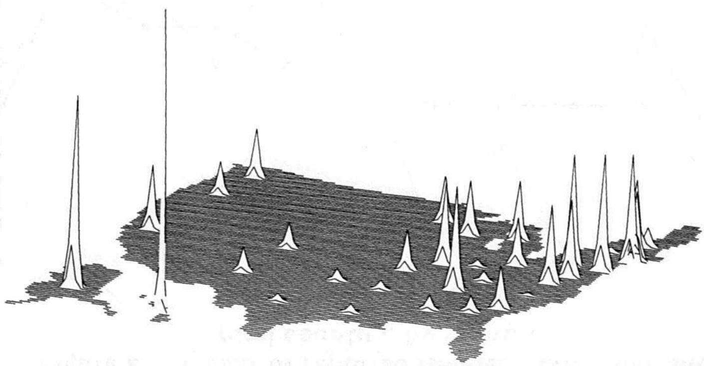


Figure 1. Reported isolates, 3-month moving average, by month and year.

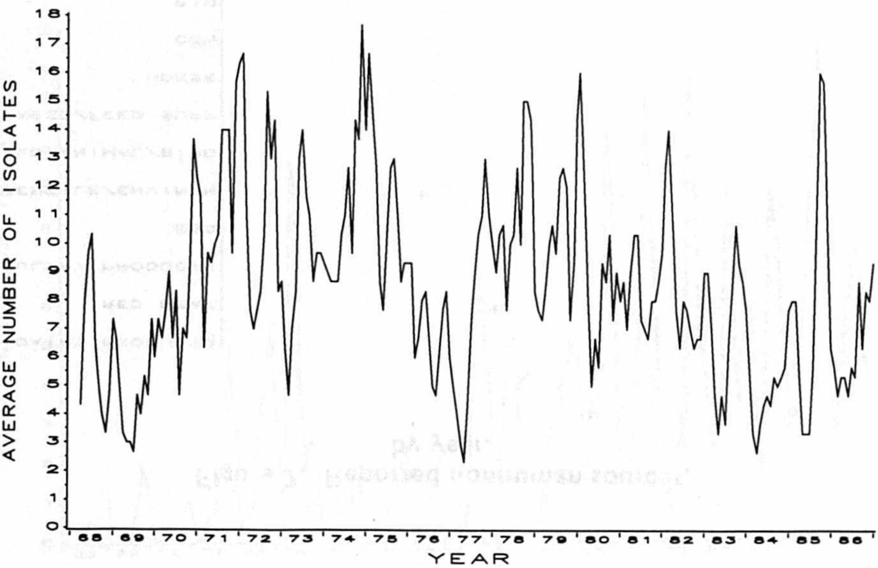


Figure 3. Number of reported isolates, by age-group and year.

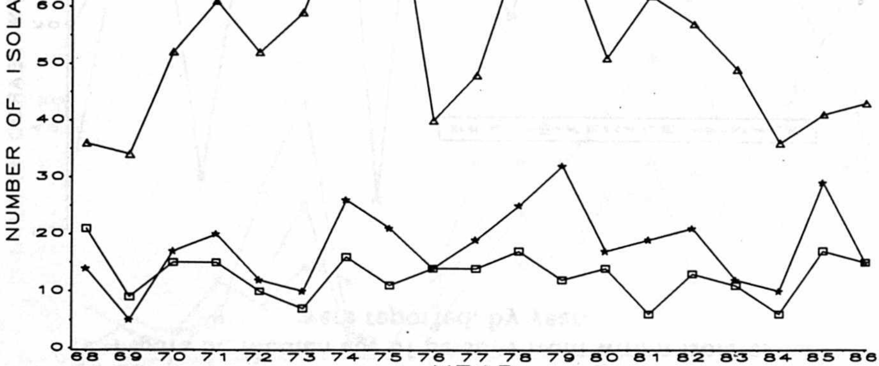


Figure 2. Percent of reported isolates from urban and rural counties, by month.

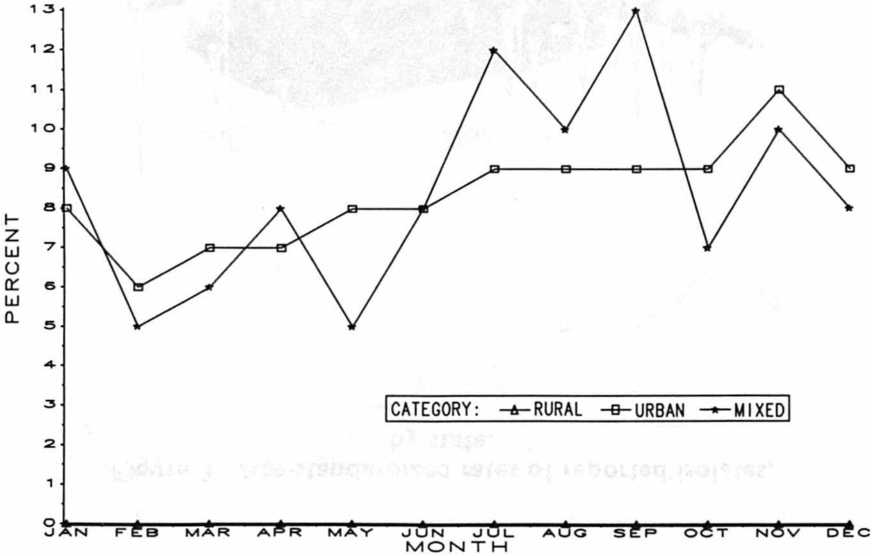
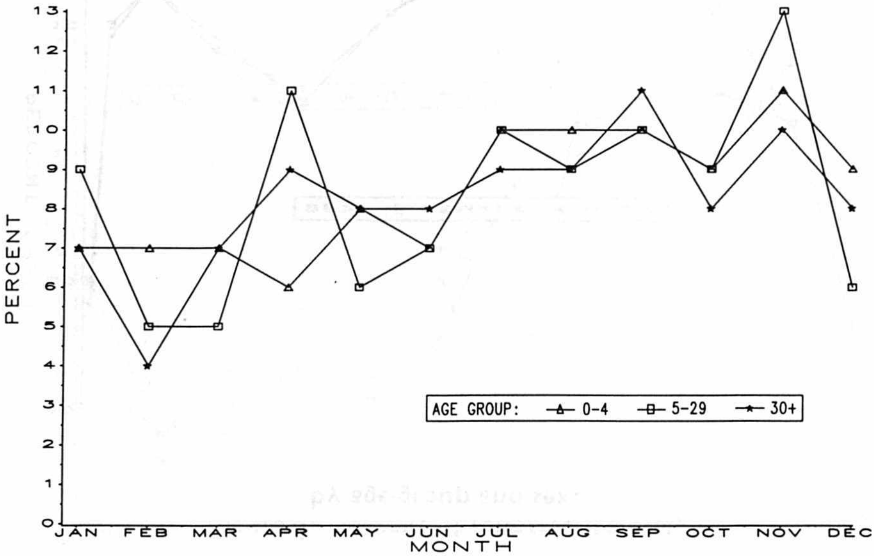


Figure 4. Percent of reported isolates, by age-group and month.



S. welteureden

Figure 5. Median age of persons from whom isolates were reported, by year.

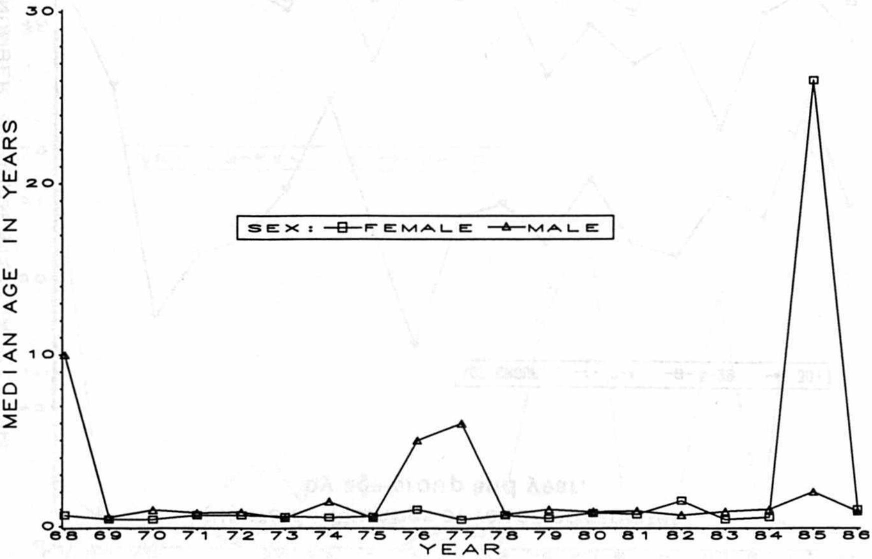


Figure 7. Reported nonhuman sources, by year.

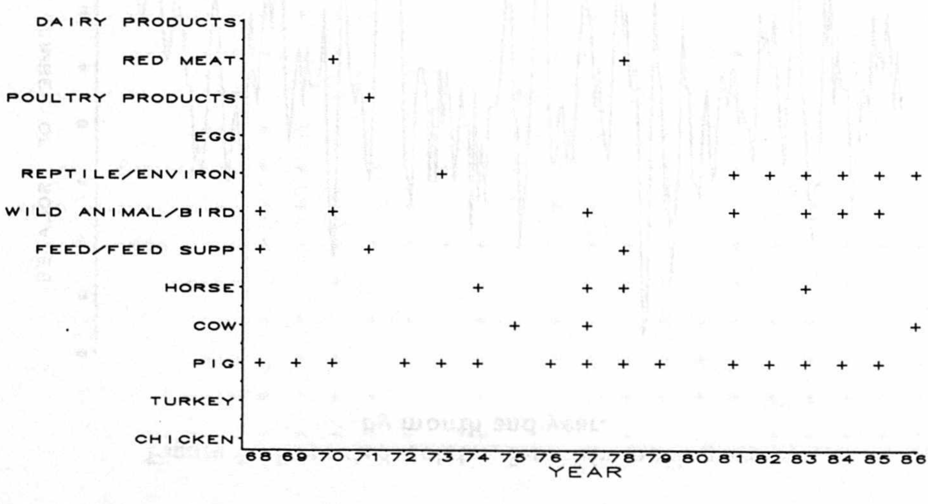


Figure 6. Percent of reported isolates, by age-group and sex.

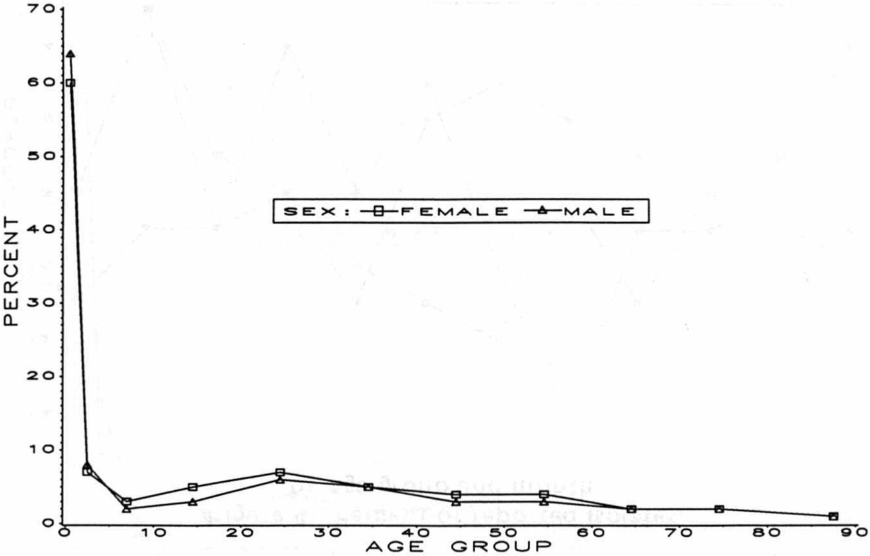
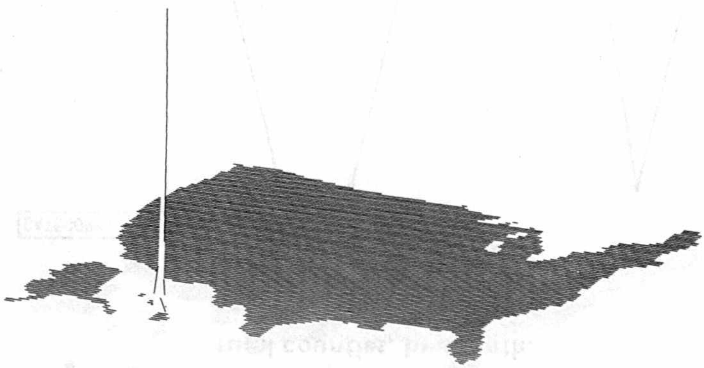


Figure 8. Age-standardized rates of reported isolates, by state.



S. weltevreden

Figure 1. Reported isolates, 3-month moving average, by month and year.

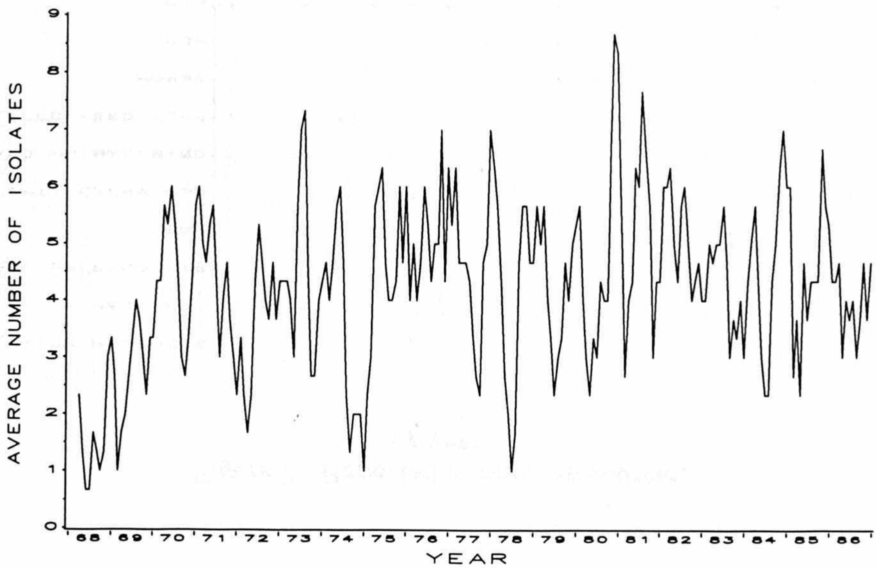


Figure 3. Number of reported isolates, by age-group and year.

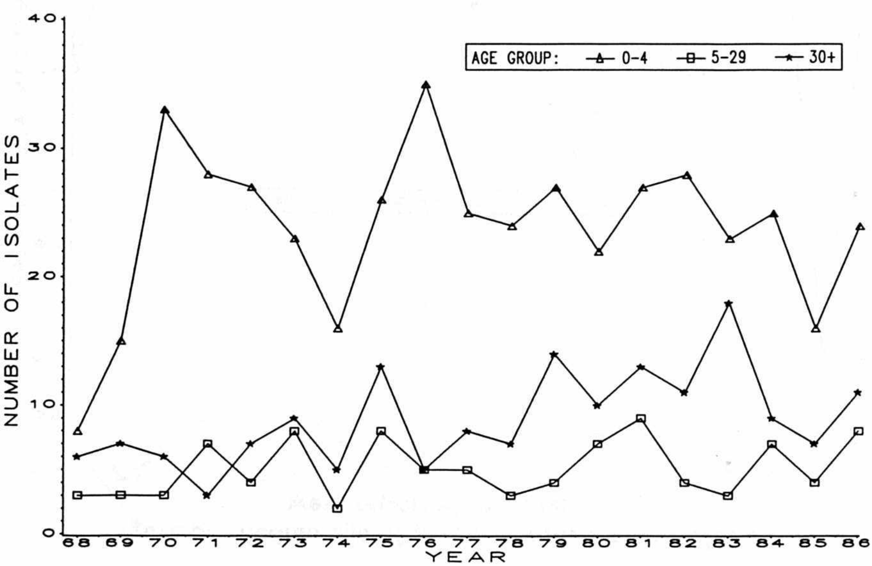
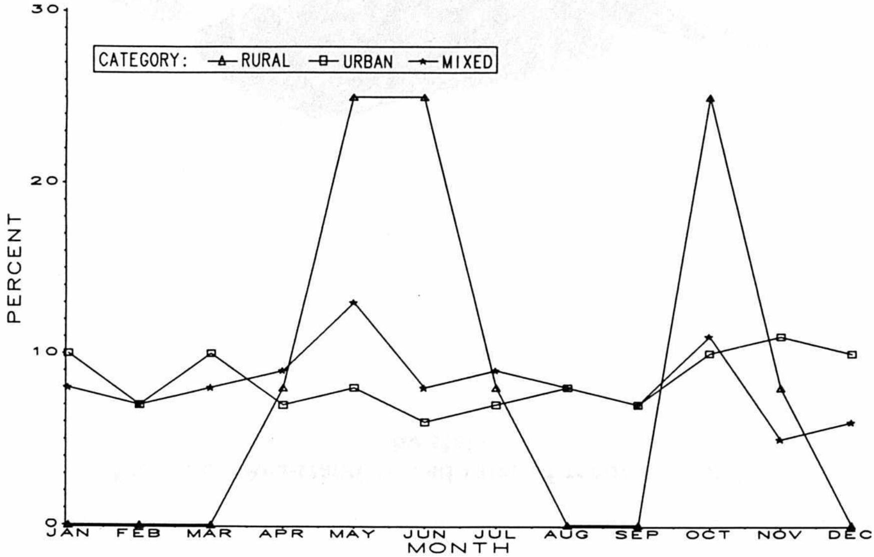


Figure 2. Percent of reported isolates from urban and rural counties, by month.



S. worthington

Figure 4. Percent of reported isolates, by age-group and month.

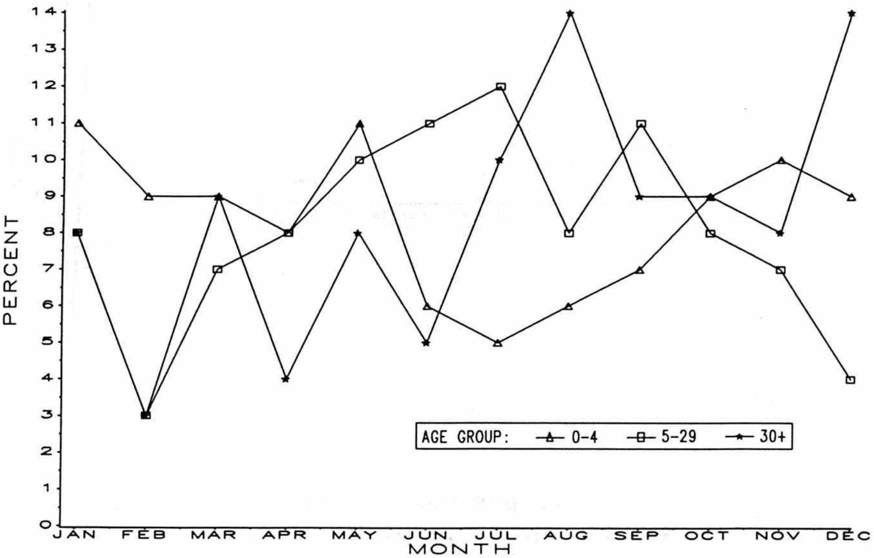


Figure 5. Median age of persons from whom isolates were reported, by year.

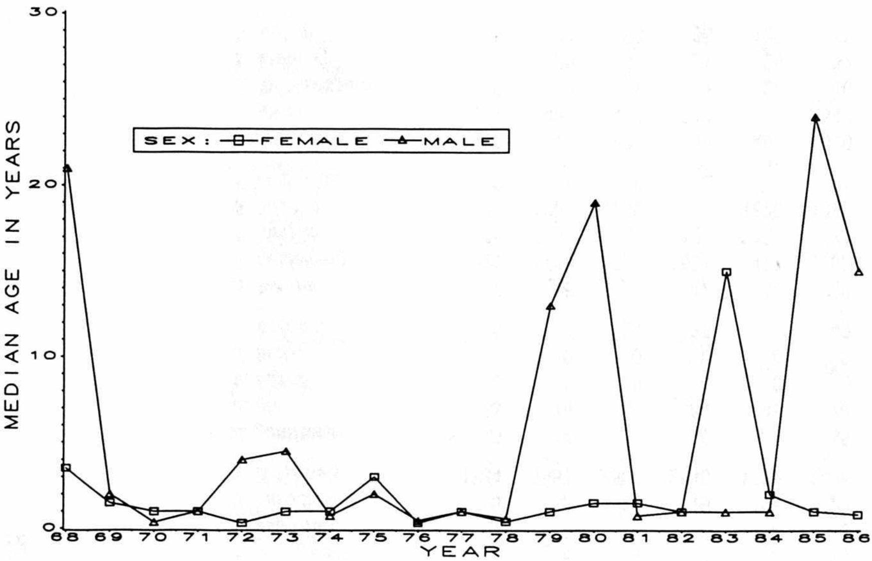


Figure 7. Reported nonhuman sources, by year.

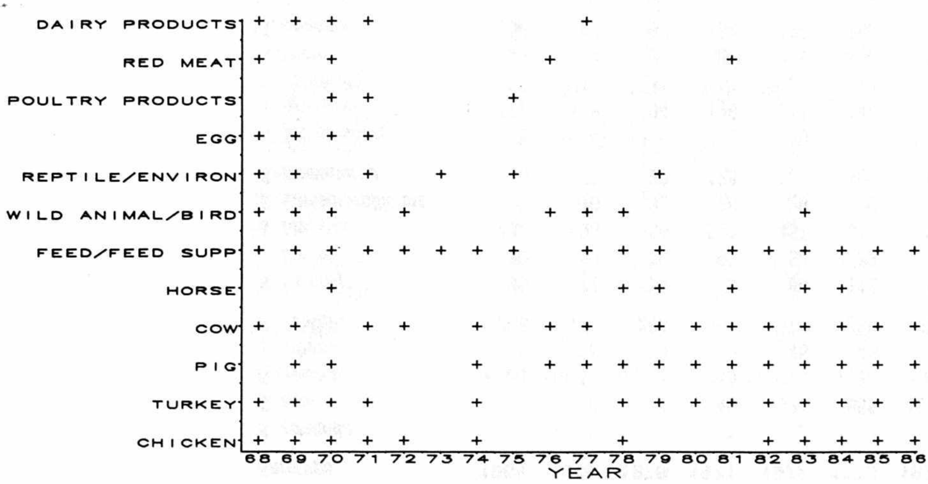


Figure 6. Percent of reported isolates, by age-group and sex.

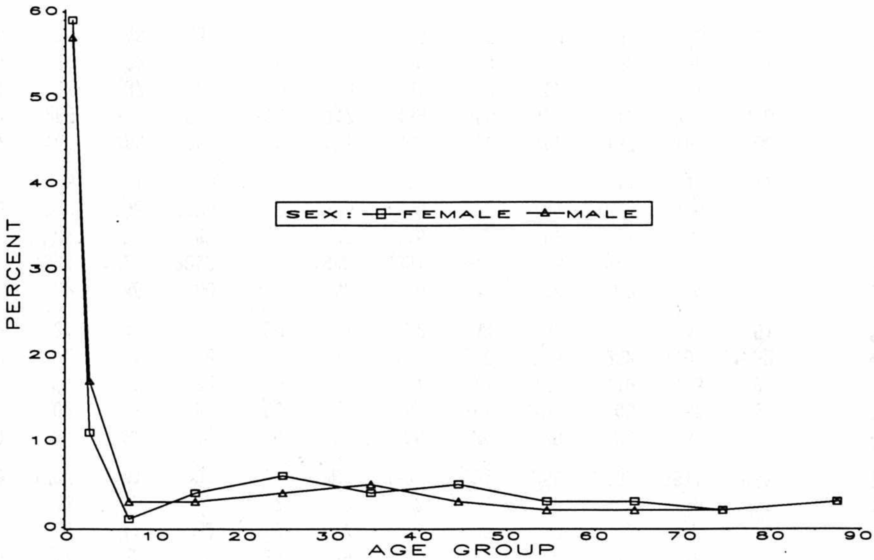
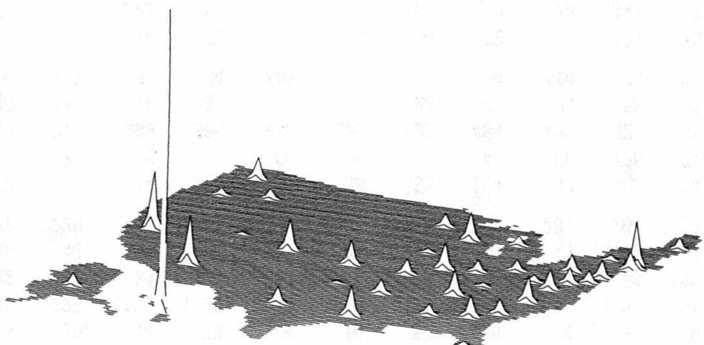


Figure 8. Age-standardized rates of reported isolates, by state.



S. worthington

Serotype	1968	1969	1970	1971	1972	1973	1974
S. adelaide	1	0	5	1	3	1	12
S. agona	1	0	4	40	521	855	1034
S. alachua	23	14	11	15	9	20	34
S. albany	18	16	29	19	45	45	30
S. anatum	208	177	266	301	377	336	331
S. bareilly	95	71	75	49	80	113	83
S. berta	30	40	70	95	54	23	18
S. blockley	487	496	656	593	457	310	294
S. bovismorbificans	2	10	33	26	29	18	60
S. braenderup	139	77	89	128	134	106	88
S. brandenburg	5	4	5	8	10	5	14
S. bredeney	172	128	194	190	211	144	175
S. california	22	13	31	14	24	17	19
S. cerro	12	24	23	24	19	22	27
S. chester	58	49	87	64	127	260	83
S. choleraesuis	15	12	10	14	15	11	20
S. choleraesuis var kunzendorf	29	15	21	27	25	25	20
S. cubana	59	145	159	261	70	29	27
S. derby	409	332	486	534	631	557	552
S. drypool	6	12	10	19	17	19	16
S. dublin	11	7	8	23	32	28	43
S. duesseldorf	3	6	14	7	20	23	24
S. eastbourne	1	5	7	9	4	6	114
S. eimsbuettel	5	32	22	19	28	23	10
S. enteritidis	1734	1957	2509	2240	1710	1458	1439
S. gaminara	16	14	17	19	37	36	30
S. give	65	74	83	84	97	78	72
S. haardt	0	0	0	0	0	0	0
S. hadar	1	0	0	0	0	0	0
S. hartford	16	41	24	38	30	40	28
S. havana	7	15	6	17	18	23	22
S. heidelberg	1322	1410	1702	1651	1477	1152	1148
S. indiana	84	91	108	107	157	72	64
S. infantis	941	1082	1209	1416	1670	1380	1286
S. inverness	2	6	6	10	7	15	5
S. java	196	173	458	583	466	319	207
S. javiana	517	464	416	514	566	547	409
S. johannesburg	9	9	7	4	20	16	34
S. kentucky	17	28	57	34	36	34	35
S. kottbus	5	14	53	66	186	65	58
S. litchfield	92	123	183	156	176	166	106
S. livingstone	44	35	29	57	56	26	31
S. london	1	16	25	64	88	172	232
S. manhattan	199	253	336	418	328	184	391
S. mbandaka	0	0	0	0	0	0	0

Table 2. Reported isolates of common *Salmonella* serotypes, by year, United States, 1968-1986

1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
21	3	20	44	70	48	46	57	45	78	84	97
1326	1445	1223	1186	1130	1374	1217	1130	1396	942	1193	912
24	22	16	34	19	10	30	88	72	69	48	120
46	36	46	55	60	38	25	29	35	43	30	41
253	227	229	264	351	280	367	275	354	281	261	224
76	72	114	74	148	129	98	88	104	93	109	147
16	30	30	26	28	48	89	57	44	100	126	240
241	249	278	499	395	382	529	409	454	420	321	318
34	113	143	78	51	21	29	28	47	24	53	32
60	110	107	230	204	240	236	213	324	414	334	616
7	16	10	10	22	16	33	38	58	88	171	132
158	173	133	223	184	210	201	162	140	178	149	134
11	2	15	27	23	26	13	23	8	7	5	2
22	21	21	55	79	74	112	121	157	155	207	154
104	69	77	55	79	53	181	139	78	85	74	53
28	35	29	30	41	35	44	35	27	29	42	38
25	24	41	49	78	84	96	83	54	66	42	25
25	18	29	44	28	32	41	19	22	23	9	13
419	346	337	352	375	384	345	393	507	366	285	334
12	14	22	22	21	18	90	71	19	27	12	11
40	52	63	75	53	99	108	126	182	190	158	137
19	17	35	23	24	29	31	23	18	24	16	13
7	4	11	2	18	7	8	5	10	6	5	4
7	3	5	7	7	3	6	3	2	1	0	1
1510	1207	1461	1904	2694	1884	2532	3322	3256	3709	5611	5967
20	21	27	26	29	23	39	30	49	30	37	23
106	62	97	87	106	73	97	108	121	85	56	67
4	11	5	30	59	73	57	126	138	110	113	91
0	2	1	8	18	45	137	146	325	262	1197	1552
42	31	46	50	39	29	32	44	37	29	48	61
35	52	48	46	48	54	76	71	114	52	62	69
1417	1971	1721	2092	2515	1940	2051	2645	3746	3575	5196	5595
31	45	73	67	57	90	115	72	67	41	60	74
1183	999	1298	1229	1450	1390	1506	1227	1272	1234	1106	1104
4	5	1	3	4	3	10	13	22	11	12	12
192	147	186	255	198	171	310	176	166	137	103	100
424	289	369	529	509	417	459	456	489	310	345	416
21	35	37	36	60	63	84	62	52	45	17	46
21	29	29	26	30	47	48	34	51	62	46	41
104	70	43	31	44	34	9	22	4	40	123	67
160	98	214	129	255	182	319	243	135	139	101	133
18	22	21	30	52	42	32	60	41	42	50	35
148	179	187	182	183	134	161	96	71	54	55	48
253	202	138	120	113	110	143	157	180	128	119	115
0	0	0	2	14	37	106	201	251	202	168	162

Serotype	1968	1969	1970	1971	1972	1973	1974
S. meleagridis	4	14	26	24	22	17	19
S. miami	118	106	71	93	88	58	49
S. minnesota	19	27	34	30	44	22	25
S. mississippi	50	45	66	65	107	124	132
S. montevideo	270	308	399	373	364	466	346
S. muenchen	210	241	275	388	418	436	300
S. muenster	31	41	25	26	30	25	29
S. newbrunswick	5	10	5	6	35	7	5
S. newington	42	34	47	42	43	22	41
S. newport	1239	1593	1709	1700	2223	2055	1645
S. norwich	41	24	21	32	36	35	51
S. ohio	1	16	8	15	16	14	42
S. oranienburg	293	262	400	405	626	432	493
S. oslo	14	17	28	44	23	60	42
S. panama	228	326	241	283	231	336	269
S. paratyphi A	13	14	5	14	10	19	32
S. paratyphi B	114	164	199	248	208	165	85
S. poona	75	80	94	95	97	141	81
S. reading	73	67	145	172	96	114	66
S. rubislaw	33	28	29	27	33	57	43
S. saintpaul	1139	969	1163	921	1014	1184	933
S. sandiego	106	74	272	147	314	164	137
S. saphra	20	14	15	14	11	12	20
S. schwarzengrund	55	84	61	83	59	104	77
S. senftenberg	65	77	84	220	218	164	97
S. siegburg	8	24	53	72	54	51	77
S. stanley	7	13	13	17	10	18	23
S. tennessee	85	43	54	75	52	58	65
S. thompson	669	1045	964	837	673	534	402
S. typhi	609	541	533	586	538	683	578
S. typhimurium	5133	5412	5697	6459	6521	8323	7011
S. typhimurium var copenhagen	314	254	282	345	288	250	338
S. uganda	1	1	4	4	13	13	15
S. urbana	29	49	57	53	30	15	12
S. virchow	6	7	4	21	29	47	11
S. weltevreden	78	52	105	151	113	117	144
S. worthington	22	34	58	48	45	54	37
other serotypes	1361	1471	1515	1468	1527	1459	1405
total	19659	21071	24304	25561	26326	26634	23902

Common serotypes, U.S., 1968-1986 (continued)

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
	26	29	17	15	26	18	33	151	41	18	24	11
	33	37	19	25	35	21	36	75	70	25	41	52
	23	27	18	9	21	19	20	20	10	20	19	16
	121	112	136	141	139	110	136	135	156	116	132	152
	305	318	458	706	625	658	727	882	658	637	715	775
	362	372	303	293	416	360	650	439	499	525	586	694
	39	28	29	80	69	65	137	105	119	76	107	101
	10	3	10	3	66	9	5	25	7	6	9	13
	30	36	51	29	36	30	25	46	50	34	27	16
	1521	1347	2148	1905	1943	1593	2167	2225	2071	1615	2452	2431
	49	46	66	91	60	63	49	60	78	43	44	46
	25	61	104	151	126	122	235	226	196	249	264	239
	463	463	434	477	612	483	580	607	578	502	501	484
	22	28	35	22	30	25	43	36	25	19	12	17
	160	186	257	225	248	236	229	262	206	223	248	235
	29	29	37	56	64	55	52	72	50	51	62	52
	86	68	61	86	78	101	110	110	110	121	86	103
	70	83	92	92	152	87	111	116	88	88	224	83
	95	40	105	93	92	47	52	63	85	76	105	74
	50	32	39	52	69	33	58	63	60	23	48	54
	881	535	568	604	872	753	867	814	711	654	442	558
	123	102	129	117	120	120	103	137	105	99	69	79
	15	8	6	12	9	10	16	30	27	17	10	13
	103	96	118	167	236	258	257	262	219	211	149	114
	183	62	66	69	106	82	210	131	116	104	116	170
	54	57	59	60	28	29	28	17	16	11	13	12
	22	18	39	29	25	24	61	39	37	43	45	57
	62	43	47	70	65	102	109	59	136	42	55	58
	328	248	210	242	353	272	361	688	377	350	444	539
	532	542	542	604	659	588	615	524	528	458	470	541
	6505	7441	9271	9621	9978	10089	11991	12557	12934	12550	28034	10742
	303	358	307	407	414	159	176	421	239	174	120	146
	20	18	15	24	14	5	7	4	13	10	7	9
	7	18	7	10	3	7	25	16	16	10	8	5
	11	14	37	43	39	61	62	57	55	64	88	58
	130	77	94	133	133	97	102	102	80	60	94	80
	62	62	55	47	54	55	60	60	51	57	51	50
	1637	1552	2046	1725	1791	2011	2949	3335	3325	2674	2470	3573
	23171	23174	27071	28881	31771	29338	35752	37897	38886	36061	56750	42028