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A Statistical Report of the Incidence of First Primary Central Nervous System Tumors in California, 2001-2005

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Introduction

Central nervous system (CNS) cancers encompass neoplasms of the neuroepithelial tissue and membranous coverings of the brain and spinal cord, tumors of the pituitary gland, those arising from the cranial nerves and from CNS hematopoietic cells. All are contained within the bony cranial or spinal vault. First primary CNS tumors (PCNST) are distinguished from subsequent independent tumors of same organ and secondary tumors, which are metastatic from a primary non-neural site. Compared to other forms of cancer, PCNST are rare. In California, these cancers generally represent only 1.5% of incident cancer cases and 2.6% of cancer deaths [1]. Despite these statistics, PCNST are an important source of cancer morbidity and mortality and generate intense interest from clinicians, researchers, the public health community and the general public.

PCNST among children, adolescents and teens differ from those in adults in frequency, histological appearance and clinical behavior.[2] PCNST are the second most common form of cancer among children 15 years and younger and the third most common among those 15-19 years old in California. While PCNST represent only 1.3% of incident cancers among adults, 20 years and older, they represent between 26.4% (5-9 year olds) to 9.5% (15-19 year olds) of incident cancers among persons less than 20 years old.[1] PCNST among children, adolescents and teens tend to have short latent periods, often grow rapidly and are aggressively invasive.[2] They are the second leading cause of cancer death among children less than 15 years old representing between 32% (5-9 year olds) and 12% (15-19 year olds) of cancer deaths as compared to 3% of cancer deaths for adults 20 years and older.[1]

With the enactment of Public Law 107-260 in 2004, the Benign Brain Tumor Cancer Registries Amendment Act, all state and metropolitan cancer registries are now required to collect data on benign PCNST and those of uncertain behavior [3]. The California Cancer Registry began to voluntarily collect benign brain tumor data in 2001. In this study, we examined the incidence of first primary PCNST collected by the CCR from 2001-2005. For benign PCNST, this study period represents the first 5-years of data collection in California and is the first population-based study of benign PCNST in the country. The CCR provides a robust source of epidemiologic data from a densely populous and demographically diverse geographic area. Delineating the epidemiology of PCNST in California will constitute a backdrop for future basic,

translational, clinical and public health research and also serve as a baseline for monitoring incidence trends over time.

Materials and Methods

CASE IDENTIFICATION

Cases used in these analyses were identified using the California Cancer Registry (CCR), a population-based registry composed of eight regional registries collecting cancer incidence and mortality data for the entire population of California. In 1985, California state law mandated the reporting of all newly diagnosed cancers in California, and statewide implementation began January 1, 1988. This state law was amended requiring the collection of benign and uncertain behavior brain and other nervous system tumors beginning January 1, 2001. Cases are reported to the Chronic Disease Surveillance and Research Branch of the California Department of Public Health from hospitals and any other facilities providing care or therapy to cancer patients residing in California [4]. Cases diagnosed outside of California, at autopsy or from death certificates were excluded. For this study, first primary cases of malignant, benign and uncertain behavior brain and other nervous system tumors diagnosed between January 1, 2001 and December 31, 2005 and reported to the CCR as of October 2007 were used. Only cases diagnosed or treated at the reporting facility were included in these analyses. Diagnoses of 98% of the 24,944 cases were confirmed by histology (79.0%) and radiography (19.3%). The remaining 1.7% was confirmed by a variety of methods, including but not limited to cytology and clinical determination. Less than 0.5% of cases included in these analyses were confirmed by an unknown method. In this manuscript, the term "uncertain behavior" is used and is synonymous with "borderline behavior". These terms are defined similarly but their use is specific to certain classification systems. Uncertain behavior is used in the International Classification of Diseases (ICD) [5] systems, while borderline behavior is the term used by the CDC/NPCR [6], SEER [7] program and thus the CCR. Only cases with anatomical sites, histology codes and tumor behavior defined as reportable in Cancer Reporting in California: Abstracting and Coding Procedures for Hospitals, Volume 1, Section II.1.9.1 and Appendix V were included in these analyses.[8] For children, adolescents and teens, diagnostic groups were organized using the SEER Program's site/histology modification to the International Classification of Childhood Cancer (ICCC).[9, 10] The table below, lists ICCC diagnostic groups by ICD-O-3 morphology and topography codes.

SEER Recode of ICCC Diagnostic Group and ICD-O-3 Codes for California Cases, 2001-2005

		ICD-O-3 code(s)	
	Diagnostic Group	**Morphology**	**Topography**
IIIA	Ependymomas & Choroid Plexus Tumor	9383, 9390-9394, 9390	C000-C809
IIIB	Astrocytomas	9380	C723
		9384, 9400, 9401, 9410, 9411, 9420, 9421, 9423, 9424, 9440-9442	C000-C809
IIIC1	Medulloblastomas	9470-9472, 9474, 9480	C000-C809
IIIC2	Primitive Neuroectodermal Tumors (PNET)	9473	C000-C809
IIIC9	Other Intracranial & Intraspinal Embryonal Tumors	9501-9503	C700-C729
		9508	C000-C809
IIID	Other Gliomas	9380	C700-C722, C724-C729, C751, C753
		9381, 9382, 9430, 9450, 9451, 9460	C000-C809
IIIE	Other Specified Intracranial & Intraspinal Neoplasms	8270-8281, 8300, 9350-9352, 9360-9362, 9412, 9413, 9492, 9493, 9505-9507, 9530-9537, 9537-9539	C000-C809
XA	Intracranial & Intraspinal Germ Cell Tumors	9060, 9064, 9065, 9070-9072, 9080-9085, 9100	C700-C729, C751-C753
Z	Other	8000-8005, 9370	C700-C729, C751-C753
		9501-9503	C000-C699, C739-C768, C809
		8680, 8728, 8810, 8850, 8920, 9120, 9121, 9130, 9150, 9161, 9260, 9490, 9500, 9522, 9523, 9540-9571, 9590, 9591, 9650, 9670, 9671, 9675, 9680, 9684, 9687, 9690, 9691, 9695, 9698, 9699, 9702, 9705, 9714, 9719, 9727-9729, 9731, 9733, 9734, 9740, 9741, 9750, 9755, 9930	C000-C809

For adults, anatomical sites included were the meninges (C70.0-C70.9), brain (C71.0-C71.9), cerebrum (C71.0), brain lobes (C71.1-C71.4), ventricle, NOS (C71.5), cerebellum, NOS (C71.6), brain stem (C71.7), spinal cord (C72.0), cauda equina (C72.1), cranial nerves (C72.2), pituitary gland (C75.1), craniopharyngeal duct (C75.2) and pineal gland (C75.3).[8] For other selected analyses, overlapping lesions of brain (C71.8), brain, NOS (C71.9) and/or nervous system, NOS (C72.9) were included. Although the use of some anatomical sites and histology codes differed, the 2007-2008 report of CBTRUS, 2000-2004, was used as a guide for the organization of histology codes in Table 2 [11].

The collection of benign and borderline brain and other nervous system tumors became a statewide effort beginning in 2001, however the nationwide effort did not begin until 2004. Inconsistencies in data collection occurred primarily as a result of coding rule changes with cases diagnosed in 2004 and 2005. To utilize all eligible cases, the inconsistencies needed to be resolved. Cross tabulations of cases by histology, behavior, and anatomical site were reviewed by the authors, a regional registry quality control coordinator and a neurosurgeon to determine the accuracy of coding and the appropriate categorization for presentation. Based on their assessment, several cases were reassigned histology, behavior, and/or anatomical site codes, and several more cases were deleted from the research database entirely.

VARIABLES

Age, sex, race/ethnicity and residential address of patient that were used in these analyses were collected by the CCR from the patient's medical record. Race/ethnicity was derived from patient self-identification, assumptions based on personal appearance, or inferences based on the race/ethnicity of the parents, birthplace, surname, or maiden name. Race/ethnicity was classified into four mutually exclusive categories of non-Hispanic white, non-Hispanic black, Hispanic and Asian-Pacific Islander. Cases with other race/ethnicity, age, or sex were excluded from these analyses. Hispanic ethnicity identification was enhanced by the use of computerized comparisons to the 1980 U.S. census list of Hispanic surnames. Patients identified as Hispanic on the medical record, or patients identified as white, black, or of unknown race with a Hispanic surname were classified as Hispanic. Use of this method can misclassify some persons as Hispanic when they are not [12].

The RUCAs were developed by the University of Washington's Rural Health Research Center (RHRC) and the Economic Research Service. Funding for the development of the RUCAs came from the federal Health Resources and Service Administration's Office of Rural Health Policy and the Department of Agriculture's Economic Research Service [13]. The RUCAs are a census tract-based taxonomy that utilizes the standard Census Bureau Urbanized Area and Urban Cluster definitions in combination with work commuting data to characterize the nation's census tracts regarding their urban and rural status and functional relationships [14]. For these analyses, urban and rural census tracts in California were dichotomized based on Categorization C as recommended in "Using RUCA Data" published by the RHRC [14].

Socioeconomic status (SES) was assigned based on the patient's census block group (2000 U.S. census) derived from their address at time of initial diagnosis as reported in the medical record. This SES variable is an index that utilizes education, employment characteristics, median household income, proportion of the population living 200% below the Federal Poverty Level (FPL), median rent and median housing value of census tract of residence for case and denominator population. A principal components analysis was used to identify quintiles of SES ranging from 1 the lowest, to 5 the highest [15].

STATISTICAL ANALYSIS

Counts and proportions were calculated using SAS 9.0, Cary, NC. Age-specific incidence rates (ASIR) were calculated specific to each 5-year age group. When incidence rates were calculated for multiple 5-year age groups, for example among children and adolescents, <15 years old, age-adjusted incidence rates (AAIR) were standardized to the 2000 U.S. standard population.[16] Denominators were based on the 2000 U.S. census. All rates were calculated using SEER*Stat 6.3.6, Silver Spring, MD.

INTERPRETATION OF STATISTICS

This is the first study to examine both malignant and benign PCNST in California [17]. California is a large, heavily populated state with a unique ethnic, cultural and economically diverse population. Since this diversity is reflected in the CCR, we were able to conduct robust analyses and make comparisons that few states and countries can perform. The CCR's epidemiologic value stems from the 1988 state mandated comprehensive reporting of cancer cases from all physicians, hospitals, clinics, treatment facilities and pathology laboratories. Therefore, a single standard is utilized for statewide data collection, quality assurance, training, and education for cancer registration. This high standard results in optimal case ascertainment and a high level of accuracy for many data items.

Our study and data source are not without limitations. This study was solely conducted using the CCR and was not supplemented with other data. These data are collected for the purpose of surveillance and can be less detailed than those derived from medical records to support the design of a specific research study. Population-based cancer registry data derive from many sources, thus, the quality of some variables could vary. Individual level social indicators are not available to the CCR. Our SES measure is an index based on census tract of residence at diagnosis. This composite measure is more efficient for data analysis, and avoids biases inherent in use of individual component indicators. As with all composite measures, there is a loss of information and/or precision when compared to the use of individual component indicators. Another potential source of error is the misclassification of cases. Despite a rigorous data review and cleaning process, cases could have been misclassified based on tumor behavior, histology, and/or anatomical site.

Cancer incidence is difficult to compare across geographical areas, time-periods, and data systems. Data used in national and international incidence studies, can differ in diagnostic and neuropathological assessment as well as in case ascertainment practices.[18-21] All U.S. statistics and population-based studies on brain or CNS tumors utilize data from one of four centralized systems: the National Program of Cancer Registries (NPCR) operated by the CDC, the North American Association of Central Cancer Registries (NAACCR), a professional organization, the Surveillance Epidemiology and End Results program (SEER) of the NCI, and the Central Brain Tumor Registry of the United States (CBTRUS), a not-for-profit organization. Both NPCR and NAACCR cover more than 95% of the U.S. population[6, 22], while SEER represents only 26%.[7] CBTRUS differs from the other agencies in that it is a voluntary and not mandated repository for CNS tumor data. In 1999, CBTRUS was estimated to cover only 15% of the U.S. population[23], with contributions from 16 state registries (excluding California).[11]

The World Health Organization (WHO) produces the ICD family of classification systems which includes the ICD-O[5] and the WHO grading scheme,[24] both tumor malignancy scales. The ICD-O tumor behavior codes are intended to apply across many neoplasms, whereas the WHO grading scheme is specific to CNS tumors. The ICD-O system is used by cancer data collection agencies, the WHO grading scheme is used by clinicians. The WHO grading scheme does not explicitly have an option for coding tumors of uncertain behavior, therefore discrepancies in coding a similar pathology report can occur.

Differences between PCNST incidence statistics in epidemiologic studies can also arise from the organization of histology code sub-groupings for data presentation. Histology code sub-grouping differences can affect incidence case counts, proportions and rates. SEER designed and implemented an incidence site recode system that standardizes sub-groups for the ICD-O [5]. These variables are based on primary site and histology codes and were added to the SEER data system as a convenience for researchers [7]. This system is used by the CCR as well as all member central cancer registries of NPCR, NAACCR and SEER. This system is not used by CBTRUS or in international studies.

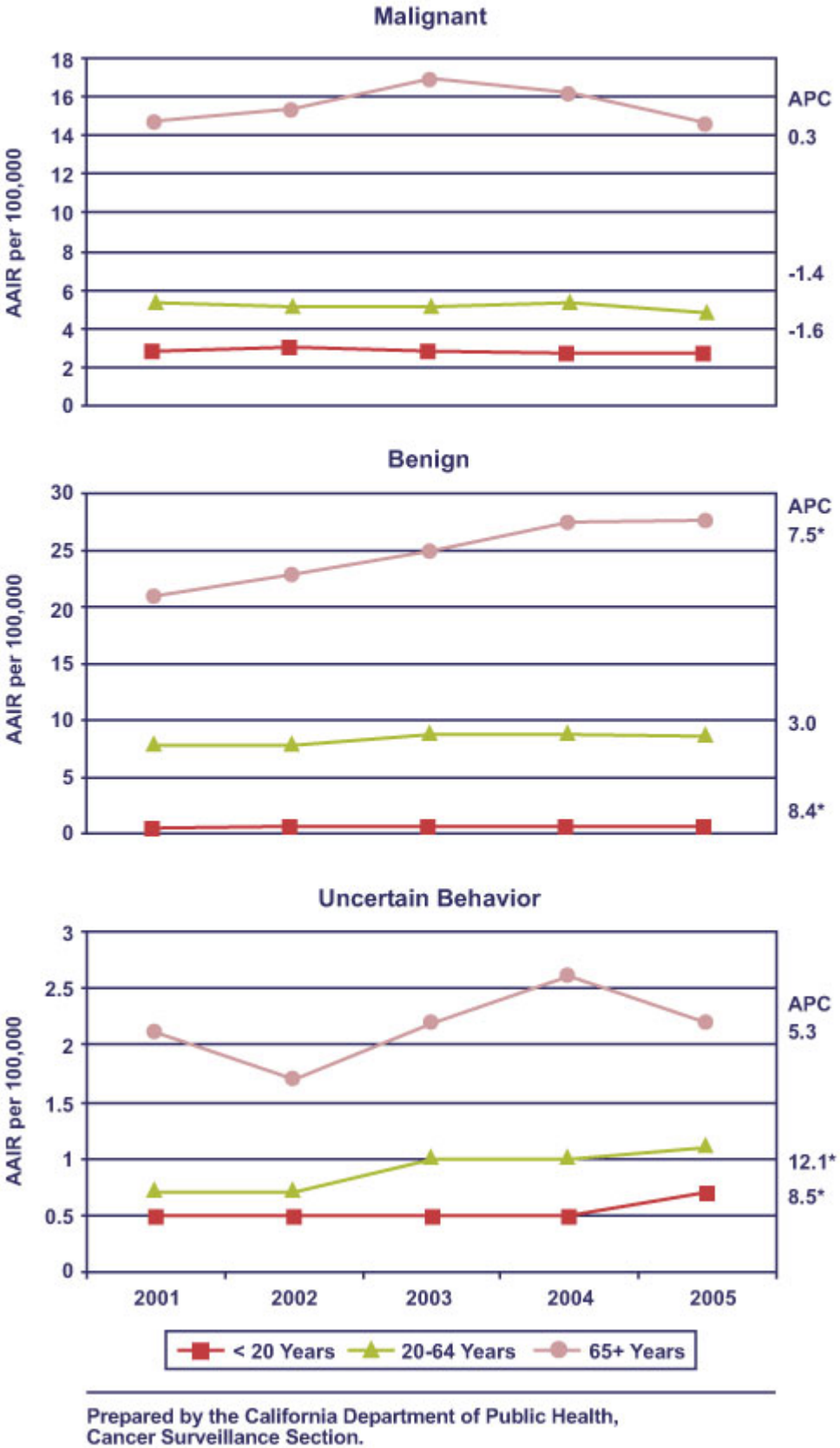
PCNST in California

- We identified 24,923 cases of first primary central nervous system tumors in the CCR from 2001 to 2005.
- A total of 9,236 (37.1%) cases were malignant, 14,057 (56.4%) cases were benign and 1,630 (6.5%) cases were of uncertain behavior.
- The AAIR of malignant PCNST in California was 5.8 cases per 100,000 persons and benign PCNST was 8.5 cases per 100,000 persons. For tumors of uncertain behavior the AAIR was 1.0 per 100,000.

Subjects comprising our patient population were mostly adults, 20-64 years old (59.5%); 54.5% female; 60.8% non-Hispanic white; 46.5% of high SES and 93.5% urban residents at the time of diagnosis.

TRENDS IN INCIDENCE

Figure 1, Annual Age-Adjusted Incidence Rate (AAIR) of First Primary Central Nervous System Tumors by Behavior, with Annual Percent Change (APC), California 2001-2005



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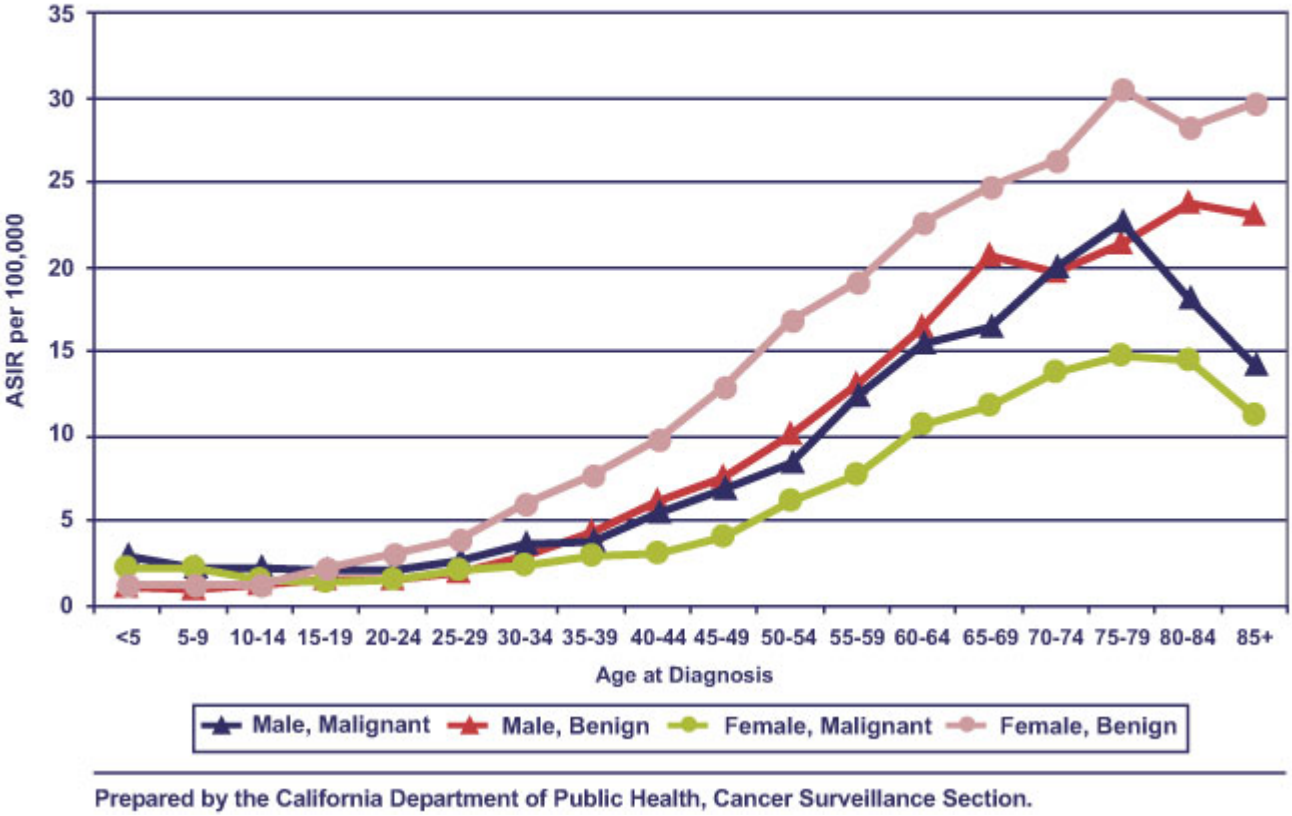
- Malignant PCNST has been decreasing in all age groups since 1988.

Benign PCNST have been increasing. For those less than 20 years old and those, 65 years and older, this increase was statistically significant ($p<0.05$).

- PCNST of uncertain behavior have had a slight increase. For those less than 20 years old and those 20-64 years old this increase has been statistically significant ($p<0.05$).

INCIDENCE BY AGE GROUPS

Figure 2, Age-Specific Incidence Rates (ASIR) of First Primary Benign and Malignant Brain and Other Nervous System Tumors by Sex, California, 2001-2005



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- Age-specific incidence of malignant tumors was lowest for both men and women in their early twenties. The ASIR for men was higher than the ASIR for women, with the gap increasing between ages 40 and 79. Incidence of malignant tumors peaked for both men and women in their late 70's and decreased thereafter.

Benign tumors were lowest in childhood and adolescence and increased with increasing age. ASIRs for benign tumors were consistently higher among females for all age groups except for ages 10-14.

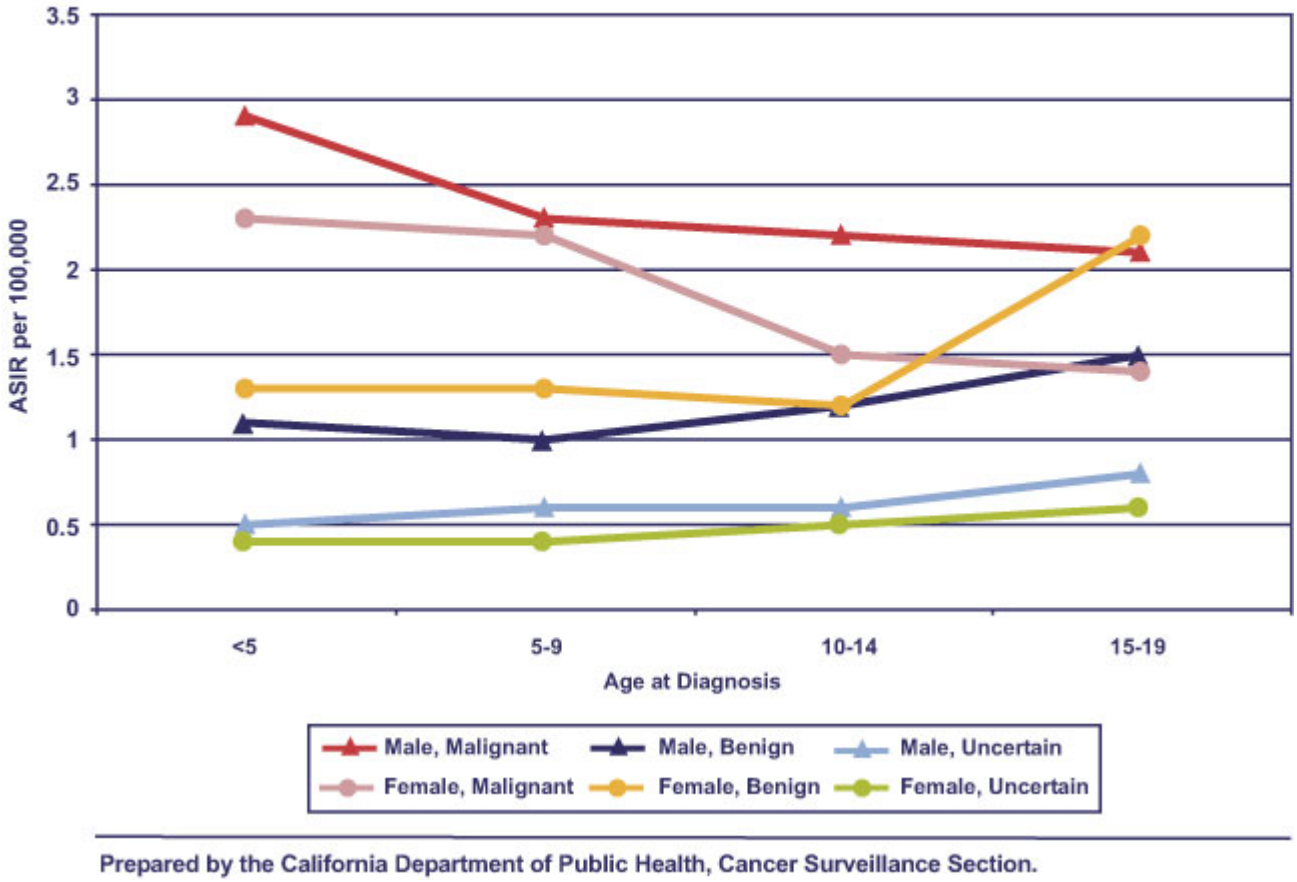
PCNST Among Children, Adolescents & Teens

- There were 2,096 cases of PCNST among children, adolescents and teens, from birth to 19 years old in California from 2001-2005.
- Of those cases, 1,114 (53.1%) were malignant, 698 (33.3%) were benign and 284 (13.6%) were of uncertain behavior.

The AAIR per 100,000 was 2.1 for malignant, 1.3 for benign and 0.5 for tumors of uncertain behavior

INCIDENCE BY AGE GROUPS

Figure 3, Age-Specific Incidence Rates (ASIR) of Malignant and Benign First Primary Central Nervous System Tumors among Children, Adolescents and Teens by Age Group and Sex, California, 2001-2005



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- The highest incidence of PCNST was for malignant PCNST among children less than five years old (2.6 per 100,000). This pattern changed for 15-19 year olds where incidence of benign equaled that of malignant (1.7 versus 1.8 per 100,000). The lowest incidence, at every age group, was for tumors of uncertain behavior.

- The ASIR for boys for malignant and uncertain behavior PCNST were higher than that for girls at all age groups. Incidence rates for girls with benign PCNST were higher than that for boys until 10-14 years old, where they appeared to be same. Benign ASIRs increased among 15-19 year old girls where they exceeded the malignant PCNST rate among boys.

Adolescents showed the widest sex-specific gulf for malignant PCNST. The ASIR among girls started to decline dramatically from 5 to 14 years old. Incidence rates for boys declined as well but not as dramatically. When PCNST incidence rates were compared by age group, sex and tumor behavior, we found that the only significant differences were among adolescents.

The ASIR for malignant PCNST for adolescent boys was 2.2 and for adolescent girls was 1.5 per 100,000. Malignant PCNST incidence among teen boys was 2.1 and 1.4 per 100,000 for teen girls. Benign PCNST among teen boys was 1.5 but was 2.2 per 100,000 for teen girls (data not shown).

PATIENT DEMOGRAPHICS BY AGE GROUP

(Table 1)

- For nearly all age groups, a higher proportion of malignant and uncertain PCNST were diagnosed among boys, while benign PCNST occurred more frequently in girls. The exception was a higher proportion of benign PCNST among 10-14 year old boys.

- Hispanic children less than five years old had the highest proportion of PCNST regardless of tumor behavior. Non-Hispanic white adolescents and teens had the highest proportion of PCNST in the 10-14 and 15-19 age groups. In the 5-9 age group, Hispanic children had the highest proportion for tumors with malignant and uncertain behavior, and

non-Hispanic white children had the highest proportion of benign PCNST.

- Among children less than five years old, more cases were from lower SES regardless of tumor behavior. For children 5-9 years old, more cases of malignant and uncertain PCNST were among low SES and more cases of benign PCNST were from high SES. For adolescents and teens, all cases of malignant PCNST were from those in the highest SES. For those 10-14 years old, a higher proportion of benign PCNST were from high SES, a higher proportion of uncertain PCNST were from low SES. For those 15-19 years old, more cases of uncertain behavior were from high SES while more cases of benign behavior were from low SES.

AGE-SPECIFIC INCIDENCE BY RACE/ETHNICITY

(Table 2)

- For many age group/race/ethnicity/tumor behavior subgroups, incidence rates could not be calculated due to the small number of cases.
- Where incidence rates could be calculated and compared, we found no statistically significant differences by race/ethnicity for any age group by tumor behavior.
- Incidence rates were highest for non-Hispanic whites at every age group by tumor behavior except for children <5 and 15-19, where Asian-Pacific Islanders had a marginally higher malignant incidence rate.

HISTOLOGY BY TUMOR BEHAVIOR

(Table 3)

- Among children less than five years old, the primary malignant diagnosis was ependymomas and choroid plexus (IIIA). For children 5-9 years old, other gliomas (IIID) was ranked first only slightly ahead of astrocytomas (IIIB), which was followed closely by medulloblastomas (IIIC1).
- Germ cell tumors (XA) ranked a close second to astrocytomas (IIIB) among adolescents 10-14 years old.
- Among teens, benign PCNST classified as other specified intracranial and intraspinal tumors (IIIE) were ranked first. The majority of patients in that sub-category were diagnosed specifically with pituitary adenoma (66.7%). Overall, pituitary adenoma was 20.1% of all diagnoses in this age group.
- In all age groups, the majority of tumors of uncertain behavior were classified as other specified intracranial and intraspinal tumors (IIIE). In nearly every age group, the majority of those patients were diagnosed specifically with gangliogliomas, representing between 37.0% (5-9 year olds) to 47.8% (10-14 year olds) of those cases (data not shown).
- Among children less than five years old, there were nearly an equal number of patients diagnosed with craniophargiomas and gangliogliomas (36.1% and 38.9%, respectively) (data not shown).

HISTOLOGY BY PATIENT DEMOGRAPHICS

(Table 4)

- The distribution of astrocytomas, both malignant and benign, was nearly the same for boys and girls less than 15 years old, while among teens, more astrocytomas were seen in boys. Boys had the highest proportion of cases of ependymomas and choroid plexus tumors and medulloblastomas and PNET tumors.
- Astrocytomas and PNET tumors were distributed nearly equally among non-Hispanic white and Hispanic children. All other histologies were distributed mostly in adolescents and teen non-Hispanic whites.
- For children less than 10 years old, ependymomas and choroid plexus tumors and medulloblastomas and PNETs occurred most often in areas of low SES. Astrocytomas occurred mostly in the low SES category for children less than five years old. Among 5-9 year olds, cases of astrocytoma were distributed evenly over SES categories. Among adolescents and teens, there were more cases of astrocytoma in the high SES

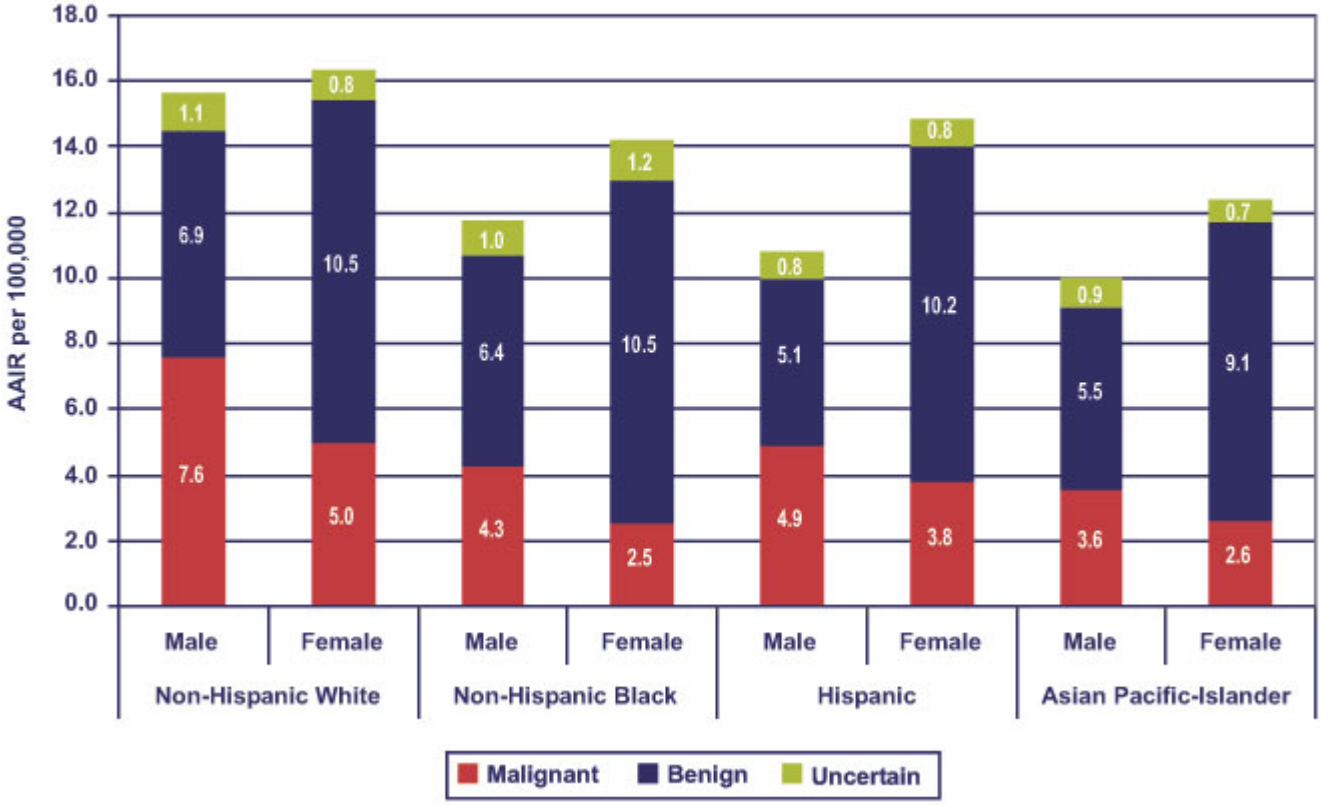
category. Benign astrocytomas occurred more often in areas of low SES for children ages less than 5 and 15-19 and in areas of high SES for children ages 5-14 years old.

PCNST Among Adults, 20-64 Years Old

- There were 14,819 cases of PCNST among adults, 20-64 years old.
- Of those cases, 5,202 (35.1%) were malignant, 8,676 (58.6%) were benign and 941 (6.3%) were of uncertain behavior.
- The AAIR per 100,000 was 5.1 for malignant, 8.3 for benign and 0.6 for tumors of uncertain behavior.
- Our patient population was 53.6% female; 58.6% non-Hispanic white; 46.9% of high SES and 93.3% urban residents at time of diagnosis (Table 5)

AGE-ADJUSTED INCIDENCE BY SEX AND RACE/ETHNICITY

Figure 4: Age-Adjusted Incidence Rates (AAIR) of First Primary Central Nervous System Tumors by Race / Ethnicity, Behavior and Sex, 20-64 Year Olds, California, 2001-2005



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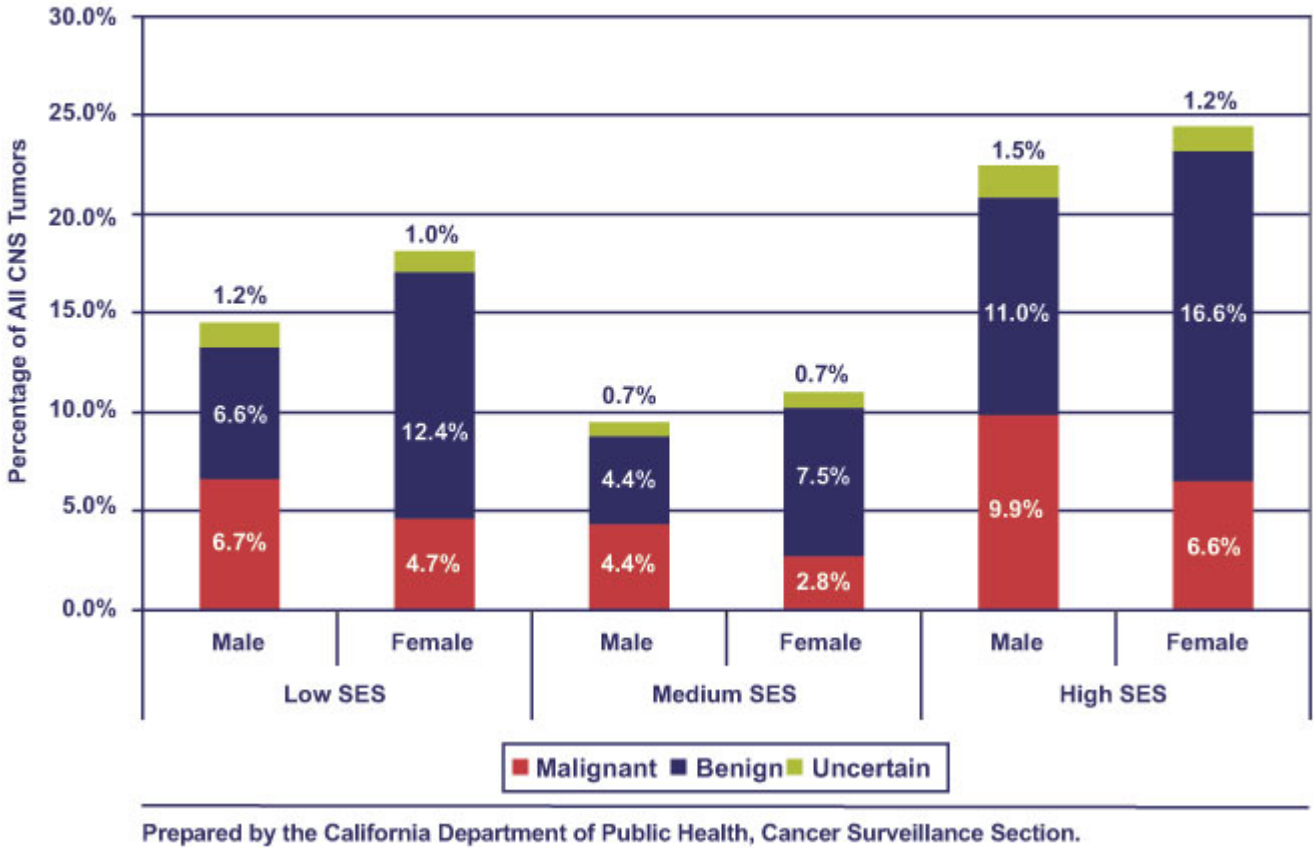
- Incidence of malignant tumors was highest for non-Hispanic white men (7.6 per 100,000), followed by non-Hispanic white women and Hispanic men (5.0 and 4.9 per 100,000 respectively).
- Incidence rates were lowest for Asian-Pacific Islander and non-Hispanic black women (2.6 and 2.5 per 100,000 respectively).

Incidence of benign tumors was highest for all women with rates by race/ethnicity being very close, ranging from 10.5 to 9.1 per 100,000). These differences were not statistically significant.

Incidence rates for tumors of uncertain behavior were similar regardless of sex and race/ethnicity.

DISTRIBUTION OF CASES BY SEX AND SES

Figure 5: Proportion of First Primary Brain and Central Nervous System Tumors by Socioeconomic Status (SES), Behavior and Sex, 20-64 year olds, California, 2001-2005



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- The proportion of malignant tumors was highest for high in men SES (9.9%) followed by low SES (6.7%).
- Similarly, the proportion of benign tumors was highest for women in the highest SES (16.6%) followed by women in the low SES (12.4%).

The proportion of tumors of uncertain behavior was similarly distributed regardless of sex or SES.

(Table 5)

HISTOLOGY BY TUMOR BEHAVIOR

(Table 6)

- Malignant PCNST were primarily glioblastoma (43.8%).
- The majority of benign tumors consisted of meningiomas (44.5%), followed by pituitary tumors (28.2%) and nerve sheath tumors (23.5%). These 3 histologies represented 96% of all benign PCNST.
- The largest proportion of tumors of uncertain behavior were meningiomas (25.2%) followed by hemangioblastomas (18.2%) in this age group.

HISTOLOGY BY PATIENT DEMOGRAPHICS

(Table 7) (Table 8) (Table 9)

- The AAIR for glioblastomas among men was nearly twice the rate among women, while the rate of meningiomas among women was nearly 3 times the rate among men.
- Non-Hispanic white men had significantly the highest AAIR of glioblastoma (3.6 per 100,000).

- Non-Hispanic white men and women had the highest AAIR for nerve sheath tumors (2.5 and 2.3 per 100,000, respectively).
- Non-Hispanic black and white women had the highest AAIR for meningiomas (6.0 and 5.9 per 100,000, respectively).
- Non-Hispanic black women and men, and Hispanic women had the highest incidence of pituitary tumors (3.5, 3.2 and 3.4 per 100,000, respectively).

PCNST BY ANATOMIC SITE AND PATIENT DEMOGRAPHICS

(Table 10) (Table 11)

- Malignant PCNST were primarily of the "lobes of the brain" (58.8%), followed distantly by "overlapping lesions of the brain" (15.6%).
- Malignant tumors by anatomical site were found most often among men (59.7%), non-Hispanic whites (64.3%) and Hispanics (23.1%), those in the highest SES group (47.1%) and urban dwellers (93.3%).
- Hispanics had higher proportions of tumors of the cerebellum (36.4%) and ventricles (34.2%), and Asian-Pacific Islanders had higher proportions of tumors of the pineal gland (16.3%) relative to other anatomical sites.
- Benign PCNST were primarily of the meninges (41.4%) and the pituitary gland (28.3%).
- The distribution of benign cases was similar to the distribution of malignant PCNST except that benign tumors were seen mostly in women (62.4%).
- Hispanics had a higher proportion of tumors of the pituitary gland (35.7%) relative to other anatomical sites.
- Benign PCNST classified as Brain/Nervous System, NOS (45.8%) were more frequent among patients of low SES compared to other sites.

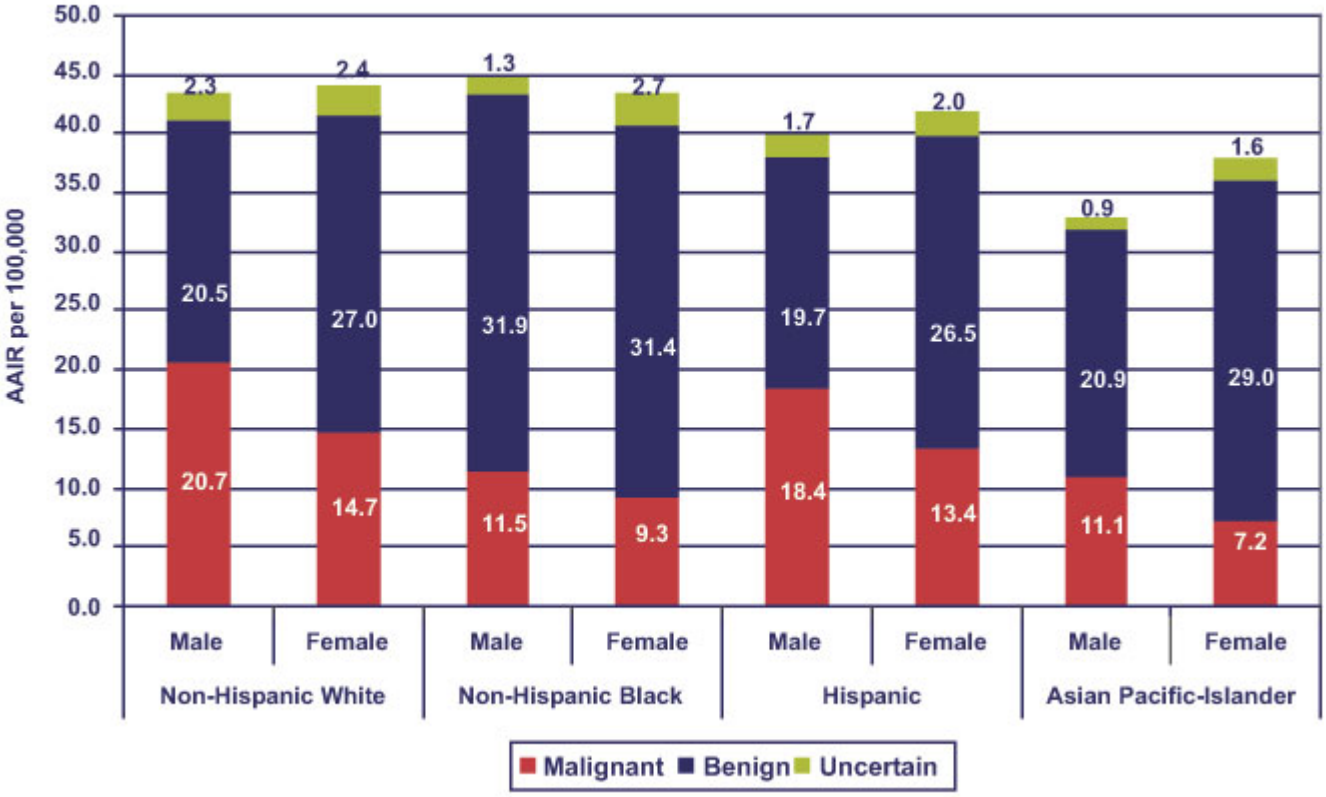
PCNST Among Seniors, 65 Years and Older

- There were 8,008 cases of PCNST among seniors, 65 years and older.
- Of those cases, 2,920 (36.5%) were malignant, 4,683 (58.5%) were benign and 405 (5.1%) were of uncertain behavior.
- The AAIR per 100,000 was 15.6 for malignant, 24.8 for benign and 1.3 for tumors of uncertain behavior.

Our patient population was 58.3% female; 69.8% non-Hispanic white; 47.6% of high SES and 92.9% urban at the time of diagnosis (Table 12).

AGE-ADJUSTED INCIDENCE BY SEX AND RACE/ETHNICITY

Figure 6: Age-Adjusted Incidence Rates (AAIR) of First Primary Central Nervous System Tumors by Race / Ethnicity, Behavior and Sex, Those 65 Years and Older, California, 2001-2005



Prepared by the California Department of Public Health, Cancer Surveillance Section.

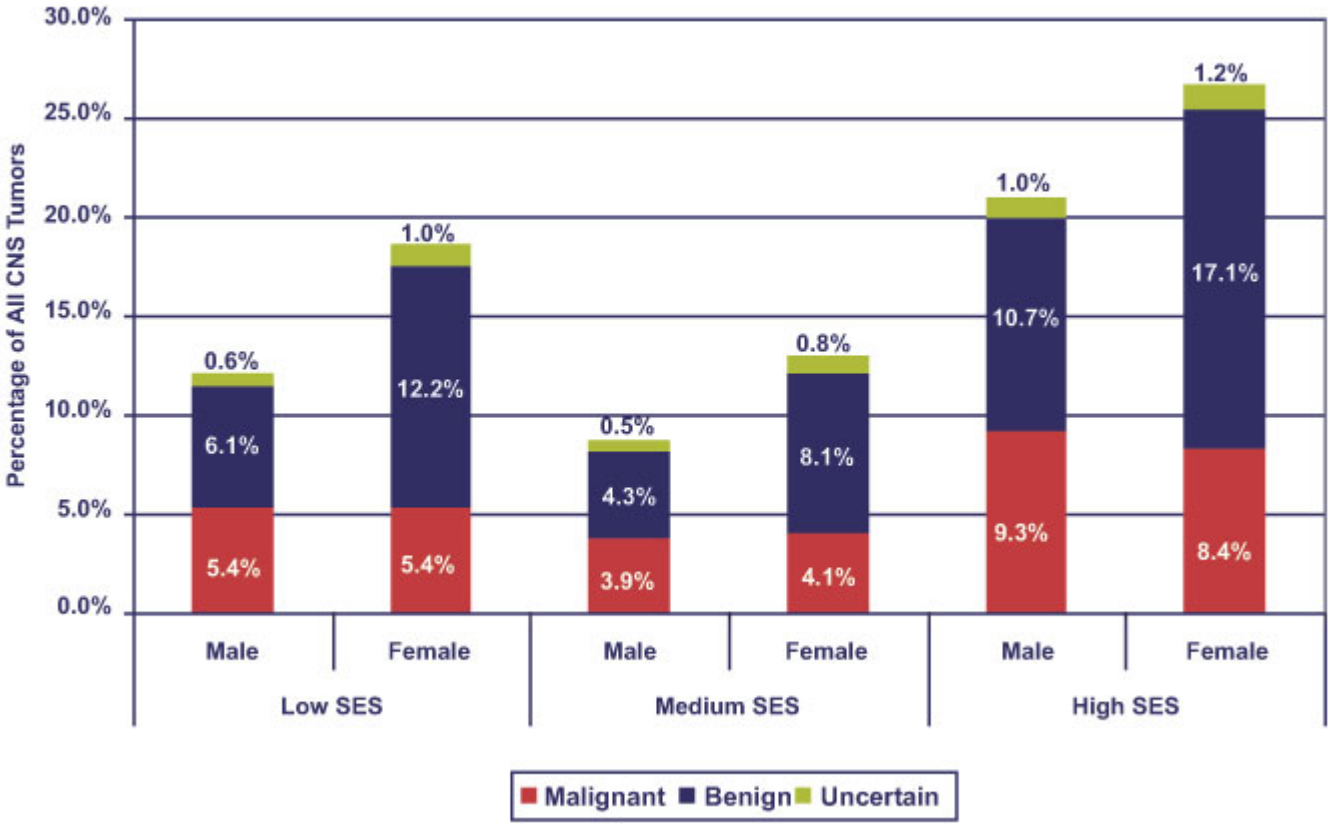
- Incidence of malignant tumors was highest for senior non-Hispanic white men (20.7 per 100,000), followed by Hispanic men (18.4 per 100,000 respectively).
- Incidence of benign tumors was highest for senior non-Hispanic black men and women at 31.9 and 31.4 per 100,000, respectively.

These rates far exceed those of both men and women in the 20-64 year old age group.

Although the AAIR was higher than that for 20-64 year olds, the incidence pattern was the same for tumors of uncertain behavior among seniors, being similarly distributed regardless of sex or race/ethnicity.

DISTRIBUTION OF CASES BY SEX AND SES

Figure 7: Proportion of First Primary Brain and Central Nervous System Tumors by Socioeconomic Status (SES), Behavior and Sex, 65 Years and Older, California, 2001-2005



Prepared by the California Department of Public Health, Cancer Surveillance Section.

- Malignant tumors were more frequent among senior men in the high SES group (9.3%) followed by senior women in the high SES group (8.4%).
- Benign tumors were more frequent among women in the highest SES group (17.1%) followed by women in the lowest SES group (12.2%).

Tumors of uncertain behavior were similarly distributed regardless of sex or SES.

HISTOLOGY BY TUMOR BEHAVIOR

(Table 13)

- Malignant PCNST were primarily glioblastoma (63.4%).
- The majority of benign tumors consisted of meningiomas (71.8%).
- The largest proportion of tumors of uncertain behavior was meningiomas (43.0%).

HISTOLOGY BY PATIENT DEMOGRAPHICS

(Table 14) (Table 15) (Table 16)

- The AAIR for glioblastomas was four times higher among senior men than those 20-64 years (12.2 compared to 2.9 per 100,000) and 1.5 times greater than senior women. Senior non-Hispanic white and Hispanic men had the highest incidence of glioblastomas at 13.7 and 12.4 per 100,000, respectively.

The AAIR for meningiomas among senior women was nearly four-fold that of women 20-64 years old

(22.2 compared to 5.6 per 100,000) and twice that of senior men. Senior non-Hispanic black and Asian-Pacific Islander women had the highest AAIR at 23.2 per 100,000 followed closely by senior non-Hispanic white and Hispanic women (22.1 and 21.1 per 100,000, respectively).

- The AAIRs for lymphomas were similar for senior men and women (1.6 and 1.4 per 100,000, respectively). Senior Asian-Pacific Islander men had the highest AAIR at 2.3 per 100,000.

Senior Asian-Pacific Islander men had the highest incidence of nerve sheath tumors at 4.0 per 100,000.

Senior non-Hispanic black men had the highest incidence of pituitary tumors at 14.8 per 100,000. This is four-times the rate found among non-Hispanic black men 20-64 years old.

PCNST by Anatomic Site and Patient Demographics

(Table 17) (Table 18)

- Malignant PCNST occurred more frequently in the "lobes of the brain" (57.9%), followed distantly by "overlapping lesions of the brain" (19.9%).

- Malignant tumors by anatomical site were distributed evenly among senior men and women (50.9% versus 49.1%).

The vast majority of benign tumors were of the meninges (66.9%).

Overall, benign tumors were seen mostly in women (63.9%).

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Table 1: Number of Cases and Percent of First Primary Central Nervous System Tumors among Children, Adolescents and Teens by Age Group, Population Demographic Characteristics and Tumor Behavior, California, 2001-2005

Demographic Characteristics			Malignant		Benign		Uncertain	
			n	%	n	%	n	%
< 5 years	Sex	Male	193	56.9%	72	46.8%	30	55.6%
		Female	146	43.1%	82	53.2%	24	44.4%
	Race/ethnicity	Non-Hispanic white	108	31.9%	62	40.3%	23	42.6%
		Non-Hispanic black	21	6.2%	8	5.2%		
		Hispanic	168	49.6%	69	44.8%	25	46.3%
		Asian-Pacific Islander	37	10.9%	11	7.1%		
		Other/Unknown	5	1.5%				
	Socioeconomic Status	Low	147	43.4%	72	46.8%	27	50.0%
		Medium	62	18.3%	29	18.8%	12	22.2%
		High	130	38.3%	53	34.4%	15	27.8%
	Level of Urbanization	Urban	325	95.9%	144	93.5%	50	92.6%
		Rural	14	4.1%	10	6.5%		
	Total		339		154		54	
5-9 years	Sex	Male	155	52.2%	68	45.9%	39	60.0%
		Female	142	47.8%	80	54.1%	26	40.0%
	Race/ethnicity	Non-Hispanic white	113	38.0%	74	50.0%	25	38.5%
		Non-Hispanic black	17	5.7%	9	6.1%		
		Hispanic	138	46.5%	55	37.2%	30	46.2%
		Asian-Pacific Islander	24	8.1%	8	5.4%	8	12.3%
		Other/Unknown	5	1.7%			0	0.0%
	Socioeconomic Status	Low	134	45.1%	52	35.1%	31	47.7%
		Medium	53	17.8%	34	23.0%	11	16.9%
		High	110	37.0%	62	41.9%	23	35.4%
	Level of Urbanization	Urban	283	95.3%	138	93.2%	61	93.8%
		Rural	14	4.7%	10	6.8%		
	Total		297		148		65	
10-14 years	Sex	Male	154	60.4%	82	51.3%	43	56.6%
		Female	101	39.6%	78	48.8%	33	43.4%
	Race/ethnicity	Non-Hispanic white	113	44.3%	78	48.8%	33	43.4%
		Non-Hispanic black	10	3.9%	10	6.3%	8	10.5%
		Hispanic	104	40.8%	61	38.1%	31	40.8%
		Asian-Pacific Islander	27	10.6%	6	3.8%		
		Other/Unknown			5	3.1%	0	0.0%
		Low	104	40.8%	58	36.3%	37	48.7%

Table 1: Number of Cases and Percent of First Primary Central Nervous System Tumors among Children, Adolescents and Teens by A

	Socioeconomic Status	Medium	42	16.5%	35	21.9%	10	13.2%
		High	109	42.7%	67	41.9%	29	38.2%
		Urban	243	95.3%	151	94.4%	69	90.8%
	Level of Urbanization	Rural	12	4.7%	9	5.6%	7	9.2%
	Total		255		160		76	
15-19 years	Sex	Male	138	61.9%	101	42.8%	52	58.4%
		Female	85	38.1%	135	57.2%	37	41.6%
	Race/ethnicity	Non-Hispanic white	102	45.7%	105	44.5%	40	44.9%
		Non-Hispanic black	12	5.4%	9	3.8%	7	7.9%
		Hispanic	73	32.7%	103	43.6%	36	40.4%
		Asian-Pacific Islander	35	15.7%	17	7.2%	5	5.6%
		Other/Unknown						
	Socioeconomic Status	Low	85	38.1%	105	44.5%	32	36.0%
		Medium	42	18.8%	49	20.8%	16	18.0%
		High	96	43.0%	82	34.7%	41	46.1%
	Level of Urbanization	Urban	207	92.8%	223	94.5%	81	91.0%
		Rural	16	7.2%	13	5.5%	8	9.0%
	Total		223		236		89	

Shaded cells = categories with less than 5 cases were omitted.

Table 2: Age-Specific Incidence Rate* (ASIR) with 95% Confidence Interval (CI) of First Primary Central Nervous System Tumors among Children, Adolescents and Teens by Age Group, Tumor Behavior and Race/Ethnicity, California, 2001-2005

Age Group	Race	Malignant		Benign	
		ASIR	95%CI	ASIR	95%CI
< 5 years	Non-Hispanic White	2.6	(2.2, 3.2)	1.5	(1.2, 1.9)
	Non-Hispanic Black	2.3	(1.4, 3.5)		
	Hispanic	2.6	(2.2, 3.0)	1.1	(0.8, 1.4)
	Asian-Pacific Islander	2.7	(1.9, 3.8)		
	Total	2.6	(2.4, 2.9)	1.2	(1.0, 1.4)
5-9 years	Non-Hispanic White	2.5	(2.1, 3.1)	1.7	(1.3, 2.1)
	Non-Hispanic Black	1.7	(1.0, 2.8)		
	Hispanic	2.2	(1.9, 2.6)	0.9	(0.7, 1.2)
	Asian-Pacific Islander	1.8	(1.1, 2.6)		
	Total	2.3	(2.0, 2.5)	1.1	(1.0, 1.3)
10-14 years	Non-Hispanic White	2.3	(1.9, 2.7)	1.6	(1.2, 1.9)
	Non-Hispanic Black				
	Hispanic	1.7	(1.4, 2.1)	1.0	(0.8, 1.3)
	Asian-Pacific Islander	1.8	(1.2, 2.7)		
	Total	1.9	(1.6, 2.1)	1.2	(1.0, 1.4)
15-19 years	Non-Hispanic White	2.0	(1.6, 2.5)	2.1	(1.7, 2.5)
	Non-Hispanic Black				
	Hispanic	1.4	(1.1, 1.8)	2.0	(1.6, 2.4)
	Asian-Pacific Islander	2.3	(1.6, 3.2)	1.1	(0.7, 1.8)
	Total	1.7	(1.5, 2.0)	1.8	(1.6, 2.1)

*** Age-specific incidence rates are per 100,000 population. Rates are standardized to the 2000 US population.**

Shaded cells = rates could not be calculated if number of cases were less than 15 and/or the underlying population was less than 100,000.

Table 3: Number of Cases, Percent and Age-Specific Incidence Rate* (ASIR) of First Primary Central Nervous System Tumors among Children, Adolescents and Teens by Diagnositic Group, Age Group and Tumor Behavior, California, 2001-2005

	< 5 years											5-9 years									
	Malignant				Benign				Uncertain		Total	Malignant				Benign				Uncertain		Total	
Diagnostic Groups	n	%	ASIR	95% CI	n	%	ASIR	95% CI	n	%	n %	n	%	ASIR	95% CI	n	%	ASIR	95% CI	n	%	n	%
IIIA Ependymomas & Choroid Plexus Tumor	74	21.8%			21	13.6%	0.2	(0.1, 0.2)			99 18.1%	28	9.4%	0.2	(0.1, 0.3)	11	7.4%			6	9.2%	45	8.8%
IIIB Astrocytomas	67	19.8%	0.8	(0.6, 0.9)	119	77.3%	0.9	(0.8,1.1)			189 34.6%	72	24.2%	1.0	(0.9, 1.2)	102	68.9%	0.8	(0.6, 0.9)	8	12.3%	182	35.7%
IIIC1 Medulloblastomas	64	18.9%	0.5	(0.4, 0.6)	0	0.0%			0	0.0%	64 11.7%	68	22.9%	0.5	(0.4, 0.7)	0	0.0%			0	0.0%	68	13.3%
IIIC2 PNET	47	13.9%	0.4	(0.3, 0.5)	0	0.0%			0	0.0%	47 8.6%	29	9.8%	0.2	(0.1, 0.3)	0	0.0%			0	0.0%	29	5.7%
IIIC9 Other Intracranial & Intraspinal	18	5.3%	0.1	(0.1, 0.2)	0	0.0%			0	0.0%	18 3.3%					0	0.0%			0	0.0%		
IIID Other Gliomas	40	11.8%	0.4	(0.3, 0.5)	0	0.0%			0	0.0%	40 7.3%	73	24.6%	0.6	(0.5, 0.8)	0	0.0%			0	0.0%	73	14.3%
IIIE Other Specified Intracranial & Intraspinal									36	66.7%	43 7.9%					22	14.9%	0.2	(0.1, 0.3)	46	70.8%	71	13.9%
XA Intracranial & Intraspinal Germ Cell	8	2.4%			5	3.2%			0	0.0%	13 2.4%	13	4.4%							0	0.0%	14	2.7%
Z Other	17	5.0%			6	3.9%			11	20.4%	34 6.2%	9	3.0%			12	8.1%			5	7.7%	26	5.1%
Total	339	100.0%	2.6	(2.4, 2.9)	154	100.0%	1.2	(1.0, 1.4)	54	100.0%	547 100.0%	297	100.0%	2.3	(2.0, 2.5)	148	100.0%	1.1	(1.0, 1.3)	65	100.0%	510	100.0%

	10-14 years											15-19 years									
IIIA Ependymomas & Choroid Plexus Tumor	23	9.0%	0.2	(0.1, 0.3)	5	3.1%			12	15.8%	40 8.1%	21	9.4%	0.2	(0.1, 0.2)					12	13.5%	37	6.8%
IIIB Astrocytomas	66	25.9%	0.7	(0.6, 0.9)	89	55.6%	0.7	(0.5, 0.8)	7	9.2%	162 33.0%	71	31.8%	0.6	(0.5, 0.8)	61	25.8%	0.5	(0.4, 0.6)	5	5.6%	137	25.0%
IIIC1 Medulloblastomas	28	11.0%	0.2	(0.1, 0.3)	0	0.0%			0	0.0%	28 5.7%	23	10.3%	0.2	(0.1, 0.3)	0	0.0%			0	0.0%	23	4.2%
IIIC2 PNET	17	6.7%	0.1	(0.1, 0.2)	0	0.0%			0	0.0%	17 3.5%	11	4.9%			0	0.0%			0	0.0%	11	2.0%
IIIC9 Other Intracranial & Intraspinal	0	0.0%			0	0.0%			0	0.0%	0 0.0%	0	0.0%			0	0.0%			0	0.0%	0	0.0%
IIID Other Gliomas	51	20.0%	0.4	(0.3, 0.5)	0	0.0%			0	0.0%	51 10.4%	35	15.7%	0.3	(0.2, 0.4)	0	0.0%			0	0.0%	35	6.4%
IIIE Other Specified Intracranial & Intraspinal					41	25.6%	0.3	(0.2, 0.4)	46	60.5%	91 18.5%	6	2.7%			138	58.5%	1.1	(0.9, 1.3)	56	62.9%	200	36.5%
XA Intracranial & Intraspinal Germ Cell	59	23.1%	0.4	(0.3, 0.6)					0	0.0%	62 12.6%	43	19.3%	0.3	(0.2, 0.4)					0	0.0%	45	8.2%
Z Other	7	2.7%			22	13.8%			11	14.5%	40 8.1%	13	5.8%			31	13.1%			16	18.0%	60	10.9%
Total	255	100.0%	1.9	(1.6, 2.1)	160	100.0%	1.2	(1.0, 1.4)	76	100.0%	491 100.0%	223	100.0%	1.7	(1.5, 2.0)	236	100.0%	1.8	(1.6, 2.1)	89	100.0%	548	100.0%

*** Age-specific incidence rates are per 100,000 population. Rates are standardized to the 2000 US population.**

PNET = Primitive Neuroectodermal Tumors

Shaded cells = rates could not be calculated if number of cases were less than 15 and/or the underlying population was less than 100,000.

Table 3: Number of Cases, Percent and Age-Specific Incidence Rate* (ASIR) of First Primary Central Nervous System Tumors among Children, Adolescents and Teens by Diagnositic Group, Age Group and Tumor Behavior, California, 2001-2005

	< 5 years											5-9 years									
	Malignant				Benign				Uncertain		Total	Malignant				Benign				Uncertain		Total	
Diagnostic Groups	n	%	ASIR	95% CI	n	%	ASIR	95% CI	n	%	n	%	n	%	ASIR	95% CI	n	%	ASIR	95% CI	n	%	n	%
IIIA Ependymomas & Choroid Plexus Tumor	74	21.8%			21	13.6%	0.2	(0.1, 0.2)			99	18.1%	28	9.4%	0.2	(0.1, 0.3)	11	7.4%			6	9.2%	45	8.8%
IIIB Astrocytomas	67	19.8%	0.8	(0.6, 0.9)	119	77.3%	0.9	(0.8,1.1)			189	34.6%	72	24.2%	1.0	(0.9, 1.2)	102	68.9%	0.8	(0.6, 0.9)	8	12.3%	182	35.7%
IIIC1 Medulloblastomas	64	18.9%	0.5	(0.4, 0.6)	0	0.0%			0	0.0%	64	11.7%	68	22.9%	0.5	(0.4, 0.7)	0	0.0%			0	0.0%	68	13.3%
IIIC2 PNET	47	13.9%	0.4	(0.3, 0.5)	0	0.0%			0	0.0%	47	8.6%	29	9.8%	0.2	(0.1, 0.3)	0	0.0%			0	0.0%	29	5.7%
IIIC9 Other Intracranial & Intraspinal	18	5.3%	0.1	(0.1, 0.2)	0	0.0%			0	0.0%	18	3.3%					0	0.0%			0	0.0%		
IIID Other Gliomas	40	11.8%	0.4	(0.3, 0.5)	0	0.0%			0	0.0%	40	7.3%	73	24.6%	0.6	(0.5, 0.8)	0	0.0%			0	0.0%	73	14.3%
IIIE Other Specified Intracranial & Intraspinal									36	66.7%	43	7.9%					22	14.9%	0.2	(0.1, 0.3)	46	70.8%	71	13.9%
XA Intracranial & Intraspinal Germ Cell	8	2.4%			5	3.2%			0	0.0%	13	2.4%	13	4.4%							0	0.0%	14	2.7%
Z Other	17	5.0%			6	3.9%			11	20.4%	34	6.2%	9	3.0%			12	8.1%			5	7.7%	26	5.1%
Total	339	100.0%	2.6	(2.4, 2.9)	154	100.0%	1.2	(1.0, 1.4)	54	100.0%	547	100.0%	297	100.0%	2.3	(2.0, 2.5)	148	100.0%	1.1	(1.0, 1.3)	65	100.0%	510	100.0%

	10-14 years											15-19 years									
IIIA Ependymomas & Choroid Plexus Tumor	23	9.0%	0.2	(0.1, 0.3)	5	3.1%			12	15.8%	40	8.1%	21	9.4%	0.2	(0.1, 0.2)					12	13.5%	37	6.8%
IIIB Astrocytomas	66	25.9%	0.7	(0.6, 0.9)	89	55.6%	0.7	(0.5, 0.8)	7	9.2%	162	33.0%	71	31.8%	0.6	(0.5, 0.8)	61	25.8%	0.5	(0.4, 0.6)	5	5.6%	137	25.0%
IIIC1 Medulloblastomas	28	11.0%	0.2	(0.1, 0.3)	0	0.0%			0	0.0%	28	5.7%	23	10.3%	0.2	(0.1, 0.3)	0	0.0%			0	0.0%	23	4.2%
IIIC2 PNET	17	6.7%	0.1	(0.1, 0.2)	0	0.0%			0	0.0%	17	3.5%	11	4.9%			0	0.0%			0	0.0%	11	2.0%
IIIC9 Other Intracranial & Intraspinal	0	0.0%			0	0.0%			0	0.0%	0	0.0%	0	0.0%			0	0.0%			0	0.0%	0	0.0%
IIID Other Gliomas	51	20.0%	0.4	(0.3, 0.5)	0	0.0%			0	0.0%	51	10.4%	35	15.7%	0.3	(0.2, 0.4)	0	0.0%			0	0.0%	35	6.4%
IIIE Other Specified Intracranial & Intraspinal					41	25.6%	0.3	(0.2, 0.4)	46	60.5%	91	18.5%	6	2.7%			138	58.5%	1.1	(0.9, 1.3)	56	62.9%	200	36.5%
XA Intracranial & Intraspinal Germ Cell	59	23.1%	0.4	(0.3, 0.6)					0	0.0%	62	12.6%	43	19.3%	0.3	(0.2, 0.4)					0	0.0%	45	8.2%
Z Other	7	2.7%			22	13.8%			11	14.5%	40	8.1%	13	5.8%			31	13.1%			16	18.0%	60	10.9%
Total	255	100.0%	1.9	(1.6, 2.1)	160	100.0%	1.2	(1.0, 1.4)	76	100.0%	491	100.0%	223	100.0%	1.7	(1.5, 2.0)	236	100.0%	1.8	(1.6, 2.1)	89	100.0%	548	100.0%

*** Age-specific incidence rates are per 100,000 population. Rates are standardized to the 2000 US population.**

PNET = Primitive Neuroectodermal Tumors

Shaded cells = rates could not be calculated if number of cases were less than 15 and/or the underlying population was less than 100,000.

Table 4: Number of Cases and Percent of First Primary Malignant and Benign Central Nervous System Tumors among Children, Adolescents and Teens by Age Group, Population Demographics and Diagnostic Group, California, 2001-2005

Demographic Characteristics			Malignant																Benign					
			IIIA Ependymomas & Choroid Plexus Tumor		IIIB Astrocytomas		IIIC1 Medullo-blastomas		IIIC2 PNET		IIID Other Gliomas		XA Intracranial & Intraspinal Germ Cell		Z Other		Total		IIIB Astrocytomas		IIIE Other Specified Intracranial & Intraspinal		Z Other		Total	
			n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
< 5 years	Sex	Male	41	55.4%	40	59.7%	43	67.2%	26	55.3%	18	45.0%			25	53.2%	193	56.9%	60	50.4%			12	34.3%	72	46.8%
		Female	33	44.6%	27	40.3%	21	32.8%	21	44.7%	22	55.0%			22	46.8%	146	43.1%	59	49.6%			23	65.7%	82	53.2%
	Race/ethnicity	Non-Hispanic white	22	29.7%	24	35.8%	20	31.3%	13	27.7%	12	30.0%			17	36.2%	108	31.9%	47	39.5%			15	42.9%	62	40.3%
		Hispanic	41	55.4%	25	37.3%	38	59.4%	24	51.1%	19	47.5%			21	44.7%	168	49.6%	54	45.4%			15	42.9%	69	44.8%
		Other/Unknown	11	14.9%	18	26.9%	6	9.4%	10	21.3%	9	22.5%			9	19.1%	63	18.6%	18	15.1%			5	14.3%	23	14.9%
	Socioeconomic Status	Low	36	48.6%	25	37.3%	27	42.2%	20	42.6%	21	52.5%			18	38.3%	147	43.4%	61	51.3%			11	31.4%	72	46.8%
		Medium	12	16.2%	13	19.4%	14	21.9%	10	21.3%	5	12.5%			8	17.0%	62	18.3%	19	16.0%			10	28.6%	29	18.8%
		High	26	35.1%	29	43.3%	23	35.9%	17	36.2%	14	35.0%			21	44.7%	130	38.3%	39	32.8%			14	40.0%	53	34.4%
5-9 years	Sex	Male	13	46.4%	36	50.0%	42	61.8%	16	55.2%	35	47.9%			13	48.1%	155	52.2%	46	45.1%			22	47.8%	68	45.9%
		Female	15	53.6%	36	50.0%	26	38.2%	13	44.8%	38	52.1%			14	51.9%	142	47.8%	56	54.9%			24	52.2%	80	54.1%
	Race/ethnicity	Non-Hispanic white	6	21.4%	32	44.4%	28	41.2%	12	41.4%	26	35.6%			9	33.3%	113	38.0%	51	50.0%			23	50.0%	74	50.0%
		Hispanic	14	50.0%	34	47.2%	36	52.9%	13	44.8%	30	41.1%			11	40.7%	138	46.5%	37	36.3%			18	39.1%	55	37.2%
		Other/Unknown	8	28.6%	6	8.3%					17	23.3%			7	25.9%	46	15.5%	14	13.7%			5	10.9%	19	12.8%
	Socioeconomic Status	Low	17	60.7%	30	41.7%	28	41.2%	14	48.3%	34	46.6%			11	40.7%	134	45.1%	35	34.3%			17	37.0%	52	35.1%
		Medium			11	15.3%	15	22.1%			13	17.8%			7	25.9%	53	17.8%	21	20.6%			13	28.3%	34	23.0%
		High	8	28.6%	31	43.1%	25	36.8%	11	37.9%	26	35.6%			9	33.3%	110	37.0%	46	45.1%			16	34.8%	62	41.9%
10-14 years	Sex	Male			34	51.5%					25	49.0%	49	83.1%	46	58.2%	154	60.4%	42	47.2%	22	53.7%	18	60.0%	82	51.3%
		Female			32	48.5%					26	51.0%	10	16.9%	33	41.8%	101	39.6%	47	52.8%	19	46.3%	12	40.0%	78	48.8%
	Race/ethnicity	Non-Hispanic white			33	50.0%					24	47.1%	19	32.2%	37	46.8%	113	44.3%	47	52.8%	17	41.5%	14	46.7%	78	48.8%
		Hispanic			24	36.4%					21	41.2%	27	45.8%	32	40.5%	104	40.8%	28	31.5%	21	51.2%	12	40.0%	61	38.1%
		Other/Unknown			9	13.6%					6	11.8%	13	22.0%	10	12.7%	38	14.9%	14	15.7%					21	13.1%
	Socioeconomic Status	Low			30	45.5%					17	33.3%	21	35.6%	36	45.6%	104	40.8%	29	32.6%	16	39.0%	13	43.3%	58	36.3%
		Medium			10	15.2%					13	25.5%	9	15.3%	10	12.7%	42	16.5%	17	19.1%	11	26.8%	7	23.3%	35	21.9%
		High			26	39.4%					21	41.2%	29	49.2%	33	41.8%	109	42.7%	43	48.3%	14	34.1%	10	33.3%	67	41.9%
15-19 years	Sex	Male			44	62.0%					17	48.6%	35	81.4%	42	56.8%	138	61.9%	36	59.0%	44	31.9%	21	56.8%	101	42.8%
		Female			27	38.0%					18	51.4%	8	18.6%	32	43.2%	85	38.1%	25	41.0%	94	68.1%	16	43.2%	135	57.2%
	Race/ethnicity	Non-Hispanic white			30	42.3%					17	48.6%	15	34.9%	40	54.1%	102	45.7%	33	54.1%	55	39.9%	17	45.9%	105	44.5%
		Hispanic			23	32.4%					11	31.4%	12	27.9%	27	36.5%	73	32.7%	22	36.1%	68	49.3%	13	35.1%	103	43.6%
		Other/Unknown			18	25.4%					7	20.0%	16	37.2%	7	9.5%	48	21.5%	6	9.8%	15	10.9%	7	18.9%	28	11.9%
	Socioeconomic Status	Low			33	46.5%					15	42.9%	14	32.6%	23	31.1%	85	38.1%	26	42.6%	64	46.4%	15	40.5%	105	44.5%
		Medium			12	16.9%					8	22.9%	9	20.9%	13	17.6%	42	18.8%	17	27.9%	25	18.1%	7	18.9%	49	20.8%
		High			26	36.6%					12	34.3%	20	46.5%	38	51.4%	96	43.0%	18	29.5%	49	35.5%	15	40.5%	82	34.7%

PNET = Primitive Neuroectodermal Tumors

Shaded cells = categories with less than 5 cases; age groups that represented less than 25% of a histology group and/or no meaningful information could be gleaned due to small case numbers, were omitted.

Table 5: Number of Cases and Percent of First Primary Central Nervous System Tumors, Population Demographic Characteristics, by Behavior, 20-64 Year Olds, California, 2001-2005

Demographic Characteristics		Malignant		Benign		Uncertain		Total	
		n	%	n	%	n	%	n	%
Sex	**Male**	3,105	59.7%	3,263	37.6%	503	53.5%	6,871	46.4%
	Female	2,097	40.3%	5,413	62.4%	438	46.6%	7,948	53.6%
Race/Ethnicity	**Non-Hispanic white**	3,344	64.3%	4,837	55.8%	500	53.1%	8,681	58.6%
	Non-Hispanic black	218	4.2%	561	6.5%	75	8.0%	854	5.8%
	Hispanic	1,203	23.1%	2,136	24.6%	249	26.5%	3,588	24.2%
	Asian-Pacific Islander	411	7.9%	1,006	11.6%	109	11.6%	1,526	10.3%
	Other/Unknown	26	0.5%	136	1.6%	8	0.9%	170	1.1%
Socioeconomic Status	**Low**	1,687	32.4%	2,815	32.5%	333	35.7%	4,835	32.6%
	Medium	1,064	20.5%	1,771	20.4%	203	21.6%	3,038	20.5%
	High	2,451	47.1%	4,090	47.1%	405	43.0%	6,946	46.9%
Level of Urbanization	**Rural**	350	6.7%	519	6.0%	58	6.2%	927	6.3%
	Urban	4,852	93.3%	8,157	94.0%	883	93.8%	13,822	93.3%
Total		5,202		8,676		941		14,819	

Table 6: Number of Cases and Percent of First Primary Central Nervous System Tumors by Behavior and Histology, 20-64 Year Olds, California, 2001-2005

Histology		ICD-O3 Histology Codes	Malignant		Benign		Uncertain		Total	
			n	%	n	%	n	%	n	%
Tumors of the Neuroepithelial Tissue	Pilocytic astrocytoma	9421	0	0.0%	111	1.3%	0	0.0%	111	0.7%
	Diffuse astrocytoma (protoplasmic, fibrillary)	9410, 9420	56	1.1%	0	0.0%	0	0.0%	56	0.4%
	Anaplastic astrocytoma	9401, 9411	443	8.5%	0	0.0%	0	0.0%	443	3.0%
	Unique astrocytoma variants	9383, 9384, 9424	14	0.3%	0	0.0%	41	4.4%	55	0.4%
	Astrocytoma, NOS	9400, 9412	358	6.9%	0	0.0%	0	0.0%	358	2.4%
	Glioblastoma	9440, 9441, 9442	2,277	43.8%	0	0.0%	0	0.0%	2,277	15.4%
	Oligodendroglioma	9450	387	7.4%	0	0.0%	0	0.0%	387	2.6%
	Anaplastic oligodendroglioma	9451, 9460	179	3.4%	0	0.0%	0	0.0%	179	1.2%
	Ependymoma/Anaplastic ependymoma	9391, 9392, 9393	253	4.9%	0	0.0%	0	0.0%	253	1.7%
	Ependymoma variant, Myxopapillary	9394	0	0.0%	0	0.0%	111	11.8%	111	0.7%
	Mixed glioma	9382	264	5.1%	0	0.0%	0	0.0%	264	1.8%
	Glioma malignant, NOS	9380	183	3.5%	0	0.0%	0	0.0%	183	1.2%
	Choroid plexus	9390	<5	0.0%	21	0.2%	<5	0.1%	24	0.2%
	Neuroepithelial	9381, 9423, 9430, 9444	12	0.2%	0	0.0%	<5	0.1%	13	0.1%
	Neuronal/glial, neuronal and mixed	8680, 9413, 9490, 9492, 9493, 9500, 9501, 9505, 9506, 9508	16	0.3%	52	0.6%	109	11.6%	177	1.2%
	Pineal parenchymal	9360, 9361, 9362	20	0.4%	0	0.0%	17	1.8%	37	0.2%
	Primitive/Medulloblastoma	9470, 9471, 9472, 9473, 9474	110	2.1%	0	0.0%	0	0.0%	110	0.7%
Tumors of Cranial & Spinal Nerves	Nerve sheath tumors	9540, 9550, 9560, 9561, 9570	13	0.2%	2,037	23.5%	7	0.7%	2,057	13.9%
Tumors of Meninges	Meningioma	9530, 9531, 9532, 9533, 9534, 9537, 9538, 9539	79	1.5%	3,863	44.5%	237	25.2%	4,179	28.2%
	Other mesenchymal	8324, 8728, 8801, 8806, 8810, 8815, 8850, 8861, 8890, 8900, 8920, 9150, 9260	17	0.3%	18	0.2%	32	3.4%	67	0.5%
	Hemangioblastoma	9131, 9161, 9535	0	0.0%	12	0.1%	171	18.2%	183	1.2%
Lymphomas		9590, 9591, 9650, 9670, 9671, 9675, 9680, 9684, 9687, 9690, 9691, 9695, 9698, 9699, 9702, 9705, 9714, 9719, 9727, 9728, 9729, 9731, 9733, 9734, 9740, 9741, 9750, 9755, 9930	394	7.6%	0	0.0%	0	0.0%	394	2.7%
Germ Cell Tumors		9060, 9064, 9065, 9070, 9071, 9080, 9081, 9084, 9085	34	0.7%	12	0.1%	0	0.0%	46	0.3%
Tumors of Sellar Region	Pituitary tumors	8270, 8271, 8272, 8280, 8290, 8300,9580	11	0.2%	2,444	28.2%	0	0.0%	2,455	16.6%
	Craniopharyngioma	9350, 9351, 9352	0	0.0%	0	0.0%	159	16.9%	159	1.1%
Local Extensions from Regional Tumors	Chordoma	9370, 9371, 9372	15	0.3%	0	0.0%	0	0.0%	15	0.1%
Unclassifed Tumors	Hemangioma	9120, 9121, 9122, 9130, 9133	0	0.0%	66	0.8%	2	0.2%	68	0.5%
	Neoplasm, unspecified	8000, 8005, 8010	60	1.2%	40	0.5%	53	5.6%	153	1.0%
	All other	8720, 8728, 9580, 9751	5	0.1%	0	0.0%	0	0.0%	5	0.0%
Total			5,202		8,676		941		14,819	

Table 6: Number of Cases and Percent of First Primary Central Nervous System Tumors by Behavior and Histology, 20-64 Year Olds

Table 7: Age-Adjusted Incidence Rates (AAIR)* of Selected First Primary Malignant and Benign Central Nervous System Tumors by Histology and Sex, 20-64 Year Olds, California, 2001-2005

Behavior	Histology	Sex	Total			NH White			NH Black			Hispanic			API		
			AAIR	95% CI		AAIR	95% CI		AAIR	95% CI		AAIR	95% CI		AAIR	95% CI	
Malignant	Astrocytoma, anaplastic	Total	0.4	0.4	0.5	0.5	0.5	0.6	0.2	0.1	0.3	0.4	0.3	0.5	0.2	0.2	0.3
		Male	0.5	0.4	0.6	0.6	0.6	0.8	0.2	0.0	0.4	0.4	0.3	0.6	0.3	0.2	0.4
		Female	0.3	0.3	0.4	0.4	0.4	0.5	0.1	0.0	0.3	0.3	0.2	0.4	0.2	0.1	0.3
	Astrocytoma, NOS	Total	0.3	0.3	0.4	0.4	0.4	0.5	0.3	0.2	0.4	0.3	0.2	0.4	0.1	0.1	0.2
		Male	0.4	0.3	0.4	0.5	0.4	0.6	0.4	0.2	0.7	0.3	0.2	0.4	0.1	0.0	0.2
		Female	0.3	0.3	0.3	0.4	0.3	0.5	0.1	0.0	0.3	0.3	0.2	0.4	0.2	0.1	0.3
	Glioblastoma	Total	2.2	2.1	2.3	2.8	2.7	3.0	1.3	1.1	1.7	1.8	1.6	2.0	1.0	0.9	1.2
		Male	2.9	2.7	3.0	3.6	3.4	3.9	1.8	1.4	2.4	2.0	1.8	2.3	1.4	1.1	1.7
		Female	1.6	1.5	1.7	2.0	1.8	2.2	0.9	0.6	1.3	1.5	1.3	1.7	0.7	0.5	0.9
	Oligodendroglioma	Total	0.4	0.3	0.4	0.5	0.4	0.6	0.1	0.1	0.2	0.3	0.2	0.3	0.3	0.2	0.4
		Male	0.4	0.4	0.5	0.6	0.5	0.7	0.2	0.1	0.4	0.3	0.2	0.4	0.3	0.2	0.5
		Female	0.3	0.3	0.4	0.4	0.3	0.5				0.3	0.2	0.4	0.2	0.1	0.4
	Anaplastic oligodendroglioma	Total	0.2	0.1	0.2	0.2	0.2	0.3				0.1	0.1	0.2	0.1	0.1	0.2
		Male	0.2	0.1	0.2	0.2	0.2	0.3				0.1	0.1	0.2	0.2	0.1	0.3
		Female	0.2	0.1	0.2	0.2	0.2	0.3				0.1	0.1	0.2	0.1	0.0	0.2
	Ependymomas, anaplastic	Total	0.2	0.2	0.3	0.3	0.2	0.3	0.2	0.1	0.3	0.2	0.2	0.3	0.2	0.1	0.2
		Male	0.2	0.2	0.3	0.3	0.2	0.3	0.3	0.1	0.5	0.3	0.2	0.4	0.1	0.1	0.3
		Female	0.2	0.2	0.3	0.3	0.2	0.4				0.2	0.1	0.3	0.2	0.1	0.3
	Mixed glioma	Total	0.2	0.2	0.3	0.3	0.3	0.4	0.1	0.0	0.2	0.2	0.1	0.3	0.2	0.2	0.3
		Male	0.3	0.2	0.3	0.4	0.3	0.5				0.2	0.1	0.2	0.2	0.1	0.4
		Female	0.2	0.2	0.3	0.2	0.2	0.3				0.2	0.2	0.3	0.2	0.1	0.4
	Glioma malignant, NOS	Total	0.2	0.1	0.2	0.2	0.2	0.2	0.1	0.1	0.2	0.2	0.1	0.3	0.1	0.1	0.2
		Male	0.2	0.2	0.2	0.2	0.2	0.3				0.2	0.1	0.3	0.1	0.0	0.2
		Female	0.2	0.1	0.2	0.2	0.1	0.2	0.1	0.0	0.3	0.2	0.1	0.3	0.2	0.1	0.3
	PNET/Meduloblastoma	Total	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.2	0.1	0.1	0.2	0.0	0.0	0.1
		Male	0.1	0.1	0.2	0.1	0.1	0.2				0.2	0.1	0.2			
		Female	0.1	0.0	0.1	0.1	0.0	0.1				0.1	0.0	0.1			
	Lymphomas	Total	0.4	0.3	0.4	0.4	0.3	0.4	0.4	0.3	0.6	0.4	0.3	0.5	0.4	0.3	0.5
		Male	0.5	0.4	0.6	0.5	0.4	0.6	0.6	0.3	0.9	0.5	0.4	0.7	0.5	0.3	0.6
		Female	0.3	0.2	0.3	0.3	0.2	0.3	0.2	0.1	0.5	0.2	0.2	0.3	0.3	0.2	0.4
Benign	Pilocytic astrocytoma	Total	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.0	0.2	0.1	0.0	0.1	0.1	0.0	0.1
		Male	0.1	0.1	0.1	0.1	0.1	0.2				0.1	0.0	0.1			
		Female	0.1	0.1	0.1	0.2	0.1	0.2				0.1	0.0	0.1	0.1	0.0	0.2
	Nerve sheath	Total	2.0	1.9	2.1	2.4	2.3	2.5	0.9	0.7	1.1	1.3	1.1	1.4	1.9	1.7	2.1
		Male	2.0	1.9	2.1	2.5	2.3	2.7	0.9	0.6	1.4	1.2	1.0	1.4	1.9	1.6	2.3
		Female	1.9	1.8	2.1	2.3	2.1	2.5	0.8	0.5	1.2	1.4	1.2	1.6	1.9	1.6	2.2
	Meningioma	Total	3.8	3.7	3.9	4.1	3.9	4.2	4.1	3.6	4.6	3.2	3.0	3.5	3.3	3.0	3.7
		Male	1.9	1.8	2.1	2.2	2.1	2.4	2.0	1.6	2.6	1.3	1.1	1.5	1.7	1.4	2.0
		Female	5.6	5.4	5.8	5.9	5.6	6.2	6.0	5.2	6.9	5.2	4.8	5.6	4.8	4.3	5.3
	Pituitary tumors	Total	2.3	2.3	2.4	2.0	1.9	2.1	3.4	2.9	3.8	2.9	2.7	3.1	2.0	1.7	2.2
		Male	2.1	2.0	2.3	2.0	1.8	2.1	3.2	2.6	3.9	2.5	2.2	2.8	1.7	1.4	2.1
		Female	2.6	2.4	2.7	2.1	1.9	2.2	3.5	2.9	4.2	3.4	3.1	3.7	2.2	1.9	2.6

* Age-adjusted incidence rates are per 100,000 population. Rates are standardized to the 2000 US population.

Table 7: Age-Adjusted Incidence Rates (AAIR)* of Selected First Primary Malignant and Benign Central Nervous System Tumors by

Table 8: Number of Cases and Percent of Selected First Primary Malignant Central Nervous System Tumors by Demographics and Histology, 20-64 Year Olds, California, 2001-2005

Demographic Characteristics		Diffuse Astrocytoma		Anaplastic Astrocytoma		Astrocytoma, NOS		Glioblastoma		Oligodendro-glioma		Anaplastic oligodendro-glioma		Ependymoma / anaplastic ependymoma		Mixed glioma		Glioma malignant, NOS		Pineal Gland tumors		PNET / medulloblastoma		Meningioma		Lymphomas		Germ Cell Tumors		Neoplasm, NOS		Other		Total	
		n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Sex	**Male**	34	60.7%	263	59.4%	202	56.4%	1,433	62.9%	224	57.9%	92	51.4%	124	49.0%	150	56.8%	98	53.6%	9	45.0%	73	66.4%	35	44.3%	259	77.5%	27	79.4%	30	50.0%	52	49.5%	3,105	59.7%
	Female	22	39.3%	180	40.6%	156	43.6%	844	37.1%	163	42.1%	87	48.6%	129	51.0%	114	43.2%	85	46.4%	11	55.0%	37	33.6%	44	55.7%	135	40.4%	7	20.6%	30	50.0%	53	50.5%	2,097	40.3%
Race/Ethnicity	**Non-Hispanic White**	33	58.9%	285	64.3%	221	61.7%	1,620	71.1%	251	64.9%	124	69.3%	146	57.7%	160	60.6%	99	54.1%	9	45.0%	51	46.4%	36	45.6%	205	61.4%	15	44.1%	32	53.3%	57	54.3%	3,344	64.3%
	Non-Hispanic Black	3	5.4%	10	2.3%	19	5.3%	86	3.8%	8	2.1%	4	2.2%	12	4.7%	7	2.7%	9	4.9%	0	0.0%	5	4.5%	12	15.2%	27	8.1%	3	8.8%	7	11.7%	6	5.7%	218	4.2%
	Hispanic	15	26.8%	113	25.5%	92	25.7%	426	18.7%	87	22.5%	34	19.0%	74	29.2%	65	24.6%	57	31.1%	9	45.0%	47	42.7%	20	25.3%	109	32.6%	9	26.5%	18	30.0%	28	26.7%	1,203	23.1%
	Asian-Pacific Islander	5	8.9%	32	7.2%	20	5.6%	136	6.0%	39	10.1%	17	9.5%	21	8.3%	32	12.1%	17	9.3%	2	10.0%	7	6.4%	11	13.9%	49	14.7%	7	20.6%	3	5.0%	13	12.4%	411	7.9%
	Other/Unknown	0	0.0%	3	0.7%	6	1.7%	9	0.4%	2	0.5%	0	0.0%	0	0.0%	0	0.0%	1	0.5%	0	0.0%	0	0.0%	0	0.0%	4	1.2%	0	0.0%	0	0.0%	1	1.0%	26	0.5%
Socioeconomic Status	**Low**	19	33.9%	156	35.2%	134	37.4%	671	29.5%	117	30.2%	48	26.8%	85	33.6%	82	31.1%	72	39.3%	11	55.0%	46	41.8%	29	36.7%	142	42.5%	11	32.4%	30	50.0%	34	32.4%	1,687	32.4%
	Medium	10	17.9%	84	19.0%	76	21.2%	469	20.6%	71	18.3%	44	24.6%	44	17.4%	65	24.6%	38	20.8%	3	15.0%	21	19.1%	18	22.8%	79	23.7%	7	20.6%	19	31.7%	16	15.2%	1,064	20.5%
	High	27	48.2%	203	45.8%	148	41.3%	1,137	49.9%	199	51.4%	87	48.6%	124	49.0%	117	44.3%	73	39.9%	6	30.0%	43	39.1%	32	40.5%	173	51.8%	16	47.1%	11	18.3%	55	52.4%	2,451	47.1%
Level of Urbanization	**Rural**	5	8.9%	41	9.3%	17	4.7%	166	7.3%	19	4.9%	8	4.5%	19	7.5%	11	4.2%	10	5.5%	1	5.0%	4	3.6%	4	5.1%	24	7.2%	2	5.9%	10	16.7%	9	8.6%	350	6.7%
	Urban	51	91.1%	402	90.7%	341	95.3%	2,111	92.7%	368	95.1%	171	95.5%	234	92.5%	253	95.8%	173	94.5%	19	95.0%	106	96.4%	75	94.9%	370	110.8%	32	94.1%	50	83.3%	96	91.4%	4,852	93.3%
Total		56		443		358		2,277		387		179		253		264		183		20		110		79		394		34		60		105		5,202	

Table 9: Number of Cases and Percent of Selected First Primary Benign Central Nervous System Tumors by Demographics and Histology, 20-64 Year Olds, California, 2001-2005

Demographic Characteristics		Pilocytic Astrocytoma		Choroid plexus		Nueronal / glial, neuronal and mixed		Nerve sheath tumors		Meningioma		Hemangioma		Pituitary Gland		Neoplasm, NOS		Other		Total	
		n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Sex	**Male**	52	46.8%	8	38.1%	29	55.8%	1,030	50.6%	975	25.2%	27	40.9%	1,101	45.0%	18	45.0%	23	54.8%	3,263	37.6%
	Female	59	53.2%	13	61.9%	23	44.2%	1,007	49.4%	2,888	74.8%	39	59.1%	1,343	55.0%	22	55.0%	19	45.2%	5,413	62.4%
Race/Ethnicity	**Non-Hispanic White**	67	60.4%	10	47.6%	35	67.3%	1,306	64.1%	2,295	59.4%	38	57.6%	1,047	42.8%	22	55.0%	17	40.5%	4,837	55.8%
	Non-Hispanic Black	5	4.5%	<5	4.8%	<5	3.8%	58	2.8%	266	6.9%	<5	4.5%	221	9.0%	<5	7.5%	2	4.8%	561	6.5%
	Hispanic	26	23.4%	7	33.3%	11	21.2%	358	17.6%	815	21.1%	14	21.2%	875	35.8%	11	27.5%	19	45.2%	2,136	24.6%
	Asian-Pacific Islander	11	9.9%	3	14.3%	<5	7.7%	256	12.6%	444	11.5%	11	16.7%	271	11.1%	<5	5.0%	<5	9.5%	1,006	11.6%
	Other/Unknown	<5	1.8%	0	0.0%	0	0.0%	59	2.9%	43	1.1%	0	0.0%	30	1.2%	<5	5.0%	0	0.0%	136	1.6%
Socioeconomic Status	**Low**	39	35.1%	6	28.6%	9	17.3%	506	24.8%	1,246	32.3%	17	25.8%	960	39.3%	17	42.5%	15	35.7%	2,815	32.4%
	Medium	20	18.0%	6	28.6%	13	25.0%	384	18.9%	822	21.3%	18	27.3%	487	19.9%	10	25.0%	11	26.2%	1,771	20.4%
	High	52	46.8%	9	42.9%	30	57.7%	1,147	56.3%	1,795	46.5%	31	47.0%	997	40.8%	13	32.5%	16	38.1%	4,090	47.1%
Level of Urbanization	**Rural**	8	7.2%	<5	4.8%	<5	1.9%	128	6.3%	247	6.4%	5	7.6%	117	4.8%	8	20.0%	<5	9.5%	519	6.0%
	Urban	103	92.8%	20	95.2%	51	98.1%	1,909	93.7%	3,616	93.6%	61	92.4%	2,327	95.2%	32	80.0%	38	90.5%	8,157	94.0%
Total		111		21		52		2,037		3,863		66		2,444		40		42		8,676	

Table 10: Number of Cases and Percent of First Primary Malignant Central Nervous System Tumors by Demographics and Anatomic Site, 20-64 Year Olds, California, 2001-2005

Demographic Characteristics		Meninges		Cerebrum		Brain Lobes		Ventricles		Cerebellum		Brain Stem		Spinal Cord & Cauda Equina		Pineal Gland		Overlapping lesions		Brain / Nervous System, NOS		Other		Total	
		n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Sex	**Male**	37	43.0%	128	61.5%	1,834	60.0%	45	59.2%	96	63.6%	76	50.3%	135	56.3%	26	60.5%	494	61.1%	212	62.7%	22	52.4%	3,105	59.7%
	Female	49	57.0%	80	38.5%	1,224	40.0%	31	40.8%	55	36.4%	75	49.7%	105	43.8%	17	39.5%	315	38.9%	126	37.3%	20	47.6%	2,097	40.3%
Race/Ethnicity	**Non-Hispanic White**	44	51.2%	117	56.3%	2,047	66.9%	36	47.4%	80	53.0%	87	57.6%	142	59.2%	21	48.8%	550	68.0%	195	57.7%	25	59.5%	3,344	64.3%
	Non-Hispanic Black	13	15.1%	10	4.8%	104	3.4%	5	6.6%	5	3.3%	8	5.3%	17	7.1%	<5	2.3%	29	3.6%	22	6.5%	<5	9.5%	218	4.2%
	Hispanic	20	23.3%	57	27.4%	658	21.5%	26	34.2%	55	36.4%	40	26.5%	63	26.3%	14	32.6%	169	20.9%	92	27.2%	9	21.4%	1,203	23.1%
	Asian-Pacific Islander	9	10.5%	19	9.1%	235	7.7%	9	11.8%	11	7.3%	16	10.6%	16	6.7%	7	16.3%	59	7.3%	27	8.0%	<5	7.1%	411	7.9%
	Other/Unknown	0	0.0%	5	2.4%	14	0.5%	0	0.0%	0	0.0%	0	0.0%	2	0.8%	0	0.0%	<5	0.2%	<5	0.6%	<5	2.4%	26	0.5%
Socioeconomic Status	**Low**	34	39.5%	66	31.7%	960	31.4%	29	38.2%	54	35.8%	62	41.1%	78	32.5%	18	41.9%	257	31.8%	118	34.9%	11	26.2%	1,687	32.4%
	Medium	19	22.1%	39	18.8%	637	20.8%	12	15.8%	30	19.9%	17	11.3%	49	20.4%	9	20.9%	181	22.4%	60	17.8%	11	26.2%	1,064	20.5%
	High	33	38.4%	103	49.5%	1,461	47.8%	35	46.1%	67	44.4%	72	47.7%	113	47.1%	16	37.2%	371	45.9%	160	47.3%	20	47.6%	2,451	47.1%
Level of Urbanization	**Rural**	<5	4.7%	12	5.8%	210	6.9%	6	7.9%	12	7.9%	10	6.6%	19	7.9%	<5	2.3%	58	7.2%	11	3.3%	7	16.7%	350	6.7%
	Urban	82	95.3%	196	94.2%	2,848	93.1%	70	92.1%	139	92.1%	141	93.4%	221	92.1%	42	97.7%	751	92.8%	327	96.7%	35	83.3%	4,852	93.3%
Total		86		208		3,058		76		151		151		240		43		809		338		42		5,202	

Table 11: Number of Cases and Percent of First Primary Benign Central Nervous System Tumors by Demographics and Anatomic Site, 20-64 Year Olds, California, 2001-2005

Demographic Characteristics		Meninges		Brain Lobes		Ventricles		Cerebellum		Brain Stem		Spinal Cord & Cauda Equina		Acoustic Nerve		Cranial Nerves		Pituitary Gland		Overlapping lesions		Brain / Nervous System, NOS		Other		Total	
		n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Sex	**Male**	910	25.3%	100	34.4%	13	36.1%	75	51.4%	16	44.4%	201	53.3%	714	50.6%	62	41.3%	1,106	45.1%	15	31.3%	40	41.7%	11	29.7%	3,263	37.6%
	Female	2,684	74.7%	191	65.6%	23	63.9%	71	48.6%	20	55.6%	176	46.7%	698	49.4%	88	58.7%	1,347	54.9%	33	68.8%	56	58.3%	26	70.3%	5,413	62.4%
Race/Ethnicity	**Non-Hispanic White**	2,130	59.3%	189	64.9%	18	50.0%	78	53.4%	17	47.2%	228	60.5%	935	66.2%	89	59.3%	1,054	43.0%	29	60.4%	48	50.0%	22	59.5%	4,837	55.8%
	Non-Hispanic Black	254	7.1%	10	3.4%	<5	5.6%	7	4.8%	<5	11.1%	17	4.5%	36	2.5%	<5	1.3%	222	9.1%	<5	8.3%	<5	3.1%	0	0.0%	561	6.5%
	Hispanic	754	21.0%	67	23.0%	11	30.6%	40	27.4%	10	27.8%	75	19.9%	223	15.8%	33	22.0%	875	35.7%	9	18.8%	31	32.3%	8	21.6%	2,136	24.6%
	Asian-Pacific Islander	417	11.6%	21	7.2%	5	13.9%	14	9.6%	<5	11.1%	52	13.8%	179	12.7%	18	12.0%	271	11.0%	6	12.5%	12	12.5%	7	18.9%	1,006	11.6%
	Other/Unknown	39	1.1%	<5	1.4%	0	0.0%	7	4.8%	<5	2.8%	5	1.3%	39	2.8%	8	5.3%	31	1.3%	0	0.0%	<5	2.1%	0	0.0%	136	1.6%
Socioeconomic Status	**Low**	1,164	32.4%	82	28.2%	10	27.8%	48	32.9%	12	33.3%	113	30.0%	321	22.7%	36	24.0%	962	39.2%	11	22.9%	44	45.8%	12	32.4%	2,815	32.4%
	Medium	753	21.0%	65	22.3%	8	22.2%	29	19.9%	13	36.1%	75	19.9%	275	19.5%	26	17.3%	491	20.0%	12	25.0%	16	16.7%	8	21.6%	1,771	20.4%
	High	1,677	46.7%	144	49.5%	18	50.0%	69	47.3%	11	30.6%	189	50.1%	816	57.8%	88	58.7%	1,000	40.8%	25	52.1%	36	37.5%	17	45.9%	4,090	47.1%
Level of Urbanization	**Rural**	226	6.3%	23	7.9%	<5	5.6%	13	8.9%	5	13.9%	25	6.6%	88	6.2%	5	3.3%	121	4.9%	<5	2.1%	9	9.4%	<5	2.7%	519	6.0%
	Urban	3,368	93.7%	268	92.1%	34	94.4%	133	91.1%	31	86.1%	352	93.4%	1,324	93.8%	145	96.7%	2,332	95.1%	47	97.9%	87	90.6%	36	97.3%	8,157	94.0%
Total		3,594		291		36		146		36		377		1,412		150		2,453		48		96		37		8,676	

Table 12: Number of Cases and Percent of First Primary Malignant Central Nervous System Tumors by Demographics and Anatomic Site, 65 Years and Older, California, 2001-2005

Demographic Characteristics		Malignant		Benign		Uncertain		Total	
		n	%	n	%	n	%	n	%
Sex	**Male**	1,487	50.9%	1,691	36.1%	163	4.0%	3,341	41.7%
	Female	1,433	49.1%	2,992	63.9%	242	59.8%	4,667	58.3%
Race/Ethnicity	**Non-Hispanic White**	2,185	74.8%	3,110	66.4%	298	73.6%	5,593	69.8%
	Non-Hispanic Black	100	3.4%	305	6.5%	21	5.2%	426	5.3%
	Hispanic	436	14.9%	668	14.3%	53	13.1%	1,157	14.4%
	Asian-Pacific Islander	192	6.6%	557	11.9%	29	7.2%	778	9.7%
	Other/Unknown	7	0.2%	43	0.9%	<5	1.0%	54	0.7%
Socioeconomic Status	**Low**	863	29.6%	1,471	31.4%	125	30.9%	2,459	30.7%
	Medium	644	22.1%	991	21.2%	100	24.7%	1,735	21.7%
	High	1,413	48.4%	2,221	47.4%	180	44.4%	3,814	47.6%
Level of Urbanization	**Rural**	225	7.7%	298	6.4%	46	11.4%	569	7.1%
	Urban	2,695	92.3%	4,385	93.6%	359	88.6%	7,439	92.9%
Total		2,920		4,683		405		8,008	

Table 13: Number of Cases and Percent of First Primary Malignant Central Nervous System Tumors by Demographics and Anatomic Site, 65 Years and Older, California, 2001-2005

Histology		ICD-O3 Histology Codes	Malignant		Benign		Uncertain		Total	
			n	%	n	%	n	%	n	%
Tumors of the Neuroepithelial Tissue	Pilocytic astrocytoma	9421	0	0.0%	6	0.1%	0	0.0%	6	0.1%
	Diffuse astrocytoma (protoplasmic, fibrillary)	9410, 9420	18	0.6%	0	0.0%	0	0.0%	18	0.2%
	Anaplastic astrocytoma	9401, 9411	149	5.1%	0	0.0%	0	0.0%	149	1.9%
	Unique astrocytoma variants	9383, 9384, 9424	<5	0.0%	0	0.0%	13	3.2%	14	0.2%
	Astrocytoma, NOS	9400, 9412	117	4.0%	0	0.0%	0	0.0%	117	1.5%
	Glioblastoma	9440, 9441, 9442	1,850	63.4%	0	0.0%	0	0.0%	1,850	23.1%
	Oligodendroglioma	9450	33	1.1%	0	0.0%	0	0.0%	33	0.4%
	Anaplastic oligodendroglioma	9451, 9460	23	0.8%	0	0.0%	0	0.0%	23	0.3%
	Ependymoma/Anaplastic ependymoma	9391, 9392, 9393	37	1.3%	0	0.0%	0	0.0%	37	0.5%
	Ependymoma variant, Myxopapillary	9394	0	0.0%	0	0.0%	10	2.5%	10	0.1%
	Mixed glioma	9382	27	0.9%	0	0.0%	0	0.0%	27	0.3%
	Glioma malignant, NOS	9380	148	5.1%	0	0.0%	0	0.0%	148	1.8%
	Choroid plexus	9390	0	0.0%	6	0.1%	0	0.0%	6	0.1%
	Neuroepithelial	9381, 9423, 9430, 9444	10	0.3%	0	0.0%	<5	0.2%	11	0.1%
	Neuronal/glial, neuronal and mixed	8680, 9413, 9490, 9492, 9493, 9500, 9501, 9505, 9506, 9508	0	0.0%	<5	0.1%	5	1.2%	9	0.1%
	Pineal parenchymal	9360, 9361, 9362	<5	0.1%	0	0.0%	2	0.5%	6	0.1%
	Primitive/Medulloblastoma	9470, 9471, 9472, 9473, 9474	<5	0.1%	0	0.0%	0	0.0%	<5	0.0%
Tumors of Cranial & Spinal Nerves	Nerve sheath tumors	9540, 9550, 9560, 9561, 9570	<5	0.1%	452	9.6%	0	0.0%	455	5.7%
Tumors of Meninges	Meningioma	9530, 9531, 9532, 9533, 9534, 9537, 9538, 9539	56	1.9%	3,364	71.8%	174	43.0%	3,594	44.9%
	Other mesenchymal	8324, 8728, 8801, 8806, 8810, 8815, 8850, 8861, 8890, 8900, 8920, 9150, 9260	5	0.2%	<5	0.0%	14	3.5%	20	0.2%
	Hemangioblastoma	9131, 9161, 9535	0	0.0%	5	0.1%	31	7.7%	36	0.4%
Lymphomas		9590, 9591, 9650, 9670, 9671, 9675, 9680, 9684, 9687, 9690, 9691, 9695, 9698, 9699, 9702, 9705, 9714, 9719, 9727, 9728, 9729, 9731, 9733, 9734, 9740, 9741, 9750, 9755, 9930	282	9.7%	0	0.0%	0	0.0%	282	3.5%
Germ Cell Tumors		9060, 9064, 9065, 9070, 9071, 9080, 9081, 9084, 9085	0	0.0%	<5	0.0%	0	0.0%	<5	0.0%
Tumors of Sellar Region	Pituitary tumors	8270, 8271, 8272, 8280, 8290, 8300,9580	<5	0.1%	797	17.0%	0	0.0%	801	10.0%
	Craniopharyngioma	9350, 9351, 9352	0	0.0%	0	0.0%	37	9.1%	37	0.5%
Local Extensions from Regional Tumors	Chordoma	9370, 9371, 9372	7	0.2%	0	0.0%	0	0.0%	7	0.1%
Unclassifed Tumors	Hemangioma	9120, 9121, 9122, 9130, 9133	0	0.0%	12	0.3%	0	0.0%	12	0.1%
	Neoplasm, unspecified	8000, 8005, 8010	144	4.9%	34	0.7%	118	29.1%	296	0.1%
	All other	8720, 8728, 9580, 9751	0	0.0%	0	0.0%	0	0.0%	0	3.7%
Total			2,920		4,683		405		8,008	

Table 14: Number of Cases and Percent of First Primary Malignant Central Nervous System Tumors by Demographics and Anatomic Site, 65 Years and Older, California, 2001-2005

Behavior	Histology	Sex	Total			NH White			NH Black			Hispanic			API		
			AAIR	95% CI		AAIR	95% CI		AAIR	95% CI		AAIR	95% CI		AAIR	95% CI	
Malignant	Astrocytoma, anaplastic	Total	0.8	0.7	0.9	0.9	0.8	1.1				0.7	0.4	1.0	0.5	0.2	0.9
		Male	0.9	0.7	1.2	1.1	0.9	1.4	0.0	0.0	1.1	0.6	0.3	1.3	0.6	0.2	1.4
		Female	0.7	0.6	0.9	0.8	0.6	1.0				0.7	0.4	1.2	0.4	0.1	0.9
	Astrocytoma, NOS	Total	0.6	0.5	0.7	0.6	0.5	0.8				0.9	0.6	1.3	0.3	0.1	0.7
		Male	0.7	0.5	0.9	0.7	0.5	1.0				1.0	0.5	1.8			
		Female	0.6	0.4	0.7	0.6	0.4	0.8				0.8	0.4	1.4			
	Glioblastoma	Total	9.9	9.4	10.4	11.3	10.7	11.9	5.8	4.4	7.6	9.9	8.8	11.2	4.4	3.6	5.4
		Male	12.2	11.4	13.0	13.7	12.8	14.8	7.0	4.7	10.2	12.4	10.4	14.6	5.8	4.4	7.7
		Female	8.1	7.6	8.7	9.4	8.6	10.1	4.8	3.1	7.0	8.2	6.9	9.7	3.4	2.5	4.6
	Oligodendroglioma	Total	0.2	0.1	0.2	0.2	0.1	0.3				0.2	0.1	0.4			
		Male	0.2	0.1	0.3	0.3	0.1	0.4	0.0	0.0	1.1						
		Female	0.1	0.1	0.2	0.2	0.1	0.3									
	Anaplastic oligodendroglioma	Total	0.1	0.1	0.2	0.1	0.1	0.2									
		Male	0.1	0.1	0.2	0.1	0.0	0.2									
		Female	0.1	0.1	0.2	0.2	0.1	0.3	0.0	0.0	0.6						
	Ependymomas, anaplastic	Total	0.2	0.1	0.3	0.2	0.1	0.3				0.2	0.1	0.5			
		Male	0.2	0.1	0.4	0.3	0.1	0.4									
		Female	0.2	0.1	0.3	0.1	0.1	0.3				0.3	0.1	0.7			
	Mixed glioma	Total	0.1	0.1	0.2	0.2	0.1	0.3									
		Male	0.2	0.1	0.3	0.2	0.1	0.4	0.0	0.0	1.1						
		Female	0.1	0.1	0.2	0.1	0.1	0.2				0.0	0.0	0.2			
	Glioma malignant, NOS	Total	0.8	0.7	0.9	0.8	0.7	1.0	1.0	0.4	1.8	0.7	0.4	1.1	0.4	0.2	0.8
		Male	1.0	0.8	1.2	1.0	0.8	1.3				1.0	0.5	1.9	0.7	0.3	1.6
		Female	0.7	0.5	0.8	0.7	0.5	0.9	0.9	0.3	2.1	0.5	0.2	1.0			
	PNET/Meduloblastoma	Total							0.0	0.0	0.4				0.0	0.0	0.2
		Male							0.0	0.0	1.1				0.0	0.0	0.4
		Female				0.0	0.0	0.1	0.0	0.0	0.6	0.0	0.0	0.2	0.0	0.0	0.3
	Lymphomas	Total	1.5	1.3	1.7	1.5	1.3	1.7	0.9	0.4	1.7	1.3	0.9	1.8	2.0	1.4	2.7
		Male	1.6	1.3	1.9	1.7	1.3	2.0				1.3	0.7	2.1	2.3	1.4	3.5
		Female	1.4	1.2	1.7	1.4	1.1	1.7	1.2	0.5	2.5	1.4	0.8	2.1	1.7	1.1	2.7
Benign	Pilocytic astrocytoma	Total				0.0	0.0	0.1	0.0	0.0	0.4				0.0	0.0	0.2
		Male							0.0	0.0	1.1				0.0	0.0	0.4
		Female							0.0	0.0	0.6	0.0	0.0	0.2	0.0	0.0	0.3
	Nerve sheath	Total	2.4	2.2	2.7	2.5	2.3	2.8	1.3	0.7	2.2	1.7	1.2	2.2	2.7	2.1	3.5
		Male	2.9	2.5	3.3	2.9	2.4	3.3	1.4	0.5	3.0	1.8	1.1	2.7	4.0	2.9	5.6
		Female	2.1	1.8	2.4	2.3	2.0	2.7	1.1	0.4	2.3	1.6	1.0	2.3	1.7	1.1	2.6
	Meningioma	Total	17.8	17.2	18.4	17.8	17.1	18.6	20.3	17.5	23.4	16.3	14.8	17.9	17.8	16.0	19.7
		Male	11.9	11.2	12.7	12.3	11.4	13.3	15.6	11.7	20.3	9.5	7.7	11.5	10.4	8.4	12.8
		Female	22.2	21.3	23.1	22.1	21.0	23.2	23.2	19.5	27.5	21.1	18.9	23.5	23.2	20.6	26.0
	Pituitary tumors	Total	4.3	4.0	4.6	3.4	3.1	3.8	9.7	7.9	11.9	5.6	4.7	6.5	4.8	4.0	5.9
		Male	6.0	5.5	6.6	4.9	4.4	5.6	14.8	11.1	19.3	7.9	6.5	9.7	6.1	4.6	7.9

Table 14: Number of Cases and Percent of First Primary Malignant Central Nervous System Tumors by Demographics and Anatomic Si

Female	2.9	2.6	3.2	2.2	1.9	2.6	6.6	4.6	9.0	3.7	2.9	4.8	3.9	2.9	5.1

* Age-adjusted incidence rates are per 100,000 population. Rates are standardized to the 2000 US population.

Table 15: Number of Cases and Percent of First Primary Malignant Central Nervous System Tumors by Demographics and Anatomic Site, 65 Years and Older, California, 2001-2005

Demographic Characteristics		Diffuse astrocytoma		Anaplastic astrocytoma		Astrocytoma, NOS		Glioblastoma		Oligodendro-glioma		Ependymoma / anaplastic ependymoma		Anaplastic oligodendro-glioma		Mixed glioma		Glioma malignant, NOS		Meningioma		Lymphoma		Neoplasm, NOS		Other		Total	
		n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Sex	**Male**	9	50.0%	74	49.7%	57	48.7%	975	52.7%	18	54.5%	18	48.6%	10	43.5%	16	59.3%	75	50.7%	26	46.4%	130	46.1%	61	42.4%	18	50.0%	1,487	50.9%
	Female	9	50.0%	75	50.3%	60	51.3%	875	47.3%	15	45.5%	19	51.4%	13	56.5%	11	40.7%	73	49.3%	30	53.6%	152	53.9%	83	57.6%	18	50.0%	1,433	49.1%
Race/Ethnicity	**Non-Hispanic White**	15	83.3%	117	78.5%	82	70.1%	1,414	76.4%	25	75.8%	24	64.9%	16	69.6%	22	81.5%	109	73.6%	37	66.1%	190	67.4%	113	78.5%	21	58.3%	2,185	74.8%
	Non-Hispanic Black	<5	5.6%	<5	1.3%	<5	2.6%	56	3.0%	<5	3.0%	<5	8.1%	<5	4.3%	<5	3.7%	9	6.1%	3	5.4%	9	3.2%	9	6.3%	<5	5.6%	100	3.4%
	Hispanic	<5	11.1%	20	13.4%	24	20.5%	280	15.1%	5	15.2%	7	18.9%	<5	13.0%	<5	7.4%	20	13.5%	11	19.6%	37	13.1%	16	11.1%	9	25.0%	436	14.9%
	Asian-Pacific Islander	0	0.0%	10	6.7%	7	6.0%	97	5.2%	<5	6.1%	<5	8.1%	<5	13.0%	<5	7.4%	9	6.1%	5	8.9%	44	15.6%	6	4.2%	<5	11.1%	192	6.6%
	Other/Unknown	0	0.0%	0	0.0%	<5	0.9%	<5	0.2%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	<5	0.7%	0	0.0%	<5	0.7%	0	0.0%	0	0.0%	7	0.2%
Socioeconomic Status	**Low**	7	38.9%	34	22.8%	45	38.5%	527	28.5%	9	27.3%	11	29.7%	10	43.5%	5	18.5%	42	28.4%	12	21.4%	93	33.0%	55	38.2%	13	36.1%	863	29.6%
	Medium	5	27.8%	40	26.8%	24	20.5%	398	21.5%	6	18.2%	9	24.3%	6	26.1%	6	22.2%	33	22.3%	13	23.2%	60	21.3%	34	23.6%	10	27.8%	644	22.1%
	High	6	33.3%	75	50.3%	48	41.0%	925	50.0%	18	54.5%	17	45.9%	7	30.4%	16	59.3%	73	49.3%	31	55.4%	129	45.7%	55	38.2%	13	36.1%	1,413	48.4%
Level of Urbanization	**Rural**	<5	22.2%	7	4.7%	7	6.0%	138	7.5%	<5	6.1%	<5	5.4%	<5	13.0%	<5	3.7%	15	10.1%	8	14.3%	23	8.2%	13	9.0%	<5	5.6%	225	7.7%
	Urban	14	77.8%	142	95.3%	110	94.0%	1,712	92.5%	31	93.9%	35	94.6%	20	87.0%	26	96.3%	133	89.9%	48	85.7%	259	91.8%	131	91.0%	34	94.4%	2,695	92.3%
Total		18		149		117		1,850		33		37		23		27		148		56		282		144		36		2,920	

Table 16: Number of Cases and Percent of First Primary Malignant Central Nervous System Tumors by Demographics and Anatomic Site, 65 Years and Older, California, 2001-2005

Demographic Characteristics		Nerve sheath tumors		Meningioma		Pituitary tumors		Neoplasm, NOS		Other		Total	
		n	%	n	%	n	%	n	%	n	%	n	%
Sex	**Male**	236	52.2%	931	27.7%	491	61.6%	12	35.3%	21	58.3%	1,691	36.1%
	Female	216	47.8%	2,433	72.3%	306	38.4%	22	64.7%	15	41.7%	2,992	63.9%
Race/Ethnicity	**Non-Hispanic White**	313	69.2%	2,317	68.9%	427	53.6%	27	79.4%	26	72.2%	3,110	66.4%
	Non-Hispanic Black	13	2.9%	193	5.7%	95	11.9%	<5	8.8%	<5	2.8%	305	6.5%
	Hispanic	49	10.8%	447	13.3%	164	20.6%	<5	5.9%	6	16.7%	668	14.3%
	Asian-Pacific Islander	63	13.9%	381	11.3%	108	13.6%	<5	5.9%	<5	8.3%	557	11.9%
	Other/Unknown	14	3.1%	26	0.8%	<5	0.4%	0	0.0%	0	0.0%	43	0.9%
Socioeconomic Status	**Low**	109	24.1%	1,068	31.7%	270	33.9%	14	41.2%	10	27.8%	1,471	31.4%
	Medium	92	20.4%	706	21.0%	173	21.7%	10	29.4%	10	27.8%	991	21.2%
	High	251	55.5%	1,590	47.3%	354	44.4%	10	29.4%	16	44.4%	2,221	47.4%
Level of Urbanization	**Rural**	36	8.0%	218	6.5%	37	4.6%	6	17.6%	<5	2.8%	298	6.4%
	Urban	416	92.0%	3,146	93.5%	760	95.4%	28	82.4%	35	97.2%	4,385	93.6%
Total		452		3,364		797		34		36		4,683	

Table 17: Number of Cases and Percent of First Primary Malignant Central Nervous System Tumors by Demographics and Anatomic Site, 65 Years and Older, California, 2001-2005

Demographic Characteristics		Meninges		Brain Lobes		Cerebellum		Spinal Cord, Cauda Equina & Cranial Nerves		Acoustic Nerve		Cranial Nerves		Pituitary Gland		Overlapping lesions		Brain/Nervous System, NOS		Other		Total	
		n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Sex	**Men**	862	27.5%	63	38.7%	21	46.7%	42	42.4%	146	52.7%	30	61.2%	491	61.5%	6	23.1%	16	28.6%	14	41.2%	1,691	36.1%
	Women	2,273	72.5%	100	61.3%	24	53.3%	57	57.6%	131	47.3%	19	38.8%	308	38.5%	20	76.9%	40	71.4%	20	58.8%	2,992	63.9%
Race/Ethnicity	**Non-Hispanic White**	2,147	68.5%	126	77.3%	34	75.6%	67	67.7%	196	70.8%	31	63.3%	427	53.4%	18	69.2%	43	76.8%	21	61.8%	3,110	66.4%
	Non-Hispanic Black	184	5.9%	<5	2.5%	0	0.0%	5	5.1%	6	2.2%	<5	4.1%	97	12.1%	<5	3.8%	<5	5.4%	<5	8.8%	305	6.5%
	Hispanic	418	13.3%	22	13.5%	<5	8.9%	10	10.1%	30	10.8%	8	16.3%	164	20.5%	<5	11.5%	6	10.7%	<5	8.8%	668	14.3%
	Asian-Pacific Islander	362	11.5%	10	6.1%	6	13.3%	16	16.2%	36	13.0%	5	10.2%	108	13.5%	<5	15.4%	<5	7.1%	6	17.6%	557	11.9%
	Other/Unknown	24	0.8%	<5	0.6%	<5	2.2%	<5	1.0%	9	3.2%	<5	6.1%	<5	0.4%	0	0.0%	0	0.0%	<5	2.9%	43	0.9%
Socioeconomic Status	**Low**	1,006	32.1%	45	27.6%	9	20.0%	21	21.2%	67	24.2%	15	30.6%	272	34.0%	8	30.8%	17	30.4%	11	32.4%	1,471	31.4%
	Medium	665	21.2%	33	20.2%	10	22.2%	19	19.2%	59	21.3%	6	12.2%	173	21.7%	6	23.1%	14	25.0%	6	17.6%	991	21.2%
	High	1,464	46.7%	85	52.1%	26	57.8%	59	59.6%	151	54.5%	28	57.1%	354	44.3%	12	46.2%	25	44.6%	17	50.0%	2,221	47.4%
Level of Urbanization	**Rural**	201	6.4%	14	8.6%	<5	2.2%	5	5.1%	23	8.3%	6	12.2%	37	4.6%	<5	11.5%	<5	7.1%	<5	11.8%	298	6.4%
	Urban	2,934	93.6%	149	91.4%	44	97.8%	94	94.9%	254	91.7%	43	87.8%	762	95.4%	23	88.5%	52	92.9%	30	88.2%	4,385	93.6%
Total		3,135		163		45		99		277		49		799		26		56		34		4,683	

Table 18: Number of Cases and Percent of First Primary Malignant Central Nervous System Tumors by Demographics and Anatomic Site, 65 Years and Older, California, 2001-2005

Demographic Characteristics		Meninges		Cerebrum		Brain Lobes		Ventricle		Cerebellum		Brain Stem		Spinal Cord & Cauda Equina		Overlapping lesions		Brain / Nervous System, NOS		Other		Total	
		n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Sex	**Men**	21	39.6%	66	52.0%	864	51.1%	12	60.0%	22	46.8%	15	48.4%	16	42.1%	314	54.0%	143	47.0%	14	53.8%	1,487	50.9%
	Women	32	60.4%	61	48.0%	828	48.9%	8	40.0%	25	53.2%	16	51.6%	22	57.9%	268	46.0%	161	53.0%	12	46.2%	1,433	49.1%
Race/Ethnicity	**Non-Hispanic White**	32	60.4%	91	71.7%	1,308	77.3%	12	60.0%	30	63.8%	18	58.1%	27	71.1%	413	71.0%	242	79.6%	12	46.2%	2,185	74.8%
	Non-Hispanic Black	<5	5.7%	<5	3.1%	51	3.0%	<5	5.0%	5	10.6%	<5	9.7%	<5	2.6%	21	3.6%	8	2.6%	<5	11.5%	100	3.4%
	Hispanic	11	20.8%	20	15.7%	239	14.1%	<5	10.0%	10	21.3%	6	19.4%	6	15.8%	105	18.0%	28	9.2%	9	34.6%	436	14.9%
	Asian-Pacific Islander	7	13.2%	12	9.4%	90	5.3%	5	25.0%	<5	4.3%	<5	9.7%	<5	7.9%	43	7.4%	25	8.2%	<5	7.7%	192	6.6%
	Other/Unknown	0	0.0%	0	0.0%	<5	0.2%	0	0.0%	0	0.0%	<5	3.2%	<5	2.6%	0	0.0%	<5	0.3%	0	0.0%	7	0.2%
Socioeconomic Status	**Low**	11	20.8%	41	32.3%	466	27.5%	<5	15.0%	17	36.2%	7	22.6%	15	39.5%	195	33.5%	96	31.6%	12	46.2%	863	29.6%
	Medium	11	20.8%	22	17.3%	395	23.3%	8	40.0%	8	17.0%	9	29.0%	7	18.4%	119	20.4%	62	20.4%	<5	11.5%	644	22.1%
	High	31	58.5%	64	50.4%	831	49.1%	9	45.0%	22	46.8%	15	48.4%	16	42.1%	268	46.0%	146	48.0%	11	42.3%	1,413	48.4%
Level of Urbanization	**Rural**	8	15.1%	9	7.1%	133	7.9%	<5	5.0%	<5	8.5%	<5	12.9%	<5	2.6%	47	8.1%	15	4.9%	<5	11.5%	225	7.7%
	Urban	45	84.9%	118	92.9%	1,559	92.1%	19	95.0%	43	91.5%	27	87.1%	37	97.4%	535	91.9%	289	95.1%	23	88.5%	2,695	92.3%
Total		53		127		1,692		20		47		31		38		582		304		26		2,920	