**Title**

A demographic & clinical comparison of American Indian emergency department patients with emergency department patients of other ethnicities at San Francisco General Hospital

Permalink

https://escholarship.org/uc/item/8702t6wp

Author

Caruso, J. Michael

Publication Date

2000

Peer reviewed|Thesis/dissertation

A Demographic & Clinical Comparison
Of
American Indian Emergency Department Patients
With
Emergency Department Patients Of Other Ethnicities
At
San Francisco General Hospital

By

J. Michael Caruso
UCSF MSIV
Class of 2000
UC Regents Scholar

A Thesis

Submitted In Partial Satisfaction Of The
Requirements For The M.D. With Thesis Program
Of The
University of California, San Francisco
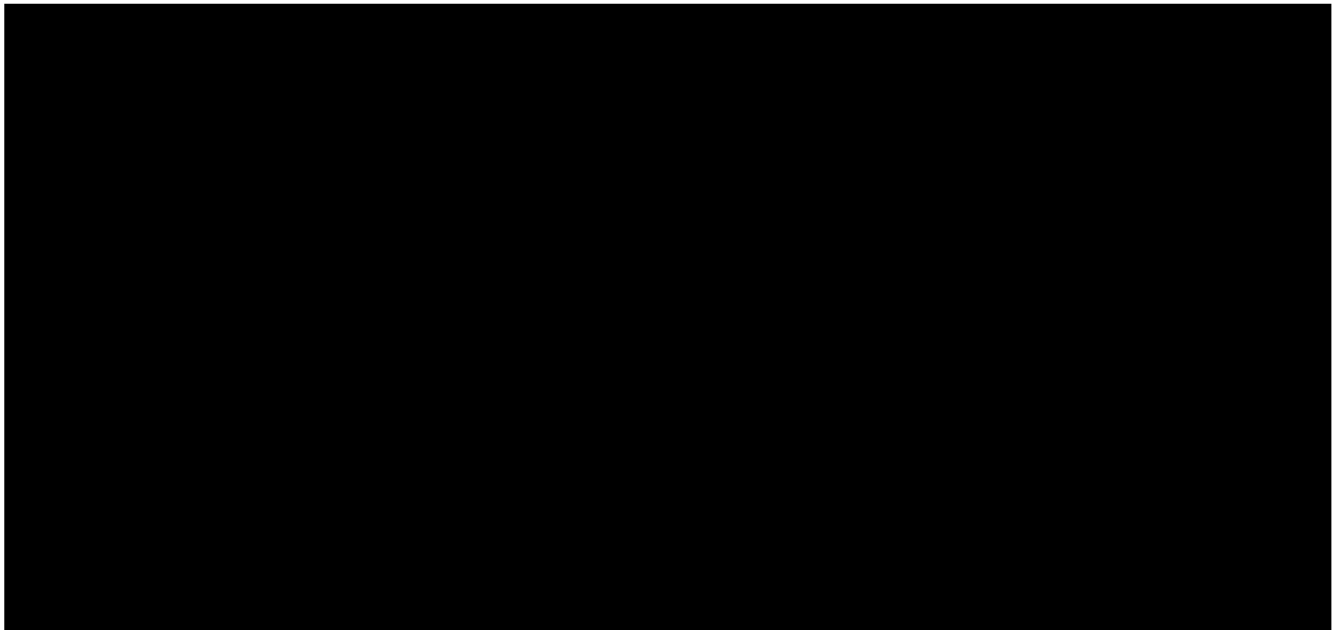
Abstract

Objectives: To determine the demographic and clinical characteristics that distinguish American Indian (AI) Emergency Department (ED) patients from other ethnic populations of ED patients at San Francisco General Hospital (SFGH). The ultimate goal of this project is to give direction to future interventions that will lower the number of AI ED visits at SFGH; increase the awareness among local health providers, including the SF Department of Health, of the health problems facing AIs; improve the effectiveness of health care programs targeted to AIs; and result in prevention programs that enhance the quality of life of AIs.

Methods: A cross-sectional and retrospective cohort study was performed using a database of all 417,199 visits to the San Francisco General Hospital ED (SFGHED) during a 6 year period (7/1/1993-6/30/1999) that compared AIs with other ethnic groups of patients using Caucasians (C) as the reference ethnicity. Data from 7/1/1998 to 6/30/1999 were not included in the multivariate logistic regression analysis.

Setting and Population: The SFGHED is staffed by UCSF faculty and residents and is designated as the only Level 1 Trauma and Acute Care Center for the City and County of San Francisco, California.

Variables: Self-Identified Ethnicity and/or Appearance based Ethnicity; Sex; Age;

Homelessness at time of visit; Status as Frequent User (FU) (defined as patients

who visited the ED five or more times in a fiscal/academic year (7/1-6/30));

Insurance Coverage; and the ICD-9 Coded Primary Diagnosis Cluster selected by

the attending physician for billing purposes.

Analysis: For demographic characteristics, which are patient specific, the relative

risks were calculated using ethnicity as a predictor of the demographic

characteristic (e.g., homelessness). Similarly, for clinical and usage pattern

characteristics, which are visit-specific, the relative risks were calculated using

ethnicity as a predictor of the clinical diagnostic characteristic. Relative risks for

each ethnicity were compared to the risks associated with Caucasian (C)

ethnicity. This method was chosen because it allowed direct comparison of AI

relative risks with all other ethnicities relative to a uniform reference point.

Because this was a population study, we did not report 95% confidence intervals

for relative risks, as the data did not come from a random sample. A

multivariate logistic regression model was utilized for data from 7/1/1993 to

6/30/1998 to verify the independence of the demographic characteristics on

frequent use of the SFGHED by patients of the various ethnicities. Microsoft

Access and Claris FileMaker Pro Database software and statistical programs

were utilized to analyze the data.

Results: AIs at SFGHED are primarily men between 21 and 64 years of age who have relatively high rates of homelessness and ED frequent use when compared to the other ethnicities studied. Drug and alcohol related diagnoses accounted for 22.6% of all AI discharge diagnoses and 28.4% of all admit diagnoses. AIDS Related Problems accounted for 2.8% of admissions, the highest RR of any ethnicity. Acute Respiratory Illnesses accounted for 9.6% of admissions, the highest RR of any ethnicity.

Conclusions: AIs at SFGHED suffer from a relatively high rate of drug and alcohol, injury, AIDS, and respiratory infection related morbidity compared to the other ethnicities at SFGHED. These trends are grossly consistent for both discharge and admit diagnoses. Heart Disease, Asthma/COPD, Trauma to Chest/Abdomen, Intracranial Injury, and GI Hemorrhage, although relatively frequent in the non-AI population, do not make up a large portion of AI visits at SFGH. In order to decrease morbidity among AI patients at SFGHED, a targeted intervention should be designed in collaboration with local AI community health organizations to refer these patients to the AI drug rehabilitation, job training, and housing referral programs that exist in San Francisco.

Table of Contents

List of Tables

Introduction

Prior investigations of American Indian (AI) populations suggest patterns of mortality that differ from the general population and from other ethnic populations. Data reveal excess overall mortality among AIs, as well as excesses for specific causes of death, including accidents, diabetes, liver disease, pneumonia/influenza, suicide, homicide, and tuberculosis (1-2). Mortality linked to injuries, violence, domestic violence, and suicide is considerable, and is related to a large degree to the abuse of alcohol (3-5). Much of the above data, particularly relating to accidents, suicide, and violence, indicate that AIs may be at increased risk for visiting an ED.

Although fully two-thirds of all AIs now live in urban areas, most studies examining the health status of AIs have focused on people living on rural reservations (1, 6-7). Despite the urban character of AI populations, only 2% of the Indian Health Service's budget is directed toward AIs living in cities (1, 8). The three known published articles that have focused on AI emergency medicine services describe reservation settings (7, 9-10).

There is a dearth of knowledge regarding the health status of urban AIs because information on their health is difficult to obtain (11-13). One exception is a recent study that clearly demonstrated the very poor health status of urban AIs (14).

Another study indicated that urban AI families appear to be less aware of ingestion prevention practices than other urban families (15). A third study found that urban AI trauma admissions were disproportionately associated with assaults and with blood alcohol levels exceeding 0.1% (16). It seems that there is only one study conducted previously that analyzed the usage of an ED by urban AIs. This twenty-four year old unpublished study suggested that approximately 85% of the AIs seen at the Massachusetts General Hospital ED had medical problems primarily or secondarily related to alcohol abuse (17).

Although California has the 2nd largest population (242,164) of AIs in the country and the San Francisco Bay Area has a relatively large population of urban AIs (~50,000 people)(6), no prior published study has analyzed presenting complaints or ultimate diagnoses of AIs who visit the SFGH ED or, for that matter, any other ED in the state. Knowledge of distinctive disease patterns among AIs presenting to SFGHED will identify the unique needs of these patients and will provide direction for improvement in risk assessment and preventive services.

There is very little known about the nature of AI visits to urban EDs. The aim of the proposed study is to determine those demographic and clinical characteristics that distinguish American Indian (AI) Emergency Department (ED) patients from other ethnic populations of ED patients at San Francisco

General Hospital (SFGH). The ultimate goal of this project is to give direction to future interventions that will attempt to lower the number of AI ED visits at SFGH, improve the effectiveness of health care programs targeted to AIs, and result in prevention programs that enhance the quality of life of AIs. A detailed demographic and clinical profile of AI SFGH ED patients was needed to accomplish these goals.

A review of the history of genocide in California is essential to more fully understand the social and cultural milieu within which AI patients visit the SFGHED. Excerpts from two writings are therefore included in appendix 3 in the hope that they will illuminate the historical legacies that are, in conjunction with the Federal Government's assimilation programs of the 1950's and 1960's, partly responsible for the current state of AI health at SFGHED.

Methods

This descriptive, cross-sectional and cohort study compared American Indian (AI) San Francisco General Hospital Emergency Department (SFGHED) patients with patients of other ethnicities using a database of ED visits containing patient-specific demographic information and visit-specific clinical and utilization information. This database was created and maintained for quality assurance and management reporting at SFGH. Approval was obtained from the University of California, San Francisco Committee on Human Research prior to querying the database for research purposes. The SFGHED determines the patient's ethnicity at the time of registration according to a protocol whereby a clerk asks the patient, "What is your ethnic background?" and records the response on a standardized intake sheet. The patients' ethnicities are coded according to the following: 1= Caucasian; 2 = African American; 3= Latino; 4 = American Indian; 5 = Asian; 6 = Other; 7 = Unknown. 1990 Census data was utilized for comparison with SFGHED's ethnic demographics and the overall adjusted population data for San Francisco's ethnicities (6).

San Francisco General Hospital (SFGH) is an urban, public, teaching hospital and the only Level I Trauma Center in the City and County of San Francisco, California. SFGH has a separate psychiatric emergency department (ED) that

was not part of this study. The SFGHED database contained records of 417,199

ED visits between 7/1/1993 and 6/30/1999.

The clinical characteristics abstracted from the SFGHED database were

organized based on a diagnostic clustering system developed by Mandelberg, et

al. (18-20, Appendices 1-2). For administrative and billing purposes, hospital

coders assigned at least one code from the International Classification of

Diseases, 9th Revision, Clinical Modification (ICD-9-CM) to every ED visit (21).

Thousands of different ICD-9-CM codes were assigned to ED visits, requiring the

creation of clustering systems to group similar diagnoses. ED visits that resulted

in hospitalization were coded on the basis of the entire hospital course, so the set

of codes used for visits resulting in hospital admission differed from the set of

codes for visits resulting in discharge. For example, ICD-9-CM code 410 (acute

myocardial infarction) can only be assigned after a hospital admission, whereas

ICD-9-CM code 786.50 (chest pain NOS) was rarely assigned after hospital

admission, but was frequently assigned to a visit resulting in discharge.

Therefore one clustering system was used for ED visits that resulted in

hospitalization (admission clusters) and a different clustering system for ED

visits that resulted in discharge (discharge clusters).

Mandelberg et al.'s clustering system was used because emergency medicine

diagnoses were not evenly distributed among the different ICD-9-CM chapters.

This clustering system was designed in accordance with the basic principles for creating diagnosis clusters as outlined in Schneeweiss et al. (22). Appendix 1 shows the 68 discharge diagnosis clusters and the included ICD-9-CM codes. Appendix 2 shows the 50 admission diagnosis clusters and the included codes.

Where multiple ICD-9-CM codes were assigned to a single visit, only primary diagnoses were considered. For example, a visit by an alcohol-intoxicated patient with a scalp laceration would be assigned 873.0 (Open Wound of Scalp) as the primary diagnosis and 305.00 (Alcohol Intoxication) as the secondary diagnosis. This visit would be clustered with other visits for "Trauma to the Head and Neck".

For demographic characteristics, which are patient specific, the relative risks were calculated using ethnicity as a predictor of the demographic characteristic (e.g., homelessness). Similarly, for clinical and usage pattern characteristics, which are visit-specific, the relative risks were calculated using ethnicity as a predictor of the clinical diagnostic characteristic. Relative risks for each ethnicity were compared to the risks associated with Caucasian (C) ethnicity. This method was chosen because it has been utilized in previous comparative studies of ethnicity (15, 20) and because it allowed direct comparison of AI relative risks with all other ethnicities relative to a uniform reference point. Because this was a population study, we did not report 95% confidence intervals for relative risks as

the data did not come from a random sample. A multivariate logistic regression model was utilized for data from 7/1/1993 to 6/30/1998 to verify the independence of the demographic characteristics on frequent use of the SFGHED by patients of the ethnicities described above. Data from 7/1/1998 to 6/30/1999 were not included in the multivariate logistic regression because of programming scheduling difficulties. It is the author's intent to analyze this additional data as it becomes available. Frequent users were defined as patients who visited the ED five or more times within a fiscal/academic year (7/1 to 6/30). Five visits per year was chosen to define frequent use because a case management program at SFGHED had previously used this definition. Other studies have defined frequent use as three (23-24), four (25-26), ten (27-28), and twelve (29) visits per year.

Results

During the study's six year period from 7/1/1993 to 6/30/1999 there were

258,641 individual patients who visited the San Francisco General Hospital's

Emergency Department (SFGHED) (Table I). Of these patients, 960 were

American Indians (AI) accounting for 0.4% of all patients at SFGHED. AIs made

up the smallest ethnic grouping of patients. The next smallest ethnic category by

number of patients, Asians (A), made up fully 12.8% of patient visits at SFGHED.

In addition, Caucasians (C), African Americans (AA), and Latinos (L) made up

32.8%, 27.4%, and 23.0% of all visits respectively. The most recent census data

show the following adjusted racial distribution for the city and county of San

Francisco's total population of 824,676 people: C (47.0%); AA (9.6%); L (12.2%);

AI (0.4%); A (25.4%); and Other (5.2%) (6).

Of the 960 AI patients presenting to the SFGHED, 650 were male and accounted

for 67.7% of AI patients (Table I). The male percentage of patients among AIs

was the highest of any of the non-C ethnicities. The male percentage relative risk

relative to Cs (RR) for AAs, Ls, and As was 0.9, 0.9, and 0.8 respectively.

A striking difference between AIs and the other ethnicities is found when

examining the relative risk for homelessness (Table I). There were 326 homeless

AI patients who sought services at the SFGHED during the six year period of the

8

study. These patients made up 34.0% (RR=2.1) of all AI patients, a relative risk double that of the next closest ethnicity, AA (RR=1.0), and far above that of Ls (RR=0.5) and As (RR=0.1).

When examined based on age criteria, AIs were more likely to be between 21 and 64 years of age than L and A patients (Table I). AI patients between the ages of 21 and 64 (860) made up 89.6% (RR=1.0) of all AI patients at SFGHED. AAs, Ls, and As had relative risk relative to Cs for ages 21 through 64 equal to 1.0, 0.9, 0.8 respectively.

AIs were less likely than patients from all other ethnic groups except Cs to be younger than 21 years of age, with a total of 59 patients were (6.1%, RR=1.1) (Table I). The RRs for age less than 21 years for AAs, Ls, and As were 2.0, 3.2, and 2.5 respectively.

AIs have the lowest rates of patients who are older than 64 years old (3.7%, RR=0.6) when compared to the other ethnicities (Table I). As had by far the highest numbers of people older than 64 (16.2%, RR=2.6), followed by Ls (5.1%, RR=0.8) and AAs (4.5%, RR=0.7).

For patients whose ages were not specified during the intake process Ls (0.6%, RR=1.0) is followed by AIs (0.5%, RR=0.9), AAs (0.3%, RR=0.6), and As (0.2%, RR=0.4) (Table I).

The 960 AI patients who were seen during the six year period of the study made a total of 2605 visits and accounted for 0.6% of all visits at SFGHED (Table I). This corresponds to an average visit (AV) per AI patient of 2.7 visits. AAs made up 33.9% of all visits (AV=2.0), followed by Cs (32.9%, AV=1.6), Ls (20.1%, AV=1.4), and As (9.9%, AV=1.3). The ethnicity with the highest number of visits by an individual patient in any one fiscal year during the study's six year period was AA (66 visits), followed by C (63), AI (47), and L and A (40).

Based on discharge data all ethnicities were equally likely to be seen in SFGHED and discharged without admission (RR=1.0). However, As had the highest rates of admissions (17.3%, RR=1.1) followed by AIs (13.6%, RR=0.8), AAs (13.2%, RR=0.8), and Ls (12.1%, RR=0.7).

As homelessness, male gender, age, and insurance/payment type are associated with frequent use of emergency departments (22-24, 26-29), a multivariate logistic regression analysis of data from 7/1/1993 to 6/30/1998 was performed in order to account for these confounding characteristics in the AI patient population (Table II). As indicated on Table II, AIs made up 0.4% of all patients

at the SFGHED during this time period. However, AIs made up 1.2% of

Frequent Users (FU) with a corresponding Relative Risk of 3.2. Multivariate

logistic regression accounting for the above confounders produced an Odds

Ratio (OR) = 2.4 for AIs. This multivariate OR value of 2.4 is the highest for any

ethnicity in the study and was followed in decreasing order by AAs (OR=1.7), Ls

(OR=0.5), and As (OR=0.4).

Data regarding the most frequent diagnoses among AIs shed light on the various

illnesses that may be contributing to AIs' frequent usage of SFGHED. Utilizing

the diagnostic clusters designed by Mandelberg, et al (20) and the ethnicity

criteria in the SFGHED database, all AI visits were sorted in descending order of

frequency. The ten most frequent diagnostic clusters for AIs are represented in

Table III. Data were also collected and sorted in descending order of frequency

for the top ten discharge and admit diagnoses clusters for all patients presenting

at SFGHED (Table IV). Tables III and IV also include relative risk comparisons

with the other ethnicities using Cs as reference (RR).

The most frequent discharge diagnosis among AIs during the study was Alcohol

Intoxication which accounted for 284 visits by 111 patients and 12.6% of all AI

visits and was associated with an AI RR=3.3 (Table III). The discharge diagnosis

of seizure is also high among AIs at SFGHED (RR=2.1, 35 patients). Fractures

and Dislocations of the Extremities is the only other discharge diagnosis that is in

the top ten diagnoses for AIs (47 patients), but not for total SFGHED patient population. The remaining ten most frequent discharge diagnoses among AIs are Trauma to Head and Neck (6.5%, 117 patients), Trauma to Extremities (5.1%, 95 patients), Joint and Muscle Pain (5.0%, 65 patients), General Symptoms (4.7%, 52 patients), Infection/Abscess of Extremities (4.6%, 42 patients), Dermatologic Problems (2.7%, 37 patients), and Abdominal Pain (2.6%, 37 patients).

The most frequent admit diagnosis among AIs during the study was Soft Tissue Infection which accounted for 74 admissions by 55 patients and 20.8% of all AI admissions and was associated with an AI RR=1.0 (Table III). This diagnosis was also the most frequent admission diagnosis among all patients (Table IV). However, the relative risk for AIs with C as reference group (RR) was 1.0, the highest among the non-C ethnicities. This indicates that Soft Tissue Infections is a common diagnosis in Cs and AIs. Acute Respiratory Infection (9.6%, RR=1.8, 28 patients) was the third most common admit diagnosis for the total patient population at SFGHED and was the second most common admit diagnosis for AIs. This is an important diagnosis for AIs relative to the other ethnicities because the AI RR is the highest of any ethnicity in the study. Fractures and Dislocations is the third most common admission diagnosis for AIs (6.5%, RR=0.7, 23 patients). This diagnosis is a frequent admit diagnosis for AIs, but occurs at a relatively uncommon rate when compared to the other ethnicities except for AAs which have the lowest RR for this diagnostic cluster (RR=0.6).

The diagnosis of Lacerations, Wounds, and Abrasions is also relatively common

among AIs (15 patients). However, the rate for this diagnosis among AIs

(RR=0.9) is the lowest of all ethnicities in the study.

In descending order the remaining of the ten most frequent admission diagnoses

are AIDS Related Complications (2.8%, RR=1.5, 7 patients), Chronic Liver

Disease (2.8%, RR=2.0, 10 patients), Urinary Tract Infections (2.8%, RR=2.3, 9

patients), Alcohol Withdrawal/Intoxication (2.5%, RR=1.2, 6 patients), Seizure

(2.2%, RR=2.9, 8 patients), and Musculoskeletal Disease (2.2%, RR=1.4, 8 patients)

(Table III). For each of these diagnoses, the AI RR is the highest of any of the

non-C RRs, indicating that these diagnoses are frequent in the AI SFGHED

patient population relative to the other ethnicities.

The ten most frequent discharge diagnoses for AIs sorted in descending order by

number of individual patients (Table VII) are 1) Trauma to Head and Neck (117

patients); 2) Alcohol Intoxication (111 Patients); 3) Trauma to Extremities (95

patients); 4) Joint and Muscle Pain (65 patients); 5) General Symptoms (52

patients); 6) Fracture and Dislocation (47 patients); 7) Infection/Abscess of

Extremities (42 patients); 8) Abdominal Pain (37 patients); 9) Dermatologic

Problems (37 patients); and 10) Musculoskeletal Disease (35 patients).

The ten most frequent admit diagnoses for AIs sorted in descending order by number of individual patients (Table VII) are 1) Soft Tissue Infection (55 patients); 2) Acute Respiratory Infection (28 patients); 3) Fractures and Dislocations (23 patients); 4) Lacerations/Abrasions (15 patients); 5) Chronic Liver Disease (10 patients); 6) Urinary Tract Infections (9 patients); 7) Seizure (8 patients); 8) Musculoskeletal Disease (8 Patients); 9) AIDS Related (7 patients); and 10) Dehydration/Electrolyte (7 patients).

The diagnostic clusters for discharge and admission were also sorted within each ethnicity by relative risk comparison using Cs as reference group (RR). (Table V & VI) The data was sorted using two different techniques. The first approach was to list the discharge and admission diagnoses for AIs after sorting the data in descending order by the AI relative risk with C as the reference group (Table V). This yielded data regarding those diagnoses that were relatively frequent for AIs in comparison to Cs. The second approach was to list the discharge and admission diagnoses for AIs after sorting the data in descending order for those diagnoses where the AI RR was greater than all other ethnic RRs (Table VI). This yielded data regarding those diagnoses that were relatively frequent for AIs in comparison to the other ethnicities. This information helps delineate those particular diagnoses that are characteristic of AI patients at SFGHED and highlights the unique health burden carried by this patient population.

As indicated on Table V, the discharge diagnosis with the highest AI RR is alcohol intoxication (RR=3.3). This diagnosis also accounted for the most visits by AIs (12.6%, 111 patients) of any single diagnostic cluster. Alcohol Dependence (RR=3.0, 1.3%, 24 patients), Alcohol Withdrawal (RR=2.2, 1.9%, 25 patients), Seizure (RR=2.1, 4.0%, 35 patients), and Chronic Liver Disease (RR=1.4, 0.8%, 11 patients) make up the remaining alcohol related diagnoses on Table V. The remaining diagnoses from the ten highest AI RR relative to C are General Symptoms (RR=1.3, 4.7%, 52 patients), AIDS Related Problems (RR=1.3, 0.4%, 2 patients), Joint and Muscle Pain (RR=1.3, 5.0%, 65 patients), Sickle Cell Anemia/Hematologic Problems (RR=1.1, 0.1%, 1 patient), and Asthma (RR=1.1, 1.6%, 21 patients).

The data from Table V show that Seizure was the diagnosis with the highest AI RR (RR=2.9, 2.2%, 8 patients) of the top ten admit diagnoses based on RR with C as reference. Urinary Tract Infection (RR=2.3, 2.8%, 9 patients), TB/Fungal/Parasitic Infections (RR=2.2, 1.1%, 4 patients), ENT Infections (RR=2.1, 1.4%, 5 patients), Chronic Liver Disease (RR=2.0, 2.8%, 10 patients), Acute Respiratory Infection (RR=1.8, 9.6%, 28 patients), Dehydration/Electrolyte Abnormalities (RR=1.7, 2.0%, 7 patients), Diabetes/Endocrine Dysfunction (RR=1.6, 1.7%, 6 patients), Renal Failure (RR=1.6, 0.6%, 2 patients) and Postoperative Complications (RR=1.6, 1.4%, 5 patients) make up the remaining diagnoses in this category.

Table VI shows all discharge and admit diagnoses where AIs had higher RR compared to C for every ethnicity classification. For discharge diagnoses it is important to note that all diagnostic clusters for Table VI are the same and in the same sequence as Table V except for the last three categories of Infection/Abscess of the Trunk and Abdomen (RR=1.1, 1.7%, 21 patients), Non-Alcohol Drug Dependence (RR=1.1, 0.3%, 5 patients), and Miscellaneous V-code (RR=1.0, 2.1%, 30 patients). This indicates that AIs carry a relatively heavier burden than the other ethnicities for these diagnoses compared to the diagnoses of Joint and Muscle Pain, Sickle Cell Anemia/Hematologic Problems, and Asthma.

The admit diagnoses data from Table VI reveal that the diagnoses of CNS Disease/Anoxic Damage (RR=1.5, 1.1%, 4 patients), AIDS Related Problems (RR=1.5, 2.8%, 7 patients), Musculoskeletal Disease (RR=1.4, 2.2%, 8 patients), Bacterial Sepsis (RR=1.3, 1.4%, 5 patients), Fever of Unknown Origin (RR=1.3, 1.4%, 5 patients), and Alcohol Withdrawal and Intoxication (RR=1.2, 2.5%, 6 patients) make up a relatively heavier burden for AIs than for other ethnicities. The diagnoses of TB/Fungal/Parasitic Infection (RR=2.2, 1.1%, 4 patients), Diabetes/Endocrine Dysfunction (RR=1.6, 1.7%, 6 patients), and Renal Failure (RR=1.6, 0.6%, 2 patients) from Table V are ranked according to AIs' RR vis-a-vis

Cs only, and do not represent diagnoses that occur relatively more often in AIs

than in other non-C ethnicities.

Table I: Demographic Analysis of San Francisco General Hospital Emergency Department Patients Based on Ethnicity, 1993-1999.

Variable	AI	AA	L	A	C	O	U	T
# of Patients	960	70792	59595	32893	84838	2815	6748	258641
% of Patients	0.4%	27.4%	23.0%	12.7%	32.8%	1.1%	2.6%	100.0%
# of Visits	2605	141421	83849	41344	137276	3520	7184	417199
% of Visits	0.6%	33.9%	20.1%	9.9%	32.9%	0.8%	1.7%	100.0%
Avg Visits	2.7	2.0	1.4	1.3	1.6	1.3	1.1	1.6
Max Visits	47	66	40	40	63	12	13	66
Males	650	45499	37218	17282	57439	1639	4572	164308
% Males	67.7%	64.3%	62.5%	52.5%	67.7%	58.2%	67.8%	63.5%
RR Male	1.0	0.9	0.9	0.8	1.0	0.9	1.0	0.9
Homeless #	326	12104	4969	521	13934	141	441	32436
Homeless RR	2.1	1.0	0.5	0.1	1.0	0.3	0.4	0.8
< 21 yrs	59	7876	10535	4501	4678	471	710	28830
% < 21 yrs	6.1%	11.1%	17.7%	13.7%	5.5%	16.7%	10.5%	11.1%
RR < 21 yrs	1.1	2.0	3.2	2.5	1.0	3.0	1.9	2.0
21-64 yrs	860	59468	45646	22979	74346	2127	4953	210381
% 21-64 yrs	89.6%	84.0%	76.6%	69.9%	87.6%	75.6%	73.4%	81.3%
RR 21-64 yrs	1.0	1.0	0.9	0.8	1.0	0.9	0.8	0.9
> 65 yrs	36	3205	3061	5332	5304	205	475	17618
> 65 yrs %	3.8%	4.5%	5.1%	16.2%	6.3%	7.3%	7.0%	6.8%
RR > 65 yrs	0.6	0.7	0.8	2.6	1.0	1.2	1.1	1.1

Note: AI = American Indian; AA = African American; L= Latino; A = Asian; C = Caucasian; O = Other; U = Unknown; T = Total; RR = Relative Risk.

Table I: Demographic Analysis of San Francisco General Hospital Emergency Department Patients Based on Ethnicity, 1993-1999; Continued.

Variable	AI	AA	L	A	C	O	U	T
Unknown Age	5	243	353	81	510	12	610	1815
Unk Age %	0.5%	0.3%	0.6%	0.2%	0.6%	0.4%	9.0%	0.7%
RR Unk Age	0.9	0.6	1.0	0.4	1.0	0.7	15.0	1.2
# of D/C's	2250	122718	73698	34175	115108	3068	5957	356974
D/C %	86.4%	86.8%	87.9%	82.7%	83.9%	87.2%	82.9%	85.6%
RR D/C	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
# of Admits	355	18703	10151	7169	22168	452	1227	60225
Admit %	13.6%	13.2%	12.1%	17.3%	16.1%	12.8%	17.1%	14.4%
RR Admit	0.8	0.8	0.7	1.1	1.0	0.8	1.1	0.9

Note: AI = American Indian; AA = African American; L= Latino; A = Asian; C = Caucasian; O = Other; U = Unknown; T = Total; RR = Relative Risk; D/C = Discharge.

Table II. Demographic Characteristics of the Overall ED Population and Frequent Users for 1993-1998*

	% of All Patients	% of Frequent Users	Relative Risk	Multivariate OR
Race				
Caucasian	32.9	33.3	1.0 (reference)	(reference)
American Indian	0.4	1.2	3.2	2.4
African American	27.3	49.9	1.8	1.7
Latino	23.1	12.0	0.5	0.6
Asian	12.7	3.2	0.2	0.4
Other	3.7	0.4	0.1	0.2
Homeless	12.1	38.3	4.5	3.8
Gender-Male	63.6	70.4	1.3	1.1
Age Group				
0-29 yr	35.9	14.0	0.3	
30-59 yr	54.4	78.9	3.1	2.4
60+ yr	9.7	7.2	0.7	
Payment type				
Medi-Cal	16.3	28.7	2.10	2.2
Medi-Cal Pending	5.3	9.6	1.90	
Medicare	8.6	13.2	1.60	
Medically Indigent Adults	31.7	37.8	1.30	
Jail (incarcerated)	2.5	1.7	0.70	
Out of pocket	4.3	0.5	0.10	
Private insurance	7.2	0.8	0.10	
Other	2.1	0.6	0.30	
Unknown	22.1	7.0	0.30	

*Patients who visited the emergency department 5 or more times in a fiscal/academic year (7/1-6/30) were defined as frequent users. OR = odds ratio; CI = confidence interval. In the multivariate logistic regression analysis, the age group and payment type categories were made dichotomous as shown; the reference category for race was Caucasian. Of all patients, 4.0% were frequent users.

Adapted from Mandelberg, JH, Kohn MA, Kuhn RE. Epidemiologic Analysis of an Urban, Public Emergency Department's Frequent Users. Acad Emerg Med. June 2000; In Press.

Table III

A) Top 10 discharge diagnoses for American Indians with Relative Risk (RR) Comparisons with other Ethnicities using Caucasians as reference ethnicity for 1993-1999.

Diagnosis	AI Patients	AI Visits	% of AI Total Visits	AI RR	AA RR	L RR	A RR
1) Alcohol Intoxication	111	284	12.6%	3.3	0.4	0.9	0.2
2) Trauma to Head and Neck	117	146	6.5%	1.0	0.7	1.0	1.0
3) Trauma to Extremities	95	115	5.1%	0.8	0.8	1.1	1.0
4) Joint and Muscle Pain	65	113	5.0%	1.3	0.8	0.9	0.7
5) General Symptoms	52	105	4.7%	1.3	1.0	0.8	0.8
6) Infection/Abscess of Extremity	42	103	4.6%	0.7	0.6	0.5	0.2
7) Seizure	35	89	4.0%	2.1	0.8	0.6	0.4
8) Fractures and Dislocations	47	62	2.8%	0.8	0.6	0.8	0.8
9) Dermatologic Problems	37	60	2.7%	0.8	1.1	0.8	0.7
10) Abdominal Pain	37	59	2.6%	0.9	1.3	1.7	1.5

B) Top 10 admit diagnoses for American Indians with Relative Risk (RR) Comparisons with other Ethnicities using Whites as reference ethnicity for 1993-1999.

Diagnosis	AI Patients	AI Visits	% of AI Total Visits	AI RR	AA RR	L RR	A RR
1) Soft Tissue Infection	55	74	20.8%	1.0	0.6	0.5	0.2
2) Acute Respiratory Infection	28	34	9.6%	1.8	1.5	0.8	0.9
3) Fractures and Dislocations	23	23	6.5%	0.7	0.6	0.8	0.9
4) Lacerations/Abrasions	15	15	4.2%	0.9	1.1	1.6	1.1
5) AIDS Related	7	10	2.8%	1.5	0.8	0.9	0.1
6) Chronic Liver Disease	10	10	2.8%	2.0	0.6	1.6	0.5
7) Urinary Tract Infections	9	10	2.8%	2.3	1.3	1.7	2.0
8) Alcohol Withdrawal and Intox	6	9	2.5%	1.2	0.3	0.7	0.1
9) Seizure	8	8	2.2%	2.9	1.2	1.1	0.6
10) Musculoskeletal Disease	8	8	2.2%	1.4	1.0	0.8	0.7

Note: General Symptoms=Failure To Thrive; Unknown Cause of Morbidity; Hiccough; Hypothermia; Observe.

Table IV

A) Top 10 discharge diagnoses for All Patients with Relative Risk (RR) Comparisons with other Ethnicities using Caucasians as reference ethnicity for 1993-1999.

Diagnosis	Total Visits	% of Total Visits	AI RR	AA RR	L RR	A RR
1) Trauma to Extremities	20129	5.6%	0.8	0.8	1.1	1.0
2) Trauma to Head and Neck	19896	5.6%	1.0	0.7	1.0	1.0
3) Infection/Abscess of Extremity	15357	4.3%	0.7	0.6	0.5	0.2
4) Back and Neck Pain	15077	4.2%	0.5	1.4	1.0	1.3
5) Joint and Muscle Pain	14947	4.2%	1.3	1.4	0.9	0.7
6) Abdominal Pain	13788	3.9%	0.9	1.3	1.7	1.5
7) General Symptoms	11644	3.3%	1.3	1.0	0.8	0.8
8) Infection/Abscess of ENT	10889	3.0%	0.6	1.1	1.8	1.2
9) URI and Viral Syndromes	10736	3.0%	0.8	1.7	1.6	1.5
10) Dermatologic Problems	10609	3.0%	0.8	1.1	0.8	0.7

B) Top 10 admit diagnoses for All Patients with Relative Risk (RR) Comparisons with other Ethnicities using Caucasians as reference ethnicity for 1993-1999.

Diagnosis	Total Visits	% of Total Admits	AI RR	AA RR	L RR	A RR
1) Soft Tissue Infection	8588	14.3%	1.0	0.6	0.5	0.2
2) Fractures and Dislocations	5057	8.4%	0.7	0.6	0.8	0.9
3) Acute Respiratory Infections	3481	5.8%	1.8	1.5	0.8	0.9
4) Ischemic Heart Disease	3430	5.7%	0.3	1.2	1.3	2.0
5) Lacerations, Wounds, Abrasions	3116	5.2%	0.9	1.1	1.6	1.1
6) Asthma and COPD	2278	3.8%	0.2	2.2	1.6	1.6
7) Heart Failure/Dysrhthmias	1719	2.8%	0.9	2.2	1.0	2.0
8) Trauma to Chest/Abdomen	1636	2.7%	0.2	1.0	1.4	1.0
9) Intracranial Injury	1477	2.4%	0.7	0.6	0.9	1.8
10) GI Hemorrhage	1467	2.4%	1.0	1.0	1.4	2.3

Table V

A) <u>Top 10 discharge diagnoses for American Indians sorted by decreasing Relative Risk (RR) Comparisons with other Ethnicities using Caucasians as reference ethnicity for 1993-1999.</u>

Diagnosis	AI Patients	AI Visits	% of AI Total Visits	AI RR	AA RR	L RR	A RR
1) Alcohol Intoxication	111	284	12.6%	3.3	0.4	0.8	0.2
2) Alcohol Dependence	24	30	1.3%	3.0	0.6	0.6	0.1
3) Alcohol Withdrawal	25	43	1.9%	2.2	0.2	0.5	0.1
4) Seizure	35	89	4.0%	2.1	0.8	0.6	0.4
5) Chronic Liver Disease	11	18	0.8%	1.4	0.4	1.0	0.6
6) General Symptoms	52	105	4.7%	1.3	1.0	0.8	0.8
7) AIDS Related	2	10	0.4%	1.3	0.8	0.6	0.2
8) Joint and Muscle Pain	65	113	5.0%	1.3	1.4	0.9	0.7
9) Sickle Cell Anemia/Hemato	1	2	0.1%	1.1	10.8	1.2	1.6
10) Asthma	21	35	1.6%	1.1	2.3	1.1	1.6

B) <u>Top 10 admit diagnoses for American Indians sorted by decreasing Relative Risk (RR) Comparisons with other Ethnicities using Caucasians as reference ethnicity for 1993-1999.</u>

Diagnosis	AI Patients	AI Visits	% of AI Total Visits	AI RR	AA RR	L RR	A RR
1) Seizure	8	8	2.2%	2.9	1.2	1.1	0.6
2) Urinary Tract Infection	9	10	2.8%	2.3	1.3	1.7	2.0
3) Tuberculin, Fungal and Parasitic	4	4	1.1%	2.2	1.5	2.5	1.8
4) ENT Infection	5	5	1.4%	2.1	1.6	1.5	0.7
5) Chronic Liver Disease	10	10	2.8%	2.0	0.6	1.6	0.5
6) Acute Respiratory Infection	28	34	9.6%	1.8	1.5	0.8	0.9
7) Dehydration/Electrolyte	7	7	2.0%	1.7	0.9	1.0	1.2
8) Diabetes/Endocrine Dysfunction	6	7	1.7%	1.6	2.1	1.5	1.1
9) Renal Failure	2	6	0.6%	1.6	3.7	1.8	4.0
10) Postoperative Complications	5	5	1.4%	1.6	1.1	1.3	1.2

Table VI

A) Discharge diagnoses where American Indians have highest Relative Risk (RR) compared to all other ethnicities for 1993-1999.

Diagnosis	AI Patients	AI Visits	% of AI Total Visits	AI RR	AA RR	L RR	A RR
1) Alcohol Intoxication	111	284	12.6%	3.3	0.4	0.9	0.2
2) Alcohol Dependence	24	30	1.3%	3.0	0.4	0.6	0.1
3) Alcohol Withdrawal	25	43	1.9%	2.2	0.2	0.5	0.1
4) Seizure	35	89	4.0%	2.1	0.8	0.6	0.4
5) Chronic Liver Disease	11	18	0.8%	1.4	0.4	1.0	0.6
6) General Symptoms	52	105	4.7%	1.3	1.0	0.8	0.8
7) AIDS Related	2	10	0.4%	1.3	0.8	0.6	0.2
8) Infection/Abscess of Trunk/Abd	21	39	1.7%	1.1	0.8	0.7	0.5
9) Non-Alcohol Drug Dependence	5	6	0.3%	1.1	0.6	0.6	0.1
10) Miscellaneous V-code	30	47	2.1%	1.0	0.9	0.9	0.7

B) Admit diagnoses where American Indians have highest Relative Risk (RR) compared to all other ethnicities for 1993-1999.

Diagnosis	AI Patients	AI Visits	% of AI Total Visits	AI RR	AA RR	L RR	A RR
1) Seizure	8	8	2.2%	2.9	1.2	1.1	0.6
2) Urinary Tract Infections	9	10	2.8%	2.3	1.3	1.7	2.0
3) ENT Infection	5	5	1.4%	2.1	1.6	1.5	0.7
4) Chronic Liver Disease	10	10	2.8%	2.0	0.6	1.6	0.5
5) Acute Respiratory Infection	28	34	9.6%	1.8	1.5	0.8	0.9
6) Dehydration/Electrolyte	7	7	2.0%	1.7	0.9	1.0	1.2
7) Postoperative Complications	5	5	1.4%	1.6	1.1	1.3	1.2
8) CNS Disease/Anoxic Damage	4	4	1.1%	1.5	0.8	0.9	0.9
9) AIDS Related	7	10	2.8%	1.5	0.8	0.9	0.1
10) Musculoskeletal Disease	8	8	2.2%	1.4	1.0	0.8	0.7
11) Bacterial Sepsis	5	5	1.4%	1.3	1.0	1.0	1.3
12) Fever of Unknown Origin	5	5	1.4%	1.3	1.0	0.6	0.3
13) EtOH Withdrawal and Intox	6	9	2.5%	1.2	0.3	0.7	0.1

Note: Miscellaneous V-code = Medical Certification Issuance; Marital Problems; Medical Clearance; Pulmonary TB Screening; Medicolegal Examination; Fracture Follow Up; Person Feigning Illness; etc.

Table VII

A) Top 10 discharge diagnoses for American Indians sorted by Total Number of Individual Patients for 1993-1999.

Diagnosis	AI Patients	AI Visits	% of AI Total Visits	AI RR	AA RR	L RR	A RR
1) Trauma to Head and Neck	117	146	6.5%	1.0	0.7	1.0	1.0
2) Alcohol Intoxication	111	284	12.6%	3.3	0.4	0.8	0.2
3) Trauma to Extremities	95	115	5.1%	0.8	0.8	1.1	1.0
4) Joint and Muscle Pain	65	113	5.0%	1.3	1.4	0.9	0.7
5) General Symptoms	52	105	4.7%	1.3	1.0	0.8	0.8
6) Fracture and Dislocation	47	62	2.8%	0.8	0.6	0.8	0.8
7) Infection/Abscess of Extremities	42	103	4.6%	0.7	0.6	0.5	0.2
8) Abdominal Pain	37	59	2.6%	0.9	1.3	1.7	1.5
9) Dermatologic Problems	37	60	2.7%	0.8	1.1	0.8	0.7
10)Back & Neck Pain	35	41	1.8%	0.5	1.4	1.0	1.3

B) Top 10 admit diagnoses for American Indians sorted by Total Number of Individual Patients for 1993-1999.

Diagnosis	AI Patients	AI Visits	% of AI Total Visits	AI RR	AA RR	L RR	A RR
1) Soft Tissue Infection	55	74	20.8%	1.0	0.6	0.5	0.2
2) Acute Respiratory Infection	28	34	9.6%	1.8	1.5	0.8	0.9
3) Fractures and Dislocations	23	23	6.5%	0.7	0.6	0.8	0.9
4) Lacerations/Abrasions	15	15	4.2%	0.9	1.1	1.6	1.1
5) Chronic Liver Disease	10	10	2.8%	2.0	0.6	1.6	0.5
6) Urinary Tract Infection	9	10	2.8%	2.3	1.3	1.7	2.0
7) Seizure	8	10	2.8%	2.9	1.2	2.0	0.6
8) Musculoskeletal Disease	8	8	2.2%	1.4	1.0	1.1	0.7
9) AIDS Related	7	10	2.8%	1.5	0.8	0.9	0.1
10) Dehydration/Electrolyte	7	7	2.0%	1.7	0.9	1.0	1.2

Discussion

Interpretations of the project's data can be proposed regarding the population of AIs in comparison to Caucasians (C) and the other non-C ethnicities visiting the SFGHED during the study's 6 year time period. As the entire body of data from the SFGHED's database was utilized for the study, the study represents a descriptive population analysis and does not, therefore, rely on randomized data to generate its outcome variables. It is therefore difficult to attach statistical significance beyond direct numerical comparison of relative risks to any of the variations noted between the ethnicities, although it is likely that many of the differences represent important clinical and demographic characteristics particular to the AI population of patients at SFGHED.

AIs make up an extremely small proportion of the entire patient population presenting to SFGHED. The numbers of AI patients are dwarfed by the other ethnicities. AIs only account for 0.4% of all patients and 0.6% of all visits to the SFGHED. Of note, the next smallest ethnic category by number of patients, Asians (A), made up fully 12.7% of patient visits at SFGHED representing over 34 times as many patients when compared to AI patients. In addition, Caucasians (C), African Americans (AA), and Latinos (L) made up 32.8%, 27.4%, and 23.0% of all visits respectively presenting in numbers 88, 73, and 62 times as large as AIs. However, the percentage of AI patients from the total patient

population presenting to the SFGHED during the time period examined, 0.4%, is equal to their percentage of AIs in the overall population of San Francisco City & County, 0.4% (6).

The census data reveal that SFGHED has a higher proportion of AA, and L patients and a lower proportion of C, A, and AI patients than would be expected from the overall San Francisco population. This likely reflects many factors including socioeconomic, access to insurance & care, and local neighborhood differences. Many AI patients utilize the well-known community health clinic, the San Francisco Native American Health Center, located nearby SFGHED in the Mission district. Future research that compares the AI population at the SFGHED with the SF Native American Health Center would provide important information regarding the specific differences in these populations and would also shed light on the overall state of health of the AI community in San Francisco.

Although the number of AI patients is exceedingly small, the proportion of AI patients who are homeless is high compared to the other ethnicities. The relative risk referenced to Cs (RR) for AIs is twice that of the next closest ethnicity, AA. Prior investigations of urban AI demographic characteristics have revealed a disproportionate number of AIs that are older than 25 years and without a high school diploma, are unemployed, and that are below the federal poverty level

when compared to other ethnicities (6, 11, 14-15). Although these demographic characteristics were not studied during this project, it is likely that a large percentage of the SFGHED AI patients also meet these criteria, which may account for their high RR for homelessness. The very high prevalence of drug and alcohol abuse/dependence evidenced in the data intertwine with chronic illness and the urban social problems of poverty and disenfranchisement to put AIs at SFGHED at high risk for homelessness. This is likely a reflection of the larger historical sequelae of the genocide inflicted on AIs by the dominant culture over the past 500 years (30-36, Appendix 3).

Other distinguishing demographic characteristics of the AI patients include their high percentage of male patients; their tendency to be between the ages of 21 and 64; and their high average visit per patient ratio. The data from the multivariate logistic regression indicate that being an AI puts the patient at the SFGHED at higher risk for being a frequent user (FU) even after accounting for homelessness, gender, age, and payment type. It is likely that the higher risk for being a FU among AIs is related to the specific health status and associated comorbidities unique to AI patients at SFGHED.

AIs had several clinical characteristics that distinguish them from the other ethnicities studied. Alcohol related diagnoses (Alcohol Intoxication, Alcohol Dependence, Alcohol Withdrawal, Seizure, and Chronic Liver Disease) were by

far the most prevalent discharge diagnoses category among AIs accounting for over 22.6% (232 patients) of all discharge diagnoses (Table V). This percentage was calculated by summing the following discharge diagnoses: Alcohol Intoxication, Alcohol Dependence, Alcohol Withdrawal, Seizure, Chronic Liver Disease, Infection/Abscess of Extremities, and Non-Alcohol Drug Dependence. For each of these diagnoses AIs had the highest relative risks compared to every other ethnicity. AIs also differed from the general population of patients in that Alcohol Intoxication, Seizure, and Fractures/Dislocations were in the top ten discharge diagnoses ranked by percentage of total visits. All other top ten discharge diagnoses ranked by percentage of total visits were common to both AIs and the general patient population (Tables III & IV). This data is consistent overall with prior studies of AI morbidity which show that drug and alcohol related disease and injuries account for the majority of excess suffering among AI communities (1-5, 7, 10-11, 14-16).

AIs also differ from the other ethnicities when analyzing the top 10 admit diagnoses. The diagnoses AIDS Related problems, Chronic Liver Disease, Urinary Tract Infections, Alcohol Withdrawal and Intoxication, Seizure, Dehydration/Electrolyte Abnormalities, and Musculoskeletal disease are all in the top 10 admit diagnoses for AIs (55 patients), but not for the general population (Table III). In fact, for these diagnoses, AIs have the highest RRs of any ethnicity (Table VI). Soft tissue infection was the most frequent admit

diagnosis (55 patients), which suggests that intravenous drug use, trauma, and poor hygiene are important problems in the SFGHED AI population. Acute respiratory infections were also frequent admit diagnoses for AIs (28 patients) who also had the highest risk of any ethnicity for this diagnosis. This suggests that more influenza and pneumococcal vaccinations may be indicated in the AI population at SFGH. Alcohol and drug related diagnoses were frequent and accounted for 28.4% of all AI admits (79 patients). This percentage was calculated by summing the following admit diagnoses: Seizure, Chronic Liver Disease, Alcohol Withdrawal and Intoxication, and Soft Tissue Infection of Extremities. This data is also consistent with prior studies of AI morbidity which show that drug and alcohol related disease and injuries account for the majority of excess suffering among AI communities (1-5, 7, 10-11, 14-16). Finally, the admit data also show that Heart Disease (5 patients), Asthma/COPD (2 patients), Trauma to Chest/Abdomen (2 patients), Intracranial Injury (6 patients), and GI Hemorrhage (7 patients), although relatively frequent in the non-AI population, do not make up a comparatively large portion of AI admissions at SFGH.

In summary this study indicates that AIs at SFGHED are primarily men between 21 and 64 years of age who have relatively high rates of homelessness and ED frequent use when compared to the other ethnicities studied. Furthermore AIs at SFGHED suffer from a relatively high rate of drug and alcohol, injury, AIDS, and respiratory infection related morbidity compared to the other ethnicities at

SFGHED. However, Heart Disease, Asthma/COPD, Trauma to Chest/Abdomen, Intracranial Injury, and GI Hemorrhage, although relatively frequent in the non-AI population, do not make up a large portion of AI visits at SFGHED.

This study has several limitations. The relatively small number of AIs (960 people accounting for 2605 visits) presenting to SFGHED over the six year period of the study, makes it difficult to directly compare AI demographic and clinical characteristics with the other, more well represented ethnicities. The racial classifications used by the SFGHED are subject to error, which can result in substantial underestimates of the numbers of AIs presenting to the SFGHED (37-39). Although the intake protocol used during the registration process at SFGHED requires the clerk to ask the patient directly about ethnicity, in practice the clerk often determines ethnicity based on the patient's appearance. Further exacerbating this potential for error is that many AIs have Latino last names and may be misclassified as such unless the clerk specifically asks the patient about ethnicity. Similarly there is not an explicit procedure whereby the ethnic classification "other" is utilized. Some patients may also be assigned "unknown" if the clerk does not complete the information. For this reason the ethnic classifications "other" and "unknown", although included in the Table I, were not analyzed for demographic or clinical comparison with the other ethnicities. Homicide, suicide, and domestic violence data could not be gathered as the

diagnostic codes utilized for injuries were based on anatomic, not etiologic descriptions. The study's results may only be applicable to urban, public hospital EDs. Visits were assigned ICD-9-CM codes for administrative purposes unrelated to the study. The validity of these assignments may be questioned. Moreover secondary diagnoses were not included in the study which may have underestimated the prevalence of some secondary diagnoses. Finally, demographic information was not included from the SFGH Psychiatric ED which limits the study's applicability to those patients with psychiatric diagnoses.

The small numbers of AI patients at SFGHED, their relatively high rates of drug/alcohol abuse and homelessness, and their age distribution make them particularly appropriate candidates for referral to the AI run and nationally renowned drug and alcohol detoxification and rehabilitation center located in San Francisco. This center is located next door to the local AI community health center and also provides its clients with job training and housing referral services. The exciting potential for a program providing seamless continuity of care in an AI culturally specific environment is in stark contrast with the abject reality of hundreds of AI patients at SFGHED who are diagnosed with alcohol and/or drug related illnesses only to be discharged to the streets without follow up. The essential conclusion of this study is that future interventions must be designed in collaboration with local AI community service organizations that will intercept those AI SFGHED patients who would benefit from direct referral

to these culturally specific organizations (12, 40). By filling this social services gap, it is likely, given the small numbers of AI patients, that a significant and lifesaving reduction in AI visits to the SFGHED will occur. It is the author's hope that the data included in this study will be used to justify the necessary structural and economic support for this type of AI specific health intervention.
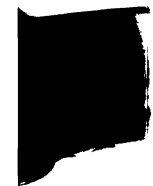
Bibliography

1) Mahone MC, Michalek AM. Health Status of American Indians/Alaska Natives: General Patterns of Mortality. Family Medicine. 30, 190-5, 1998.

2) Rhoades ER, Hammond J, Welty TX, et al. The Indian burden of illness and future health interventions. Public Health Rep. 1987;102:361-8.

3) Postl B, Moffatt M. The health of Canada's Native people: An overview. Canadian Family Physician. 34, 2413-19, 1988.

4) May PA. Motor vehicle crashes and alcohol among American Indians and Alaska Natives. The Surgeon General's Workshop on drunk driving: Background papers. Washington, DC: US Department of Health and Human Services. 1989.

5) Arbukle J, Olson L, Howard M, et al. Safe at Home? Domestic Violence and Other Homicides Among Women in New Mexico. Ann Emerg Med 1996;27:2,210-5.

6) US Census 1990. Department of Commerce, Office of the Census. Washington, DC. US Government Printing Office, 1992.

7) Ligon F. Native Needs. Emergency Medical Services. 22, 57-62, 1993.

8) Indian Health Care. Washington, DC: Office of Technology Assessment; 1986. US Dept of Health and Human Services publication OTA-H-290.

9) Morre J, Mills J. Injuries in an Indian Community – Cherokee, North Carolina. Morbidity and Mortality Weekly Report. Centers for Disease Control. 36, 779-81, 1987.

10) Porvaznik J, Jensen GH. Motor Vehicle Accidents and Emergency Medical Services on Indian Reservations. Military Medicine, 153, 453-6, 1988.

11) Shah CP, Farkas CS. The health of Indians in Canadian cities: A challenge to the health care system. Canadian Medical Association Journal. 133, 859-65, 1985.

12) Kramer BJ. Health and aging of urban American Indians. West J Med. 1992;157:281-5.

13) Taylor TL. Health problems and use of services at two urban American Indian clinics. Public Health Rep. 1988;103:88-95.

14) Grossman DC, Krieger JW, Sugarman JR, Forguera RA. Health status of urban American Indians and Alaska Natives. Journal of the American Medical Association. 271, 845-50, 1994.

15) Hsu JS, Williams S. Injury Prevention Awareness in an Urban Native American Population. American Journal of Public Health. 81, 1466-8, 1991.

16) Sugarman, JR, Grossman, DC. Trauma among American Indians in an urban county. Public Health Reports, 1996 Jul-Aug, 111(4):321-7.

17) Yukl TA, Klein R. Thoughts and observations on innovation of an Indian clinic in the emergency ward at Massachusetts General Hospital.

Unpublished paper presented to the Association of American Indian Physicians, Chickasha, OK, Aug 10-12, 1976.

18) Kohn MA, Kuhn RE. Emergency Department Release Diagnoses with the Highest Relative Risk for a Revisit Resulting in Hospital Admission. Academic Emergency Medicine. 4, 501-2, 1997.

19) Mandelberg JH, Kohn MA. A Demographic, Clinical, and Use Pattern Comparison of Emergency Department Frequent Users with Other Patients. Academic Emergency Medicine 5, 425, 1998.

20) Mandelberg JH, Kohn, MA, Kuhn RE. Epidemiologic Analysis of an Urban Public Emergency Department's Frequent Users. Academic Emergency Medicine. June 2000; In Press.

21) Department of Health and Human Services. The International Classification of Diseases, 9th rev., Clinical Modification: ICD-9-CM. Vol. 1. Diseases: Tabular List. Washington D.C.: Government Printing Office, 1980. (DHHS publication no. (PHS) 80-1260.)

22) Schneeweiss R, Rosenblatt RA, Cherkin DC, et al. Diagnosis clusters: a new tool for analyzing the content of ambulatory medical care. Med Care. 1983; 21:105-22.

23) Ullman R, Block JA, Stratmann WC. An emergency room's patients: their characteristics and utilization of hospital services. Med Care. 1975; 13:1011-19.

24) Schneider KC, Dove HG. High users of VA emergency room facilities: are outpatients abusing the system or is the system abusing them? Inquiry. 1983; 20:57-64.

25) Andren KG, Rosenquist U. Heavy users of an emergency department: psycho-social and medical characteristics, other health care contacts and the effect of a hospital social worker intervention. Soc Sci Med. 1985; 21:761-70.

26) Spillane LL, Lumb EW, Cobaugh DJ, et al. Frequent users of the emergency department: can we intervene? Acad Emerg Med. 1997; 4:574-80.

27) Kne TK, Young R, Spillane LL. Frequent ED users: patterns of use over time. Am J of Emerg Med. 1998; 16:648-52.

28) Yamamoto LG, Zimmerman KR, Butts JB, et al. Characteristics of frequent pediatric emergency department users. Pediatr Emerg Care. 1995; 11:340-7.

29) Purdle FR, Honigman B, Rosen P. The chronic emergency department patient. Ann Emerg Med. 1981;10:298-301.

30) Mears B, Pals K, Kuczerpa K, et al. Illness and Treatment Strategies of Native Indians in Downtown Vancouver: a Study of the Skid Row Population. Health Promotion directorate, Dept of National Health and Welfare, Vancouver, 1981.

31) Native Needs Assessment, Social Services Department, Calgary, 1984.

32) Ablon J. Cultural Conflict in Urban Indians. Mental Hygeine, 1971; 55: 199-205.

33) Longclaws L, Barnes G, Greive L. Alcohol and Drug use among the Brokenhead Ojibwa. J Stud Alcohol 1980; 41:1; 21-36.

34) Prucha FP. Documents of United States Indian Policy. Lincoln: University of Nebraska Press; 1990.

35) Deloria V. Custer Died for Your Sins: An Indian Manifesto. London: MacMillin; 1969.

36) Brave Heart, MY, DeBruyn, LM. The American Indian Holocaust: healing historical unresolved grief. American Indian and Alaska Native Mental Health Research. 1998, 8(2):56-78.

37) Centers for Disease Control and Prevention. Classification of American Indian race on birth and infant death certificates — California and Montana. MMWR Morb Mortal Wkly Rep. 1993;42:220-223.

38) Frost F, Taylor V, Fries E. Racial misclassification of Native Americans in a surveillance, epidemiology, and end results cancer registry. J Natl Cancer Inst. 1992;84:957-62.

39) Sugarman, JR, Soderberg R. Gordon JE, et al. Racial misclassification of American Indians: its effect on injury rates in Oregon, 1989 through 1990. Am J Public Health. 1993;83:681-4.

40) Marbella, AM; Harris, MC; Diehr, S; et al. Use of Native American healers among Native American patients in an urban Native American health center. Archives of Family Medicine, 1998 Mar-Apr, 7(2):182-5.
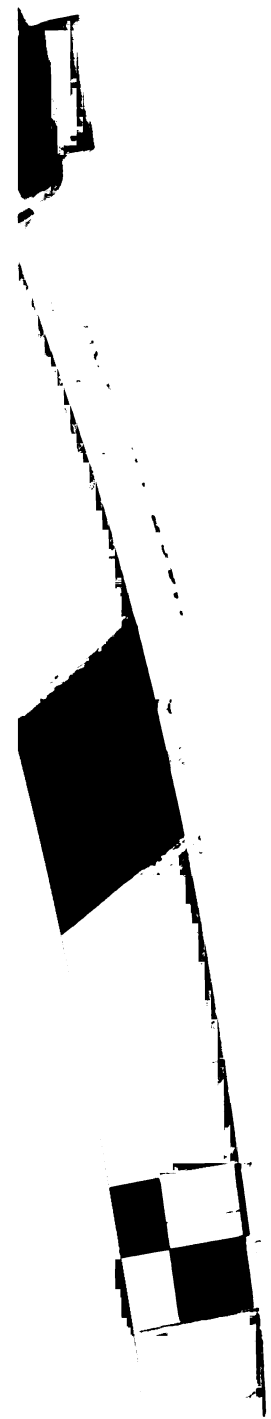
Acknowledgements

The author would like to acknowledge the Friendship House Association of American Indians, Inc. and the Urban Indian Health Board/Oakland & San Francisco Native American Health Centers for their extraordinary support and enthusiasm for the project. This study is dedicated to these institutions and the people and communities they serve.

The author would like to acknowledge the Haudenosaunee and Akwesasne People for their example of scholarly endeavor and respect for human rights. To my mother and grandfather I give thanks.

The author would like to acknowledge the UCSF MD With Thesis Committee Members for their criticism and guidance offered during the design of the project. In particular Michael A. Kohn, M.D., M.P.P., Marion Lee, Ph.D., Eliseo J. Perez-Stable, M.D., and John P. Kane, M.D., Ph.D. were strong and candid supporters of the project. Joshua H. Mandelberg, UCSF MS4, was also extremely helpful in providing access to the diagnostic clustering system used in this study.

Finally, the author would like to give thanks for the unwavering support of his wife, Yuko, and children, Emily & Ryan, who provided his life sustenance during the project. Without you this never could have been.
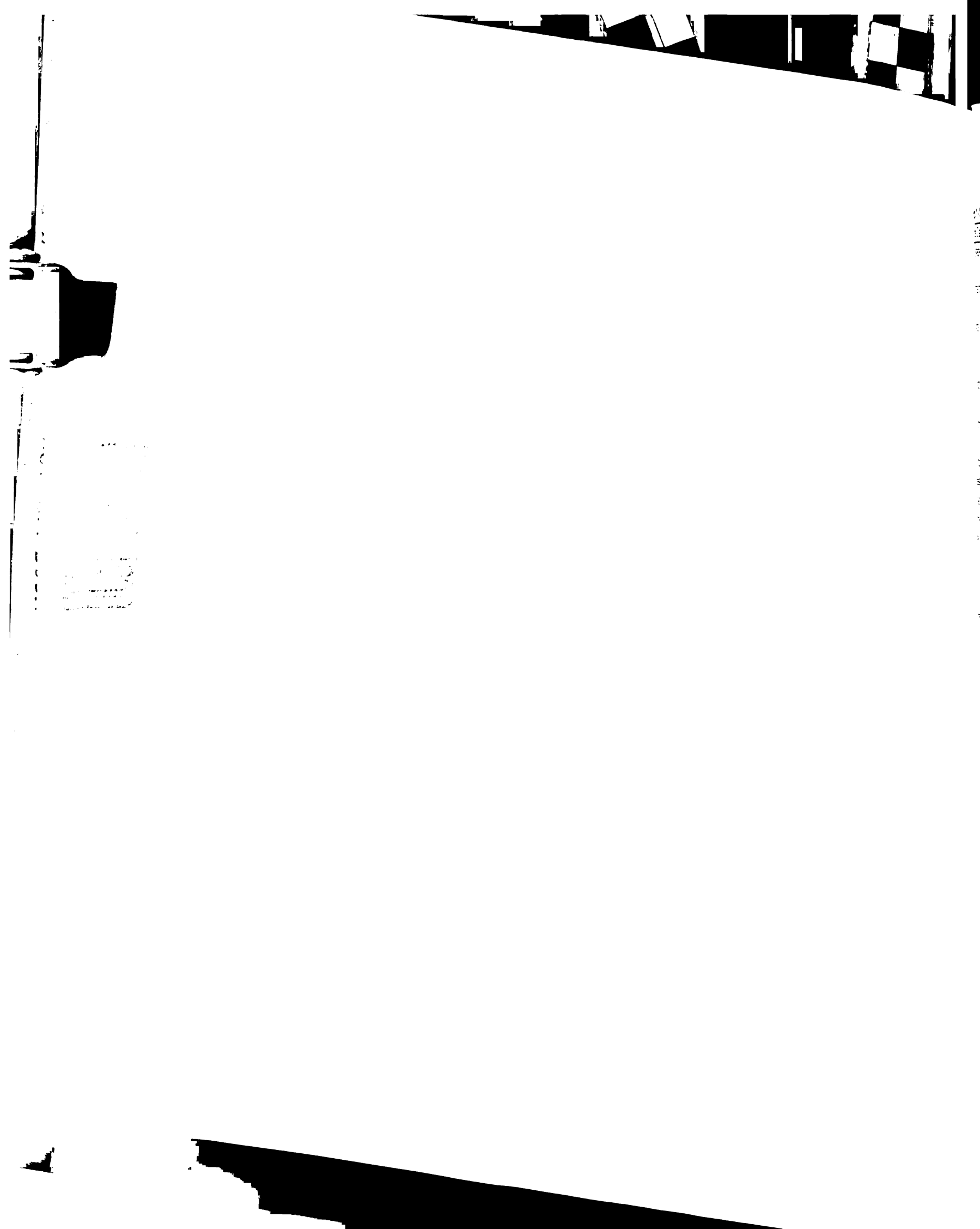
Appendix 1 - Discharge Diagnosis Cluster Definitions

Discharge Diagnosis Cluster	ICD-9-CM codes
Unclustered	all codes not otherwise listed
Trauma to the Head and Neck	384, 872-874, 910, 918.0, 920, 921, 959.0
Trauma to the Extremities	354.3, 692, 880-884, 886, 890-893, 912-917, 923, 924, 943-945, 959.3, 959.5, 959.7
Back and Neck Pain	723.1, 724.2, 724.3, 724.4, 724.5, 724.8, 805, 846, 847
Abdominal Pain	550, 553, 574, 577, 625.9, 789.0
Infections, Inflammations and Abscesses of the Ear, Nose and Throat	351, 380.1, 381, 382, 386.3, 460-463, 464.0, 472-477, 527, 528.2
Upper Respiratory Infections and Other Viral Syndromes	052, 057, 078.89, 079, 289, 465, 487.1, 785.6
Joint and Muscle Pain	354.0, 719, 723.5, 724.79, 726, 727.04, 727.05, 727.09, 728.85, 729.1, 729.5, 729.82
General Symptoms	307.9, 733.99, 780.9, 783.4, 786.8, 799, 991, V718, V719
Dermatologic Problems	078.1, 110, 111, 112.2, 112.9, 132, 133, 691, 692.6, 692.9, 695, 696, 698.1, 698.3, 700-705, 706.1, 707-709, 727.1, 782.0, 782.1
Alcohol Intoxication	303.0, 305.0, 980
Fractures and Dislocations of the Extremities	718, 736, 810-816, 822-826, 831-836, 996
Trauma - Miscellaneous	807, 879.8, 919, 924.8, 924.9, 959.8, 959.9, 983, 987.5, 998.3, V714-V716
Chest Pain	413, 786.5
Infections, Inflammations and Abscesses of the Extremities	681, 682.3-682.7, 703, 729.81
Sprains and Strains	840-845, 848.9
Asthma	493, 519
Pneumonia and Bronchitis	011, 464.4, 466, 486, 490, 511, 786.3, 786.4
Non-Alcohol Drug Use and Overdose	292.9, 305.3, 3055, 305.6, 305.7, 305.9, 965.01, 969.6, 977, 995.2
Seizures	345, 780.3
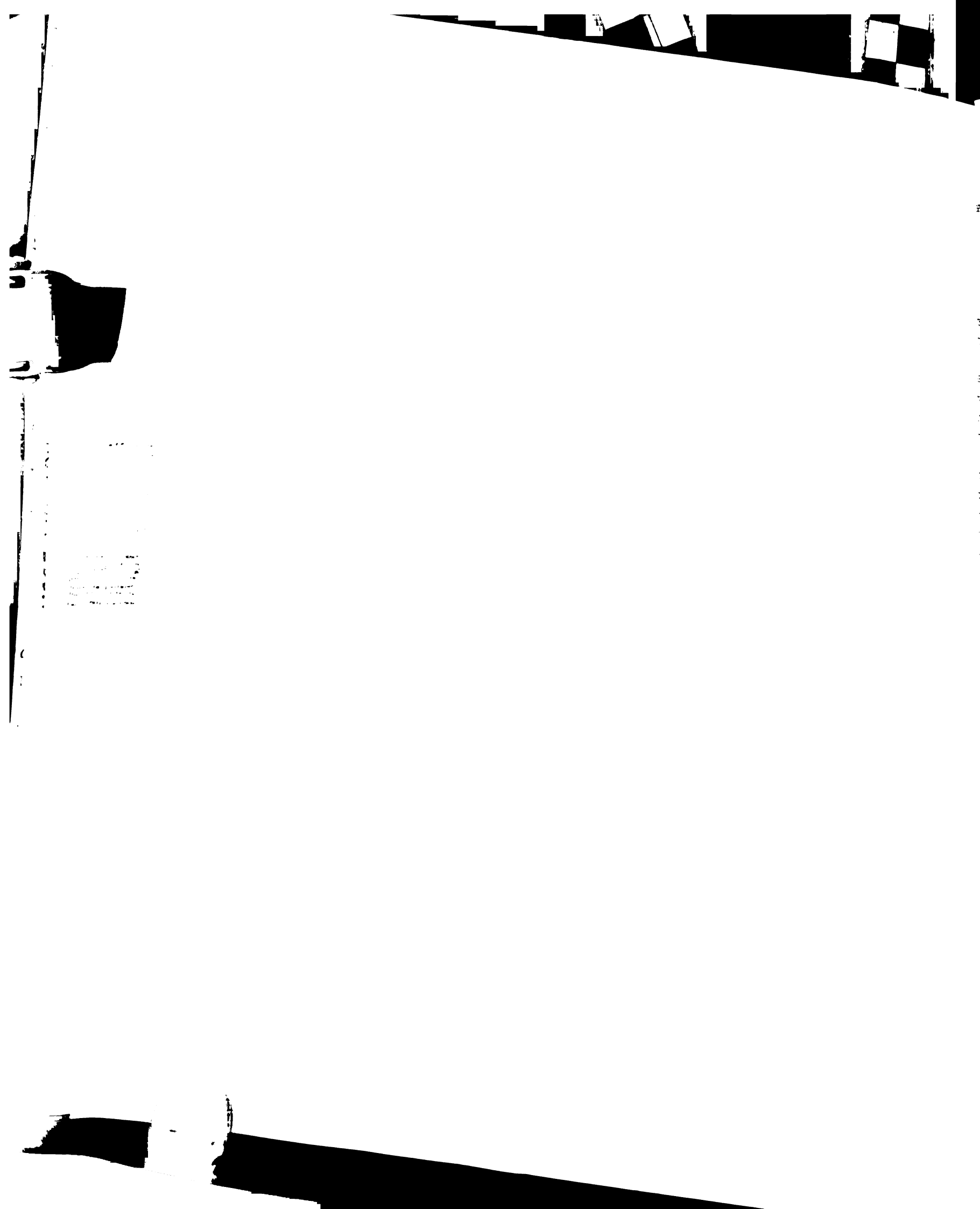
Miscellaneous V - code	795, 998.1, V018, V2541, V548, V556, V558, V583, V584, V611, V652, V670, V674-V680, V689, V689, V703-V705, V709, V712, V741
Gastritis and other Gastrointestinal Problems	530, 533, 535, 536, 564, 569.42, 569.49, 578, 783.2, 787.2, 787.3, 792, 938
Headache	307.81, 346, 784.0
Trauma to the Trunk and Abdomen	848.8, 875-877, 879.2, 911, 922, 959.1
Psychiatric Problems	295-301, 306, 308, 309, 311, 780.1
Dental Problems	521-523, 525
Medication Refills	V681
Diarrhea	005, 008, 009, 558
Urinary Tract Infection	590, 595, 599.0
Non-Infectuous Ear, Nose and Throat Problems	034, 380.4, 386.11, 388, 389, 478, 526.9, 528.9, 611.71, 784.1, 784.49, 784.7, 931-933
Ophthalmologic Problems	077, 360, 364-370, 372, 373, 379, 930
Dizziness, Syncope and Weakness	780.0, 780.4, 780.52, 780.7, 781.2, 781.3
Infections, Inflammations and Abscesses - Miscellaneous	611.0, 680.9, 682.2, 682.8, 682.9, 684, 686, 733.6, 782.2, 789.3, 958, 998.5
Non-Pregnancy Related Gynecologic Problems	112.1, 218, 616, 620, 623, 625.3, 625.8, 626, 939
Disrhythmias and Congestive Heart Failure	312, 423, 425, 427, 428, 514, 782.3, 785.0, 785.1
Pregnancy Complications	632, 634, 637, 640, 641, 643, 646, 666, V222
Poisoning	963, 965-969, 987.9, 989
Trauma to the Eye	372.72, 870, 871, 918.1, 918.9, 921, 940
Hemorrhoids and Anorectal Abscess	455, 565, 566, 569.3, 680.5, 682.5, 685
Diabetes, Blood Sugar and Other Endocrine Disorders	242, 244, 250, 251, 790
Hypertension and Peripheral Vascular Disease	401, 443, 451, 454, 459
Allergic Reactions	691, 693, 698.9, 708, 989, 995.1, 995.3
Alcohol Withdrawal	291

Nausea and Vomitting	787.0, 787.01, 787.02, 787.03
Renal Stones and Hematuria	592, 599.7, 788.0, 788.2
Shortness Of Breath	786.0
Non-HIV Sexually Transmitted Diseases	053, 054, 098, 099, 131, 614, 788.7
COPD and Other Chronic Respiratory Disease	491, 492, 496, 518
Male Genitourinary Problems	600, 601, 604, 607, 608
Cough	786.2
Arthritis	274, 714-716
Urethritis and Dysuria	597, 788.1, 788.3, 788.41
Concussion	310, 850, 854
Alcohol Dependence	303.9
Fever Of Unknown Origin	780.6
Hepatitis, Cirrhosis and Other Liver Disease	070, 570, 571, 573, 782.4, 789.5
Sickle Cell Anemia and Other Hematologic Problems	282, 285, 287
Fractures and Dislocations of the Face	802
Infections, Inflammations and Abscesses of the Head and Neck	526.4, 528.3, 680.0, 682.0, 784.2
Dehydration and Other Fluid and Electrolyte Problems	276, 458
Stroke and Other Non-Seizure Neurologic Problems	355, 356, 435, 436, 723.4, 729.2, 781.0
Cysts and Neoplasms	611.72, 706.2, 727.43, 728.71, 786.6
Non-Alcohol Drug Dependence	304
Non-Alcohol Drug Withdrawal	292.0
Renal Failure	276.7, 585, 586, 593
Altered Mental Status and Dementia	294, 780.0, 780.9
HIV-Related Problems	042, 112.0, 136

Appendix 2 - Admission Diagnosis Cluster Definitions

Admission Cluster	ICD-9-CM codes
Soft Tissue Infection and Septic Arthritis	680-709, 376.01, 785.4, 711.0, 457
Fractures and Dislocations	800-839
Ischemic Heart Disease and Chest Pain	410-414, 786.5, 420
Acute Respiratory Infection	480-487, 507-509, 460-466, 513-519
Lacerations, Wounds, Abrasions and Contusions	870-897, 910-959
Asthma and COPD	490-496, 518
Trauma to Chest, Abdomen, and Pelvis	860-869, 900-902
Heart Failure and Cardiomyopathy	428, 402.91, 424-425, 429
Intracranial Injury	850-854, 431
Gastrointestinal Hemorrhage	530-535, 562, 578
Unclustered	all codes not otherwise listed
Poisoning and Allergic Reaction	292, 304-305, 960-989, 995
Abdominal Pain and Obstruction	544-558, 560, 567, 574-576, 789-790
Urinary Tract Infections and Nephrolithiasis	590-599
HIV-Related Problems	042-044, 136.3, 117.5
Cerebrovascular Disease and Stroke	430-438
Musculoskeletal Disease and Back Pain	712-712, 715-719, 721-740, 840-848
Diabetes and Endocrine Dysfunction	250-251
Neoplasm (Non-Kaposi Sarcoma)	140-239
Cardiac Dysrhythmia and Conduction Abnormalities	426-427
Chronic Liver Disease, Hepatitis and Cirrhosis	570-573
Dehydration and Other Fluid and Electrolyte Problems	276, 990-994
Bacterial Sepsis	038, 003, 002.0

Appendicitis	540-543
Postoperative Infections and Complications	998
Epilepsy and Seizure	345, 780.3
Fever of Unknown Origin	780.6
Pelvic Inflammatory Disease and Gynecologic Problems	614-616
Pancreatitis	577
Tuberculin, Fungal and Parasitic Infections	010-018, 031, 795.5, V71.2
Problems of the Ear, Nose and Throat	520-529, 784.1-784.9, 034, 470-478
Cholecystitis and Cholelythiasis	574-576
Renal Failure	580-589, 403, V56
Deep Vein Thrombosis and Other Vascular Disease	440-460
Alcohol Withdrawal and Intoxication	291, 303, 305.0
Obstetrical Complication (	633-677
CNS Disease (Non-Acute Stroke)	320-389
Altered Mental Status	780.0- 780.1, 293-302, 306-319
Pneumothorax, Effusion and Pulmonary Embolism	510-512, 415.1, 514
Gastroenteritis and Dysentery	001-009, 558
Anemia, Leukopenia, and Thrombocytopenia (Non-Sickle Cell Disease)	280-289
Viral Syndrome and Infection	001-139,0478-0499
Syncope	780.2
Bacterial Endocardits	421,424.9
Anal and Rectal Abscess and Fistula	565-566
Sickle Cell Disease	282.6
Ectopic Pregnancy	630-633
Vascular Injury of Extremities and Neck	903-904
Epididymitis, Orchitis, Prostatitis, and Torsion	600-608

Appendix 3

From Galeano E. Open Veins of Latin America: Five Centuries of the Pillage of a

Continent, pp. 21-9. Monthly Review Press, New York. 1973.

Lust for Gold, Lust for Silver

The Sign of the Cross on the Hilt of the Sword

When Christopher Columbus headed across the great emptiness west of Christendom, he had accepted the challenge of legend. Terrible storms would play with his ships as if they were nutshells and hurl them into the jaws of monsters; the sea serpent, hungry for human flesh, would be lying in wait in the murky depths. According to fifteenth-century man, only one thousand years remained before the purifying flames of the Last Judgment would destroy the world, and the world was then the Mediterranean Sea with its uncertain horizons: Europe, Africa, Asia. Portuguese navigators spoke of strange corpses and curiously carved pieces of wood that floated in on the west wind, but no one suspected that the world was about to be startlingly extended by a great new land.

America not only lacked a name. The Norwegians did not know they had discovered it long ago, and Columbus himself died convinced that he had reached Asia by the western route. In 1492, when Spanish boats first trod the beaches of the Bahamas, the Admiral thought these islands were an outpost of the fabulous isle of Zipango—Japan. Columbus took along a copy of Marco Polo's book, and covered its margins with notes. The inhabitants of Zipango, said Marco Polo, "have gold in the greatest abundance, its sources being inexhaustible...In this island there are pearls also, in large quantities, of a red color, round in shape, and of great size, equal in value to, or even exceeding that of white pearls." The wealth of Zipango had become known to the great Kubla Khan, stirring a desire to conquer it, but he had failed. Out of Marco Polo's sparkling pages leaped all the good things of creation: there were nearly thirteen thousand islands in the Indian seas, with mountains of gold and pearls and twelve kinds of spices in enormous quantities, in addition to an abundance of white and black pepper.

Pepper, ginger, cloves, nutmeg, and cinnamon were as prized as salt in preserving meat against putrefaction and loss of flavor in winter. Spain's Catholic rulers decided to finance the adventure to get direct access to the sources and to free themselves from the burdensome chain of intermediaries and speculators who monopolized the trade in spices and tropical plants, muslins, and sidearms, from the mysterious East. The desire for precious metals, the medium of payment in commercial dealings, also sparked the crossing of the sinister seas. All of Europe needed silver; the seams in Bohemia, Saxony, and the Tyrol were almost exhausted.

For Spain it was an era of reconquest: 1492 was not only the year of the discovery of America, the new world born of that error which had such momentous consequences, but also of the recovery of Granada. Early that year Ferdinand of Aragon and Isabella of Castile, whose marriage had linked their dominions, stormed the last Arab redoubt on Spanish soil. It had taken nearly eight centuries to win back what was lost in seven years, and the war of reconquest had drained the royal treasury. But this was a holy war, a Christian war against Islam; and it was no accident that, in that same year of 1492, 150,000 Jews were expelled from the country. Spain achieved unity and reality as a nation wielding swords with the Sign of the Cross on their hilts. Queen Isabella became the patroness of the Holy Inquisition. The feat of discovering America can only be understood in the context of the tradition of crusading wars that prevailed in medieval Castile; the Church needed no prompting to provide a halo for the conquest of unknown lands across the ocean. Pope Alexander VI, who was Spanish, ordained Queen Isabella as proprietor and master of the New World. The expansion of the kingdom of Castile extended God's reign over the earth.

Three years after the discovery Columbus personally directed the military campaign against the natives of Haiti, which he called Espanola. A handful of cavalry, two hundred foot soldiers, and a few specially trained dogs decimated the Indians. More than five hundred, shipped to Spain, were sold as slaves in Seville and died miserably. Some theologians protested and the enslavement of Indians was formally banned at the beginning of the sixteenth century. Actually it was not banned but blessed: before each military action the captains of the conquest were required to read to the Indians, without an interpreter but before a notary public, a long and rhetorical Requerimiento exhorting them to adopt the holy Catholic faith:

> If you do not, or if you maliciously delay in so doing, I certify that with
> God's help I will advance powerfully against you and make war on
> you wherever and however I am able, and will subject you to the yoke
> and obedience of the Church and of their majesties and take your
> women and children to be slaves, and as such I will sell and dispose of
> them as their majesties may order, and I will take your possessions and
> do you all the harm and damage that I can.

America was the vast kingdom of the Devil, its redemption impossible or doubtful; but the fanatical mission against the natives' heresy was mixed with the fever that New World treasures stirred in the conquering hosts. Bernal Diaz del Castillo, faithful comrade of Hernan Cortes in the conquest of Mexico, wrote that they had arrived in American "to serve God and His Majesty and also to get riches."

At his first landing on San Salvador atoll, Columbus was dazzled by the transparent hues of the Caribbean, the green landscape, the soft clean air, the magnificent birds, and the youths "with size and with good faces and well made" who lived there. He gave the natives "some red caps and strings of beads, and many other trifles of small value, which gave them great pleasure. Wherewith they were much delighted, and this made them so much our friends that it was a marvel to see." They knew nothing of swords, and when these were shown to them they grasped the sharp edges and cut themselves. Meanwhile, as the Admiral relates in his logbook, "I was very attentive to them, and strove to

learn if they had any gold. Seeing some of them with little bits of metal hanging at their noses, I gathered from them by signs that by going southward or steering round the island in that direction, there would be found a king who possessed great cups full of gold, and in large quantities." For "of gold is treasure made, and with it he who has it does as he wills in the world and it even sends souls to Paradise."

On his third voyage, Columbus still believed he was in the China Sea when he was off the coast of Venezuela. This did not prevent him from reporting that an endless land which was earthly paradise extended from there. Later Amerigo Vespucci, an early sixteenth-century explorer of the Brazilian coast, reported to Lorenzo de Medici: "The trees are of such beauty and sweetness that we felt we were in earthly Paradise." In 1503 Columbus wrote to his monarchs from Jamaica: "When I discovered the Indies, I said they were the greatest rich domain in the world. I spoke of the gold, pearls, precious stones, spices..."

In the Middle Ages a small bag of pepper was worth more than a man's life, but gold and silver were the keys used by the Renaissance to open the doors of paradise in heaven and of capitalist mercantilism on earth. The epic of the Spaniards and Portuguese in America combined propagation of the Christian faith with usurpation and plunder of native wealth. European power stretched out to embrace the world. The virgin lands, bristling with jungles and dangers, fanned the flames of avarice among the captains, the hidalgos on horseback, and the ragged soldiers who went out after the spectacular booty of war: they believed in glory, in "the sun of the dead," and in the key to achieving it, which Cortes defined thus: "Fortune favors the daring." Cortes himself had mortgaged everything he owned to equip his Mexican expedition. With a few exceptions— Columbus, Pedrarias Davila, Magellan—the expeditions of conquest were not financed by the state, but by the conquistadors themselves, or by businessmen who put up money for their ventures.

The myth of El Dorado, the golden king, was born: golden were the streets and houses of his kingdom's cities. In search of El Dorado a century after Columbus, Sir Walter Raleigh sailed up the Orinoco and was defeated by its cataracts. The will-o-the-wisp of the "mountain that gushed silver" became a reality in 1545 with the discovery of Potosi, but before this many adventurers who sailed up the Rio Parana in a vain search for the silver spring had died of hunger or disease or were pierced by native arrows.

There was indeed gold and silver in large quantities, accumulated in the Mexican plateau and the Andean altiplano. In 1519 Cortes told Spain of the fabulous magnitude of Montezuma's Aztec treasure, and fifteen years later there arrived in Seville the gigantic ransom—a roomful of gold and two of silver—which Francisco Pizarro had made the Inca Atahualpa pay before strangling him. Years earlier the Crown had paid the sailors on Columbus' first voyage with gold carried off from the Antilles. The Caribbean island populations finally stopped paying tribute because they had disappeared: they were totally exterminated in the gold mines, in the deadly task of sifting auriferous sands with their bodies half submerged in water, or in breaking up the ground beyond the point of exhaustion, doubled up over the heavy cultivating tools brought from Spain. Many natives of Haiti anticipated the fate imposed by their white oppressors: they killed their children and committed mass suicide. The mid-sixteenth-

century historian Fernandez de Oviedo interpreted the Antillean holocaust thus: "many of them, by way of diversion, took poison rather than work, and others hanged themselves with their own hands."

The Gods Return with Secret Weapons

While passing Tenerife on his first voyage, Columbus had witnessed a great volcanic eruption. It seemed an omen of all that would come later in the immense new lands which, surprisingly, stood athwart the western route to Asia. America was there — at first the subject of conjecture from its endless coasts, then conquered in successive waves like a furious tide beating in. Admirals gave place to governors, ships' crews were converted into invading hosts. Papal bulls had apostolically granted Africa to the Portuguese Crown, and the lands "unknown like those already discovered by your envoys and those to be discovered in the future" to the Crown of Castile. America had been given to Queen Isabella. In 1508 another bull granted the Spanish Crown, in perpetuity, all tithes collected in America. The coveted patronage of the New World Church included a royal prerogative over all ecclesiastical benefices.

The treaty of Tordesillas, signed in 1494, allowed Portugal to occupy Latin American territories below a dividing line traced by the Pope, and in 1530 Martin Affonso de Sousa founded the first Portuguese communities in Brazil, expelling French intruders. By then the Spaniards, crossing an infinity of hellish jungles and hostile deserts, had advanced far in the process of exploration and conquest. In 1513 the South Pacific glittered before the eyes of Vasco Nunez de Balboa. In the fall of 1522 the eighteen survivors of Ferdinand Magellan's expedition returned to Spain: they had for the first time united both oceans and confirmed that the world was round by circling it. Three years earlier Hernan Cortes ten ships had sailed from Cuba toward Mexico, and in 1523 Pedro de Alvarado launched the conquest of Central America. Francisco Pizarro, an illiterate pig-breeder, triumphantly entered Cuzco in 1533 and seized the heart of the Inca empire. In 1540 Pedro de Valdivia crossed the Atacama desert and founded Santiago de Chile. The conqistadores penetrated the Chaco and laid bare the New World from Peru to the mouth of the mightiest river on our planet.

There was something of everything among the native of Latin America: astronomers and cannibals, engineers and Stone Age savages. But none of the native cultures new iron or the plow, or glass, or gunpowder, or used the wheel except on their votive carts. The civilization from across the ocean that descended upon these lands was undergoing the creative explosion of the Renaissance: Latin America seemed like another invention to be incorporated, along with gunpowder, printing, paper, and the compass, in the bubbling birth of the Modern Age. The unequal development of the two worlds explains the relative ease with which native civilizations succumbed. Cortes landed at Veracruz with no more than 100 sailors and 508 soldiers; he had 16 horses, 32 crossbows, 10 bronze cannon, and a few harquebuses, muskets, and pistols. Pizarro entered Cajamarca with 180 soldiers and 37 horses. That was enough. Yet the Aztec capital, Tenochtitlan, was then five times larger than Madrid and had double the population of Seville, Spain's largest city, and in Peru Pizarro met an army of 100,000 Indians.

The Indians were also defeated by terror. The emperor Montezuma received the first news in his palace: a large hill was moving over the sea. More messengers arrived: "He was very alarmed by the report of how the cannon exploded, how its thunder reverberated, and how it filled one with awe and stunned one's ears. And when it went off, a sort of stone ball come from its entrails and rained fire." The strangers sat on "deer as high as the rooftops." Their bodies were completely covered, "only their faces can be seen. They are white, as if made of lime. They have yellow hair, although some have black. Long are their beards." Montezuma thought it was the god Quetzalcoatl returning: there had been eight prophesies of this not long before. Hunters had brought him a bird with a round mirror-like crest on its head in which the sunset was reflected; in this mirror Montezuma saw squadrons of warriors marching on Mexico. Quetzalcoatl had come from the east and gone to the east: he was white and bearded. Also white and bearded was Viracocha, the bisexual god of the Incas. And the east was the cradle of the Mayas' heroancestors.

The Avenging gods who were now returning to settle accounts with their peoples had armor and coats of mail, lustrous caparisons that deflected arrows and stones; their weapons emitted deadly rays and darkened the air with suffocating smoke. The conquistadors also practiced the arts of treachery and intrigue with refined expertise. They sagely allied themselves with the Tlaxcalans against Montezuma and effectively exploited the split in the Inca empire between the brothers Huascar and Atahualpa. They knew how to win accomplices for their crimes among the intermediate ruling classes, priests, officials, and defeated soldiers and high Indian chiefs. But they also used other weapons — or, if you prefer, other factors operated objectively for the victory of the invaders. Horses and bacteria, for example.

Horses, like camels, had once been indigenous to Latin America but had become extinct. In Europe, where they were introduced by Arab horsemen, they had proved to be of enormous military and economic values. When they reappeared in Latin America during the conquest, they lent magic powers to the invaders in the natives' astonished eyes. Atahualpa saw the first Spanish soldiers arriving on spirited steeds adorned with plumes and little bells, making thunder and clouds of dust with their swift hooves: panic-stricken, the Inca fell down on his back. The chief Tecum, leading the descendents of the Mayas, beheaded the horse of Pedro de Alvarado with his lance convinced that it was part of the conquistador: Alvarado stood up and killed him. A few horses in medieval war trappings scattered the mass of Indians, sowing terror and death. During the colonizing process, priests and missionaries spread for the superstitious Indians' benefit the tale that horses were of sacred origin, for Santiago, Spain's patron saint, rode a white horse which had won valiant victories against the Moors and the Jews with the aid of Divine Providence.

Bacteria and viruses were the most effective allies. The Europeans brought with them, like biblical plagues, smallpox and tetanus, various lung, intestinal, and venereal diseases, trachoma, typhus, leprosy, yellow fever, and teeth-rotting caries. Smallpox was the first to appear. Must not this unknown and horrible epidemic, which produced burning fever and decomposed the flesh, be a chastisement from the gods? The invaders "moved into Tlaxcala," one native eyewitness reported, "and then the epidemic spread: cough, burning hot pustules." Reported another: "The contagious, oppressive, cruel pustule sickness

brought death to many." The Indians died like flies; their organisms had no defense against the new diseases...The Brazilian anthropologist Darcy Ribeiro estimates that more than half the aboriginal population of America, Australia, and Oceania died from the contamination of first contact with white men.

From Hauptman LM. Between Two Fires American Indians in the Civil War. pp.

6-10. The Free Press, New York. 1995

After the Mexican War, the official direction in Indian policy largely shifted from removing Indians in the East to the "pacification" of the Trans-Mississippi frontier. The frontier was redefined in 1848 with the signing of the Treaty of Guadeloupe Hidalgo which ended the Mexican War. With this treaty, the United States received California, Arizona, New Mexico, and Utah; over 100,000 American Indians lived in California alone. With the discovery of gold at Sutter's Mill in 1848, nearly a quarter of a million settlers came to California within the next four years. What followed has been described by historian Hubert H. Bancroft as "one of the last human hunts of civilization, and the basest and most brutal of them all." By 1860, only 35,000 Indians remained alive in the entire state. By the turn of the twentieth century, there were between 12,000 and 20,000 Indians who had survived the slaughter. These same Indians had been dispossessed without any compensation for more than 100,000 square miles "of the most beautiful and valuable country in the world."

To be sure, there were many previous wars of conquest and pacification – the War of 1812; the First (1813-1814) and Second (1836) Creek Wars; the First (1817-1818), Second (1835-1842), and Third Seminole Wars (1855-1858); and the Black Hawk War (1832). But not compared to what transpired in northern California in the decade prior to the Civil War. Many California Indians were killed as a result of a systematic policy of extermination, although a significant number died as a result of disease, exposure, and starvation. Frederick Law Olmsted, the noted landscape architect, who traveled to the region during the Civil War, documented these heinous acts in his writings. Olmsted, no friend of the Indian, claimed "whites discriminate but imperfectly between hostile and peaceable Indians, and are always suspicious of and rancorous toward the later." Some whites planted evidence or made false reports "calculated to turn attention to the Indians" which directed "the aim of public vengeance or justice toward them." Most disturbingly, Olmsted observed: "I myself have seen men who simply with the apology that Indians were troublesome neighbors, did not shrink from stating that they had taken part in the distribution of clothes and blankets to them, which carried the infection of smallpox." Olmsted insisted that these acts occurred "within the last ten years."

Although the federal government began to create a series of Indian reservations in 1853, the natives were never adequately protected by Washington from marauding whites, nor fed, clothed, or housed. Conflicts over federal or state jurisdiction also restricted American military efforts to protect the Indians. To make matters worse, corrupt Indian agents frequently misappropriated federal funds which were set aside for the Indians' welfare. California whites

stereotyped the Indians as "ignorant, bestial savages who deserved no rights" and lobbied for total removal of the Indians from the state borders in order to do away with the "Indian menace."

The rapid destruction of the state's Indian population was most evident in northern California. The Indians were denied access to ancestral lands to fish, hunt, or gather roots. Hoopa, Nisenan, Shasta, Yana, Yuki, Yurok, Wintu, Wiyot, and others were soon starving refugees hiding out in the mountains. In order to survive, they periodically came down from the mountains, stole horses and cattle, or retaliated by killing their dispossessors, which only gave impetus to more organized "hunts" of the Indians. By the late summer of 1859, J.Y. McDuffie, Superintendent of Indian Affairs for California, reported: "The killing of Indians is a daily occurrence there." He continued in his report to the Commissioner of Indian Affairs: "If some means be not speedily devised, by which the unauthorized expeditions that are constantly out in search of them can be restrained, they will soon be exterminated."

Brutal attacks occurred even after reservations were established to protect and feed the Indians. Most Indians remained outside the reservations for fear they would be kidnapped and enslaved. Indian children and women found themselves unsafe even when they were on reservations. Historian Albert Hurtado has shown that forced concubinage and rape of Indian women by white men were common features of the violent youth subculture of the mines of California. The official "sanctioning" of these immoral activities stemmed from a California state statute of 1850 authorizing the indenture of Indians, a law that soon became a thinly disguised substitute for slavery, which had formally been abolished in the state in 1850. Kidnapping of Indian children and women became an especially profitable trade in the 1850's. As late as the fall of 1862, G.M. Hanson, the superintending agent of Indian Affairs for the Northern District of California, blamed this situation of the indenture law "under cover of which all this trouble exists" and urged its repeal.

Officials at every level of state government were directly or indirectly involved in this genocide. What befell the Yuki Indians was a case in point. In the 1850's, these northern California Indians were set upon and hunted down by William S. Jarboe and his Eel River Rangers, a motley assortment of Mendocino County ruffians. In a letter to the Governor of California, Captain Jarboe stated that the "ukas [Yuki] are without doubt, the most degraded filthy, miserable thieving lot of anything living that comes under the head of and rank of human being...they are inferior in intellect so devoid of feeling..." Despite evidence to the contrary, Jarboe rationalized his state-sanctioned policy of "nothing short of extermination" because of these Indians' alleged thieving and murderous ways.

J. Ross Browne, a special treasury agent who investigated the California situation in the late 1850's, reported: "a man named Jarboe now holds a commission from the governor of the state, in virtue of which he has raised a company, and has been engaged for some months past in a cruel and relentless pursuit of the Indians in this vicinity, slaughtering miscellaneously all with whom he comes in contact, without regard to age or sex..." Browne then graphically described the atrocities: "In the history of Indian races I have seen nothing so cruel and relentless as the treatment of these unhappy people by the authorities constituted by law for their protection." The treasury agent continued: "Instead of receiving

aid and succor, they have been starved and driven away from the reservations, and then followed into their remote hiding places where they sought to die in peace, and cruelly slaughtered, till but few are left, and that few without hope." Browne suggested that "nothing short of military force could restrain the settlers" and save the Indians from destruction. At times the militia, not just the settlers, played a direct part in the genocide. In the early spring of 1853, Colonel Ethan Allen Hitchcock of the Second United States Infantry, later Union general during the Civil Wary, reported to the Adjutant General of the United States about the Indian war in northern California. A contingent of Indians was invited into the camp of Captain Ben Wright under a white flag to negotiate a peace; instead, the Indians were set upon and thirty-eight were killed in a planned trap. Wright took their scalps and later "was received with a general welcome by the local citizens of Yreka [Eureka]."
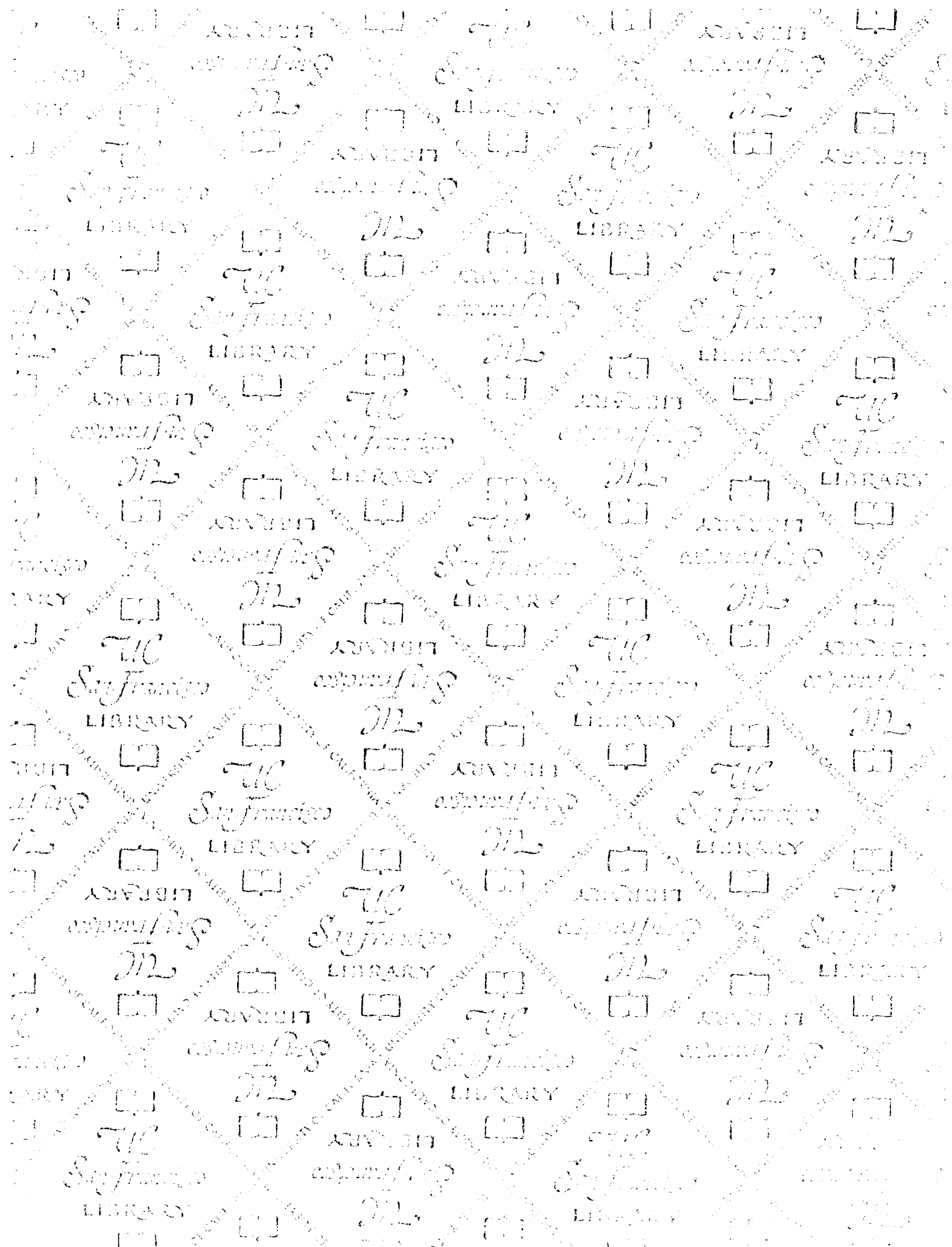
The mass murder of Indians in this decade was well known in Washington and led to the federal "solution" of creating reservations in the region, including the Nome Lackee (1854), Mendocino (1855), Klamath (1855), and Round Valley (1856) — which did little to stop the violence from intensifying there and elsewhere. Unauthorized white-owned businesses were established on the reservations; these included a sawmill which adversely affected salmon fishing on the Mendocino Reservation. At Round Valley Reservation, squatters literally overran the place, and by the end of the decade, four-fifths of the reservation was in white hands. By 1861, William P. Dole, the commissioner of Indian affairs, wrote in his annual report about the events taking place in Humboldt and Mendocino counties, that the "crimes that are committed in the wake" present "a picture of the perversion of power and of cruel wrong, from which humanity instinctively recoils." Dole continued: "This so-called 'Indian war' appears to be a war in which the whites alone are engaged. The Indians are hunted like wild and dangerous beasts of prey; the parents are 'murdered,' and the children 'kidnapped.'"

Despite Commissioner Dole's concerns, Interior Department personnel were participants in the crimes taking place in northern California. A new height of graft was established by Colonel Thomas J. Henley, the postmaster of San Francisco, who in 1854 was appointed Superintendent of California Indians. Henley's disregard for his charges included his selling off cattle herds intended to provide food for the starving Indians, allowing his sons and other partners to establish illegal businesses on the reservations at Nome Lackee and Mendocino, and permitting white squatters to overrun the Round Valley Reservation. To justify his actions, Henley insisted that the solution to the "indian problem" was to refuse to allow the feeding of any Indian off the reservations which he deemed "injurious to the policy of colonization, as contemplated by the system now in operation." Despite criticisms of his actions from 1855 onward, Henley retained his office until the late spring of 1859, by backing up squatters' claims and by having powerful allies in Sacramento and Washington.

Nor were underlings in the Interior and War departments alone in their involvement in the crimes. The top echelons of the United States government at times abdicated responsibility in keeping order. While atrocities were frequently reported to them, the United States Army high command refused to budge, insisting that the federal government had no exclusive jurisdiction in the matter. General John E. Wool, a hero of the Mexican War who later headed the Eighth

Corps of the Union Army, insisted in 1856 that since "California is in no respect considered an Indian country," the military had no control of whites or Indians there. He maintained that California state laws applied even in the case where whites kidnapped "from the reserve one or more squaws, or one or more Indian children."

By 1860, California state militia in cooperation with federal troops forced many of the Indians onto nine temporary enclaves in the northern part of the state. Militia troops hunted down the Indians while federal troops guarded the prisoners, an understanding worked out by the Indian superintendent. Yet even with this federal presence, Indian crops continued to be burned and Indian women continued to be kidnapped. Congress, which had never ratified eighteen treaties guaranteeing California Indians lands, later reimbursed the state for bonds California issued in the hunting of Indians during the decade of the 1850's.