

**Cancer assessments in a California
community adjacent to the Pacific
Coast Pipeline (PCPL) Superfund
Site, 1996-2009
(East Fillmore, CA)**

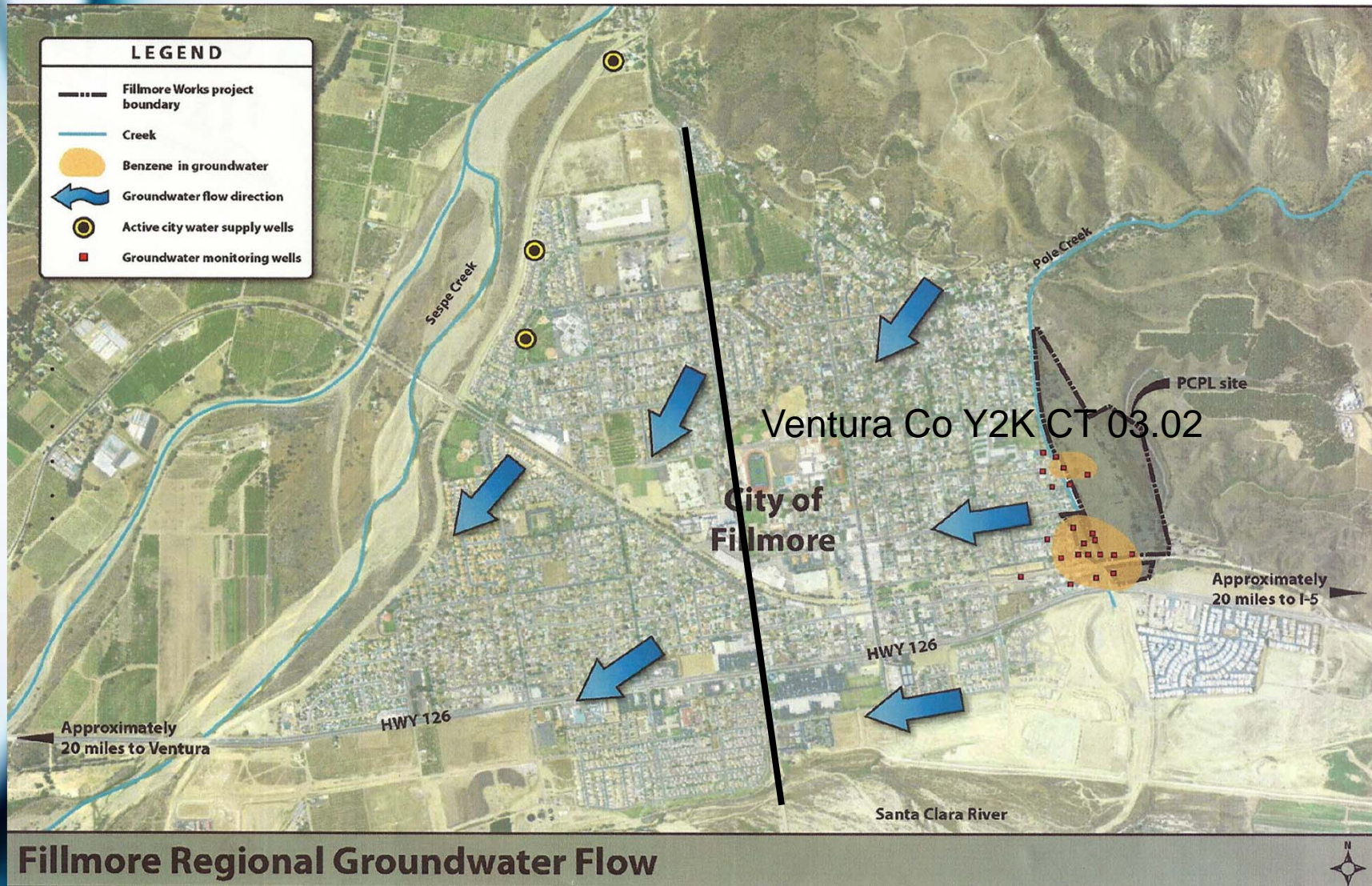
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BACKGROUND

- ❖ PCPL site, located adjacent to Pole Creek on the eastern side of Fillmore, formerly operated as an oil refinery and oil transfer site.
- ❖ In mid-2012, the Epidemiologist for Region 4 of the California Cancer Registry was contacted by the Mayor of Fillmore, who described a concern about cancer stemming from the PCPL site. After visiting the site, a cancer assessment of Year 2000 Census tract 03.02 (Eastern Fillmore) covering 1996-2009 was initiated.

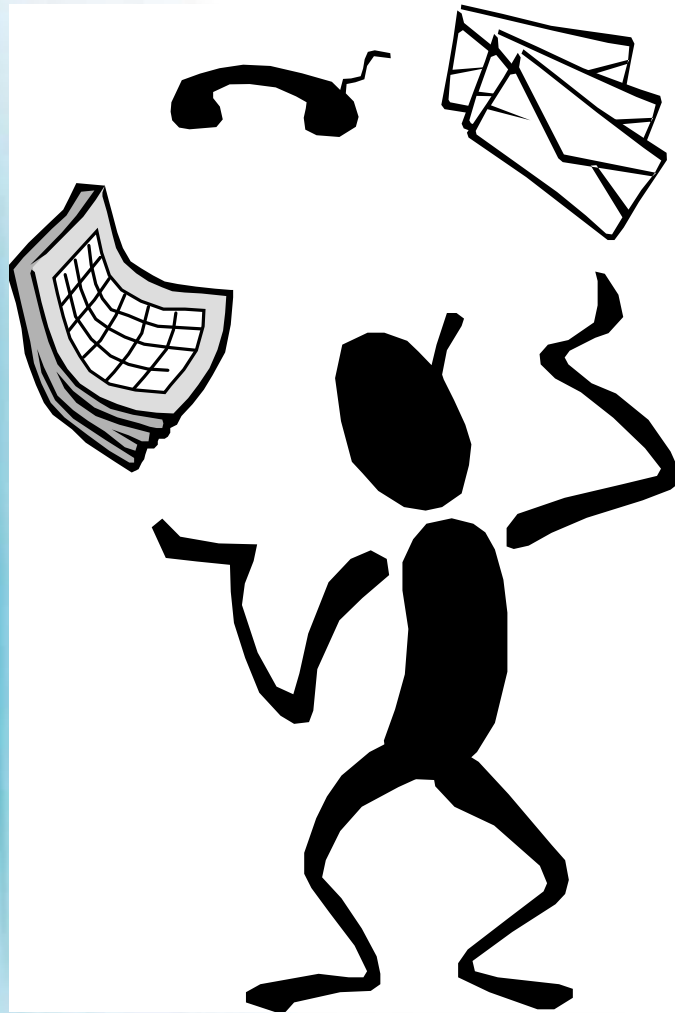
BACKGROUND



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- ❖ There has been state mandated reporting of information about cancer occurrence to the California Cancer Registry (CCR) since January 1, 1988. Approximately 95% of cases are reported within two years of diagnosis, eventually reaching 99+% of cases.
- ❖ Region 4 of CCR aka; Central Coast Cancer Registry serves San Luis Obispo, Santa Barbara, and Ventura Counties.
- ❖ In mid-2012 the Epidemiologist for Region 4 of the CCR initiated a cancer assessment in Ventura County Census Y2K Census tract 03.02, that we have called East Fillmore.

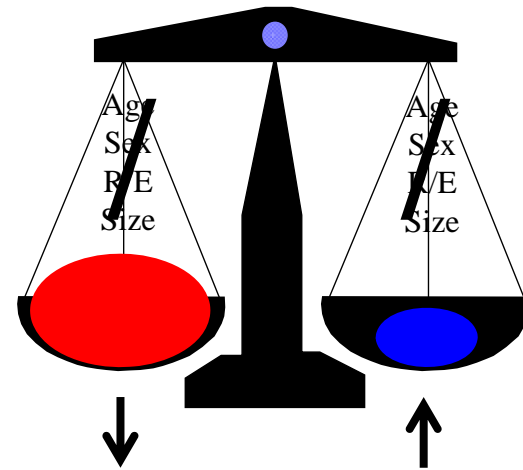
Methods:



The *Standardized Incidence Ratio (SIR)* was used to evaluate the ratio of *Observed* to *Expected* new cancer cases in census tract 03.02 for 1996-2009, balancing the effects of age, sex, race/ethnicity, and population size measured in the Y2K Census.

$$SIR = \frac{\text{Observed Cases}}{\text{Expected Cases}}$$

Age	Tract 03.02
Sex	measured in
R/E	2000 Census
Size	
Age	Region 4
Sex	1996-2009
R/E	
Size	

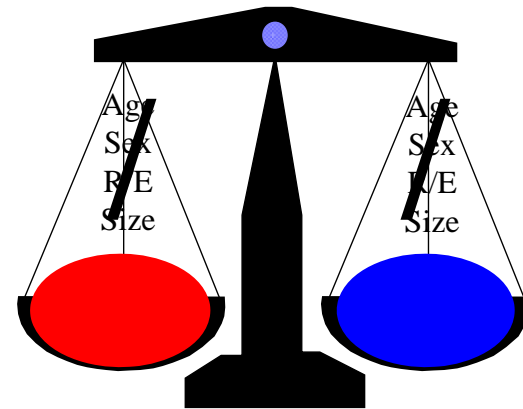


SIR > 1: Observed Count Greater Than Expected Count

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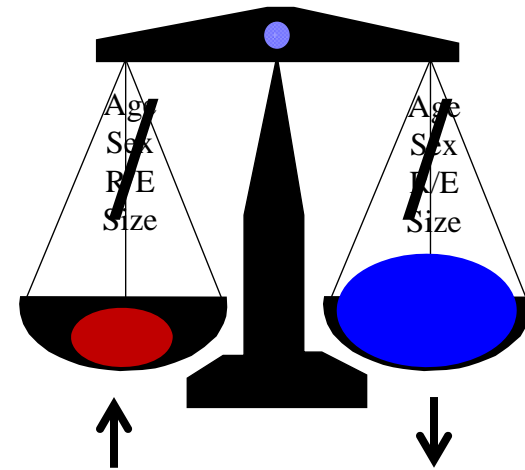
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Age	Region 4
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SIR > 1: Observed Count Greater Than Expected Count

SIR = 1: Observed Count Same As Expected Count

SIR < 1: Observed Count Less Than Expected Count

Epidemiology 101

The observed count of new cancers for a community is subject to random error (chance). This effect is maximized for small counts and diminishes as the number of observed counts is increased.

Random error in SIR values is frequently evaluated using confidence interval limits (CI) around SIR findings. The CCR has adopted use of 99% CI in settings involving multiple hypothesis tests, like this setting.

Confidence interval limits that exclude the SIR ratio value of one are more different from the null hypothesis value than chance would normally produce. These values are said to be “*statistically significant.*”

RESULTS

- ❖ Table 1. presents the race/ethnicity-, sex (gender)-, and age-distributions of the Census 2000 population residing in Ventura County Census Tract 03.02 using four major race/ethnic categories

Race/Ethnicity Categories:	Percent Distribution
Asian/Other*	2.84%
Non-Hispanic Black	0.25%
Hispanic	58.02%
Non-Hispanic White	38.89%
Total	100.00%
Sex:	
Females	48.96%
Males	51.04%
Age:	
Mean Age-category	30-34 Years
Median Age-category	30-34 Years
Mode Age-category	05-09 Years

*In addition to Asian Americans, including ethnicities from the Indian Subcontinent, American Indians, Native Alaskans, and persons reporting mixed race/ethnicity are included in this race/ethnic category. This ensures that all race/ethnicities are included.

RESULTS

Table 2. Observed and demographic factor-adjusted* expected counts of new cancers with standardized incidence ratios (SIR) and confidence interval (CI) limits for Fillmore, Ventura County, California Census Tract 03.02 for 1996-2009. California Cancer Registry.

Cancer Site	Observed	Adjusted Expected	SIR	99% CI	
All Cancer Sites Combined	422	421.78	1.00	0.88	1.13
All Leukemias	10	11.50	0.87	0.31	1.84
All Types Lymphoma	16	20.57	0.78	0.36	1.42
Breast Cancer - Both sexes	53	63.55	0.83	0.56	1.17
Cervix Uteri†	5	4.13	1.21	0.22	3.38
Cervix Uteri‡	5	4.85	1.03	0.19	2.88
Stomach Cancer	<5	<5	0.54		
Liver Cancer	5	4.56	1.10	0.20	3.06
Prostate Cancer	69	66.98	1.03	0.74	1.39
Lung & Bronchus	49	56.45	0.87	0.58	1.24
Pancreas Cancer	11	10.73	1.02	0.38	2.10
Multiple Myeloma	<5	<5	0.85		
Colorectal Cancer	44	46.69	0.94	0.61	1.37
Urinary Bladder	17	20.85	0.82	0.39	1.47
Kidney & Renal Pelvis	17	9.96	1.71	0.81	3.07
Uninary System	35	31.98	1.09	0.67	1.66
Brain & Other NS	7	5.70	1.23	0.32	2.98
Childhood Cancers‡	7	3.86	1.81	0.48	4.38

DISCUSSION

- ❖ Assessments did not identify an excess in occurrence of all cancers combined, or for any specific type of cancer that differed from the variation attributable to random error.

DISCUSSION

- ❖ The observed count of seven childhood cancers in comparison to approximately four cases expected is based on small sample size that challenges statistical interpretation and quantification beyond anecdotal.
- ❖ Observation that the modal age-category for the Fillmore population measured in the Year 2000 Census was age 5-9 years (Table 2) reveals rapid population growth among children that would increase percentages of children in Fillmore, relative to the county and state (Table 3).

Table 3. Counts and population percentages (% of Total Population) for children (age less than 15 years) in Fillmore, Ventura County, and California, 2000.

	<u>Population Count</u>	<u>% of Total Population</u>
Children (aged <15 Years)		
Fillmore	1,622	25.43%
Ventura County	307,054	21.87%
California	7,802,745	22.95%

DISCUSSION

- ❖ Although the observed count of 17 kidney and renal pelvis cancers, compared to the expected count of approximately 10 (Table 2), is within the range of difference normally attributed to random variation, this finding is consistent with the epidemic of :

Obesity and Type II Diabetes Mellitus, that are risk factors for kidney cancer.

Thank You
for your
Attention

