

Increasing Trends of Kidney and Renal Pelvis Cancer in California

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Background

- 8th most common cancer in California
- Majority of cases: renal cell carcinomas (RCC)
- Risk factors:
 - Smoking
 - Obesity
 - Hypertension

Also:

- Long term dialysis (kidney disease?)
- Von Hippel-Lindau syndrome
- Exposure to asbestos, cadmium

Incidence is 

- Kidney cancer incidence increasing in the US & Canada
- In California: incidence increasing in males and females, all racial/ethnic groups
- But: mortality declining

WHY?

Objectives



- Examine trends in incidence of kidney cancer by gender, race/ethnicity, age, and stage at diagnosis
- Interpret trends in light of prevalence:
 - Risk factors
 - Methods of detection

Methods



- Histologic type classified as:
 - Renal Cell Carcinoma (RCC):
codes 8260, 8310, 8312, 8316-8318
 - Other
- Trends in age-adjusted rates: Joinpoint
- Prevalence of risk factors: BRFSS
- Detection: scientific literature and news media

Results



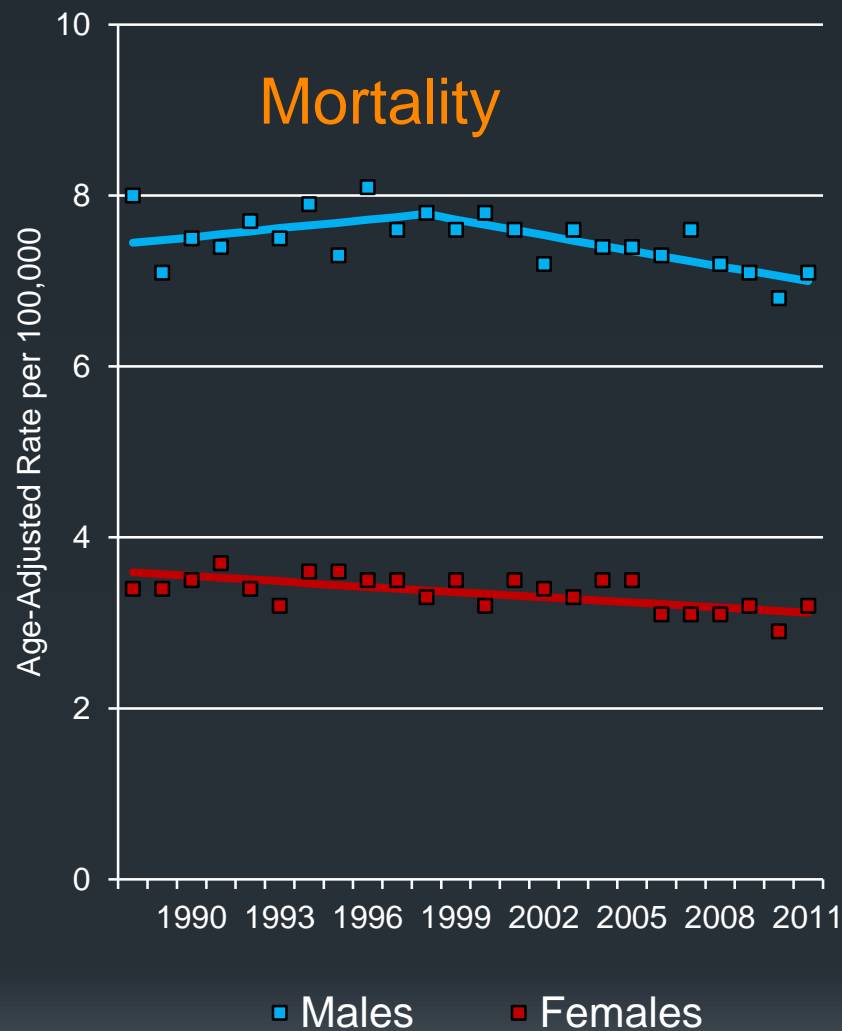
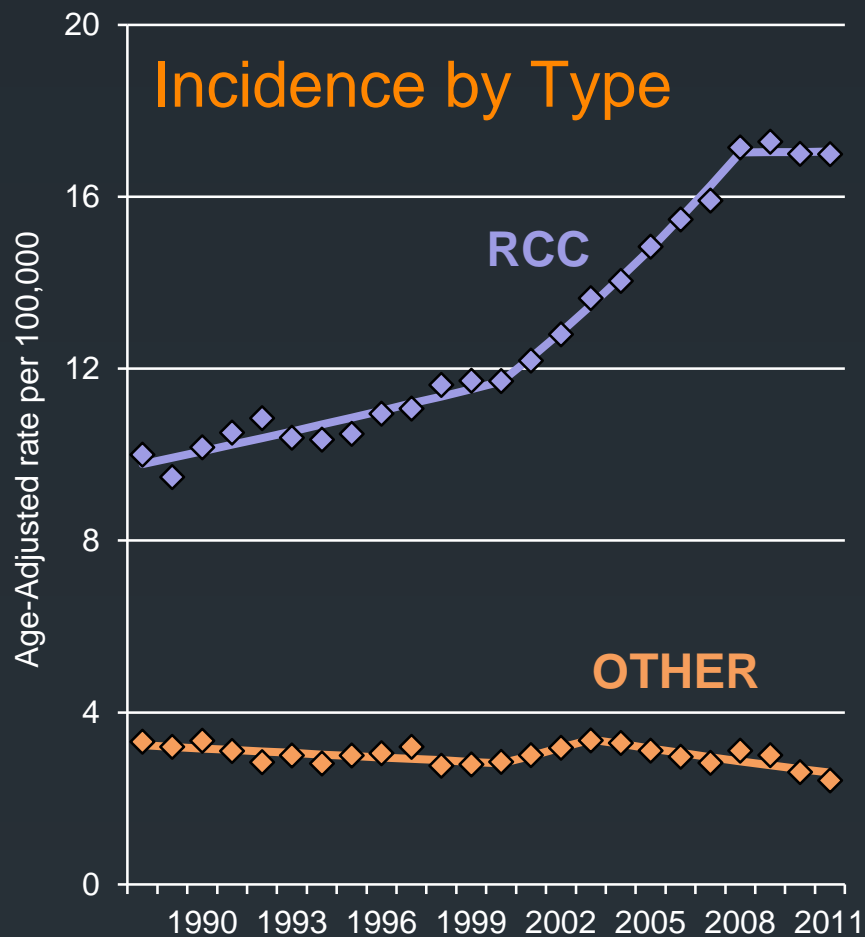
CA, 1988-2011

89,028 Kidney and renal pelvis cancer cases

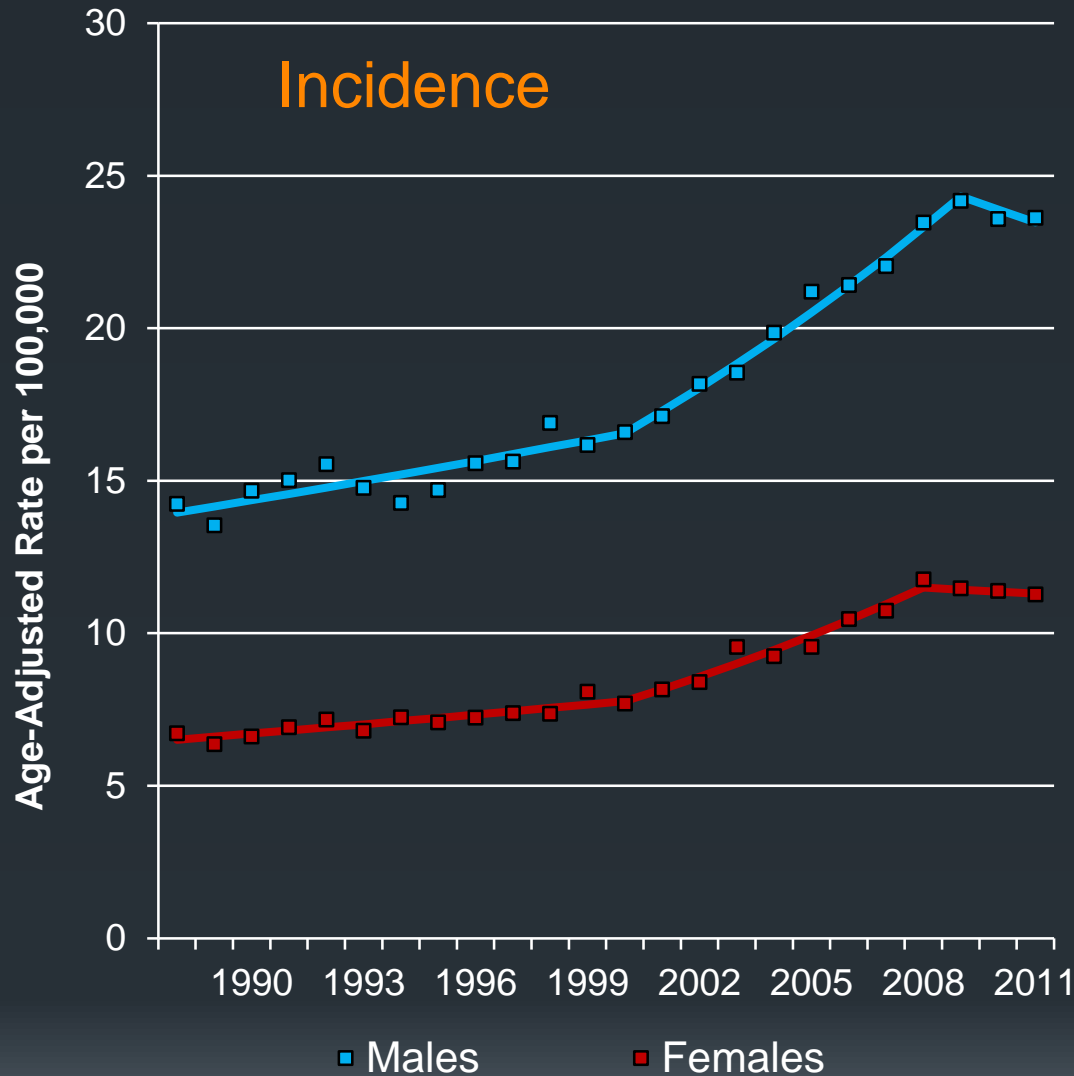
73,310 RCC (82%)

15,718 Other histologies (18%)

Kidney cancer incidence and mortality trends: California, 1988-2011



Renal Cell Carcinoma (RCC) Incidence Trends: CA, 1988-2011



Annual Percent Change (APC) in RCC Incidence Rates by Sex

	N	YEAR DX	APC	P-value
Males	46,210	1988-2000	1.4	<0.001
		2000-2009	4.4	<0.001
		2009-2011	-1.8	0.575
Females	26,100	1988-2000	1.5	<0.001
		2000-2008	5.0	<0.001
		2008-2011	-0.6	0.724

Annual Percent Change (APC) in Kidney Cancer Incidence Rates by Race/Ethnicity

	N	Year DX	APC	p-value
White	46,461	1988-2000	1.7	<0.001
		2000-2009	4.5	<0.001
		2009-2011	-1.3	0.699
Black	5,253	1988-2011	3.3	<0.001
Hispanic	15,307	1988-2000	1.9	<0.001
		2000-2008	5.1	<0.001
		2008-2011	-1.1	0.577
Asian/PI	4,532	1988-1999	1.3	0.319
		1999-2011	4.3	<0.001

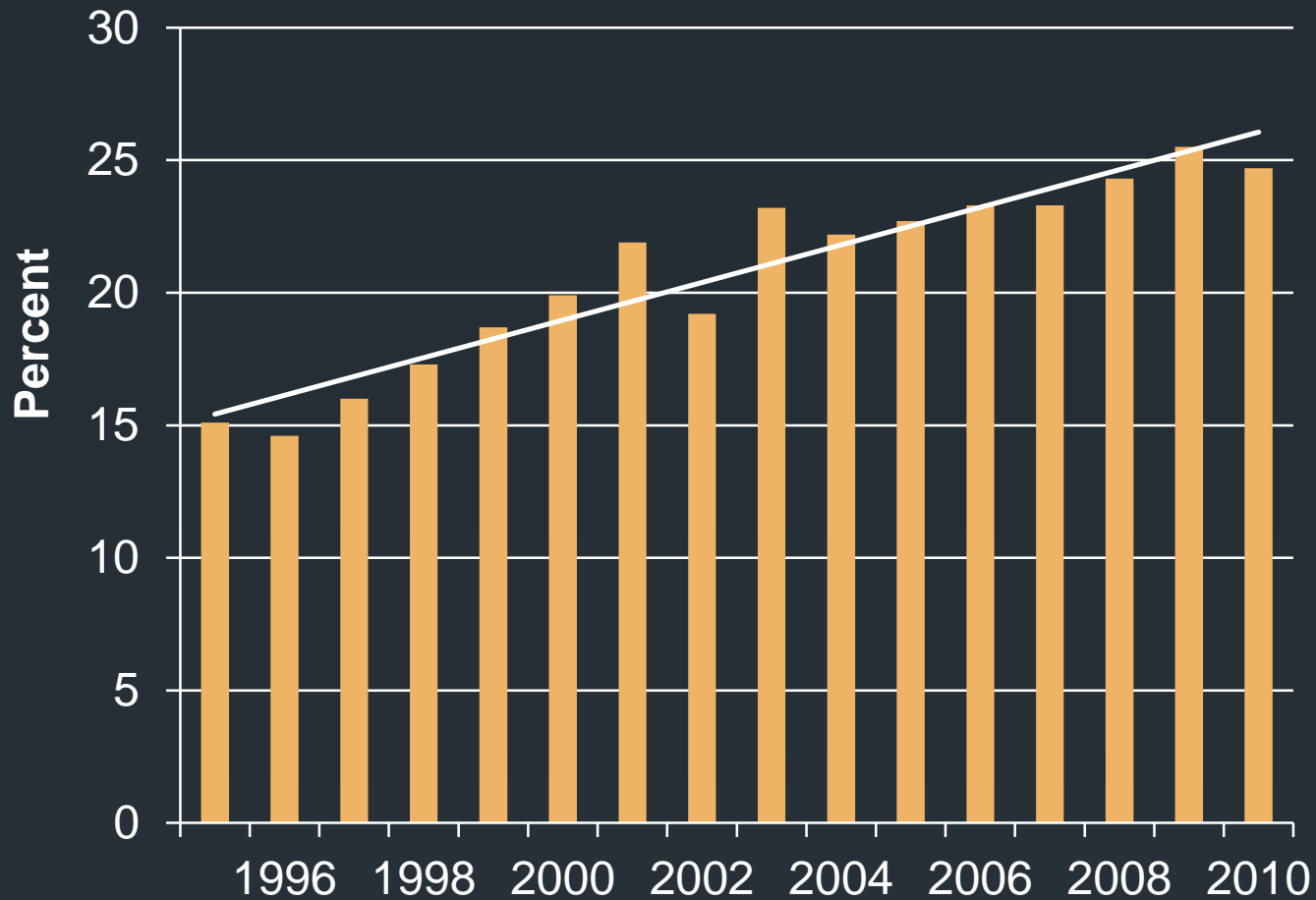
Annual Percent Change (APC) in Kidney Cancer Incidence Rates by Age at DX

	N	Year DX	APC	P-value
20-49	11,221	1988-1999	0.8	0.290
		1999-2011	5.5	<0.001
50-64	25,553	1988-2011	2.4	<0.001
65-74	19,449	1988-1997	1.2	0.171
		1997-2011	4.0	<0.001
75+	16,087	1988-1995	-0.6	0.668
		1995-2009	4.1	<0.001
		2009-2011	-5.2	0.427

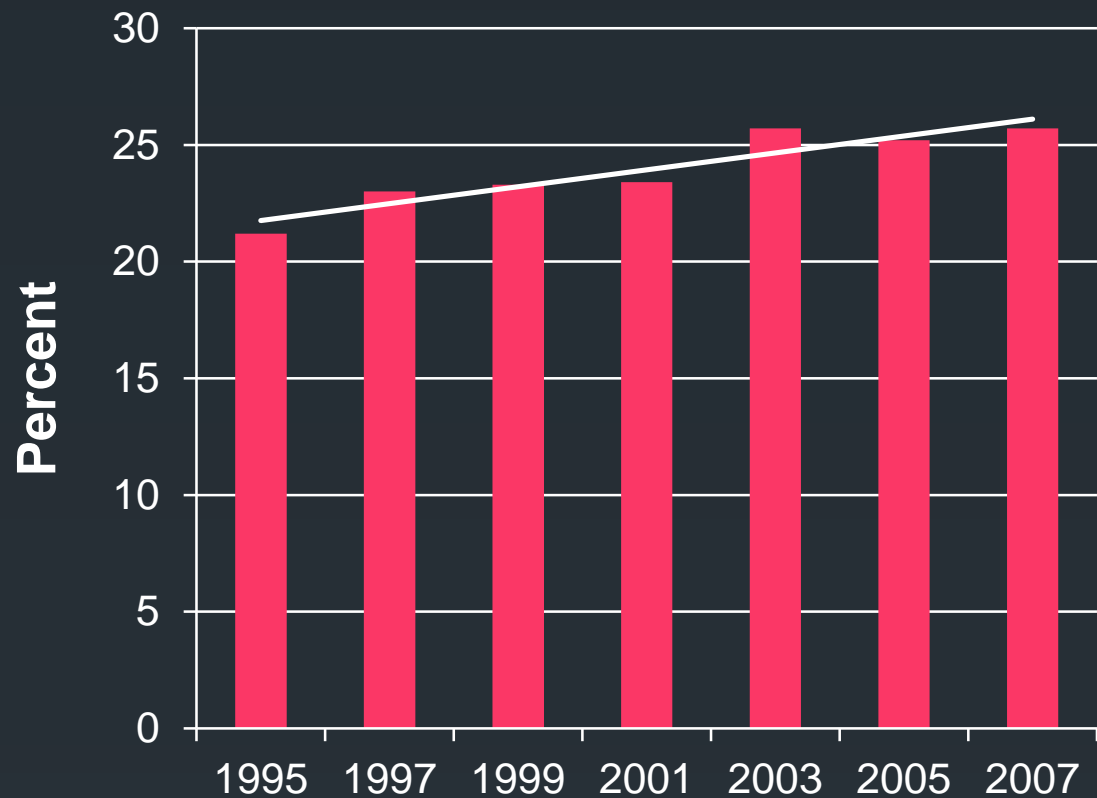
Incidence increase: summary

- 1988- Mid 90s': Slight increase in incidence
 - Significant for males & females, whites & Hispanics
- Starting in the late 90s': steep increase in incidence (all groups)
- 2008-2009: no increase
 - Reporting delay?
 - Too early for conclusions

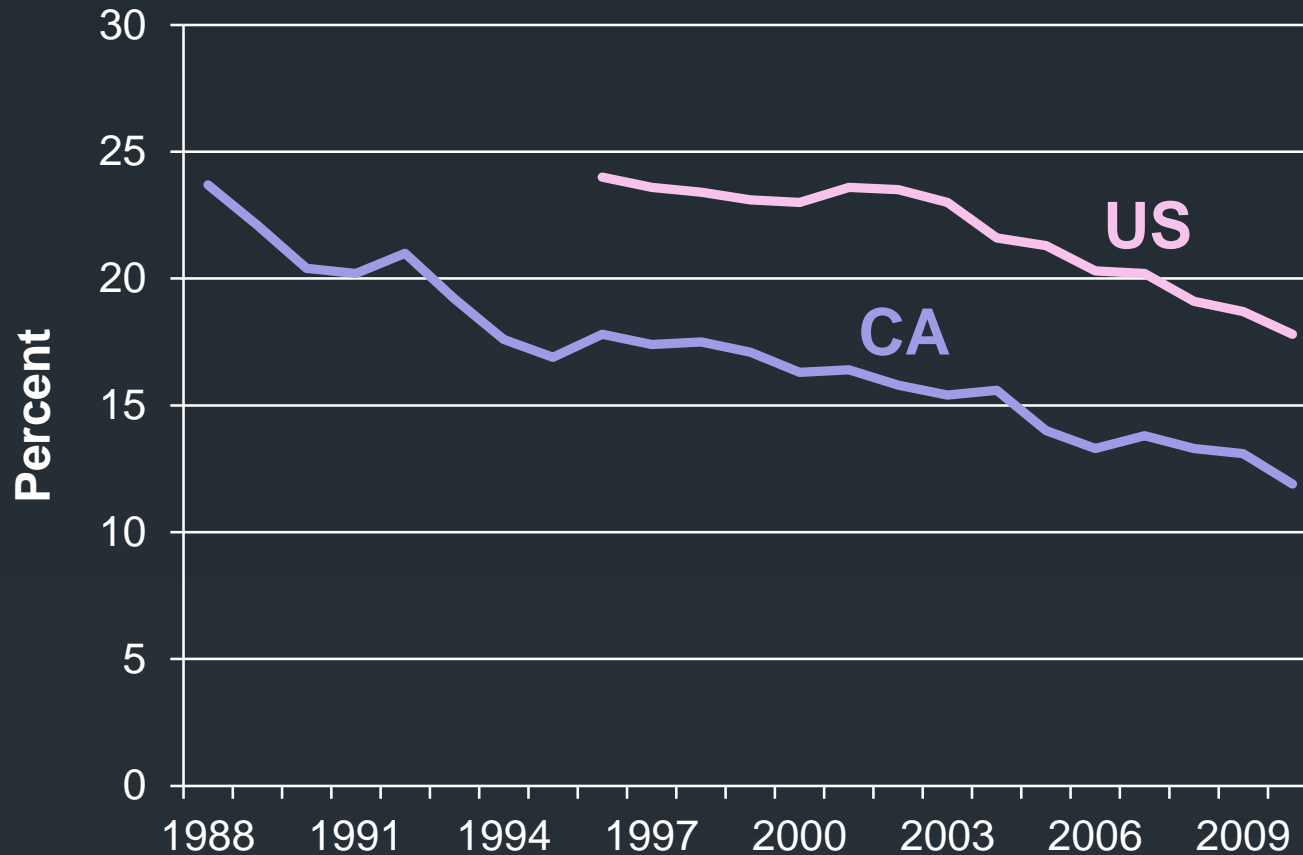
Prevalence of Adult Obesity (BMI > 30): California BRFSS



Prevalence of High Blood Pressure: California BRFSS

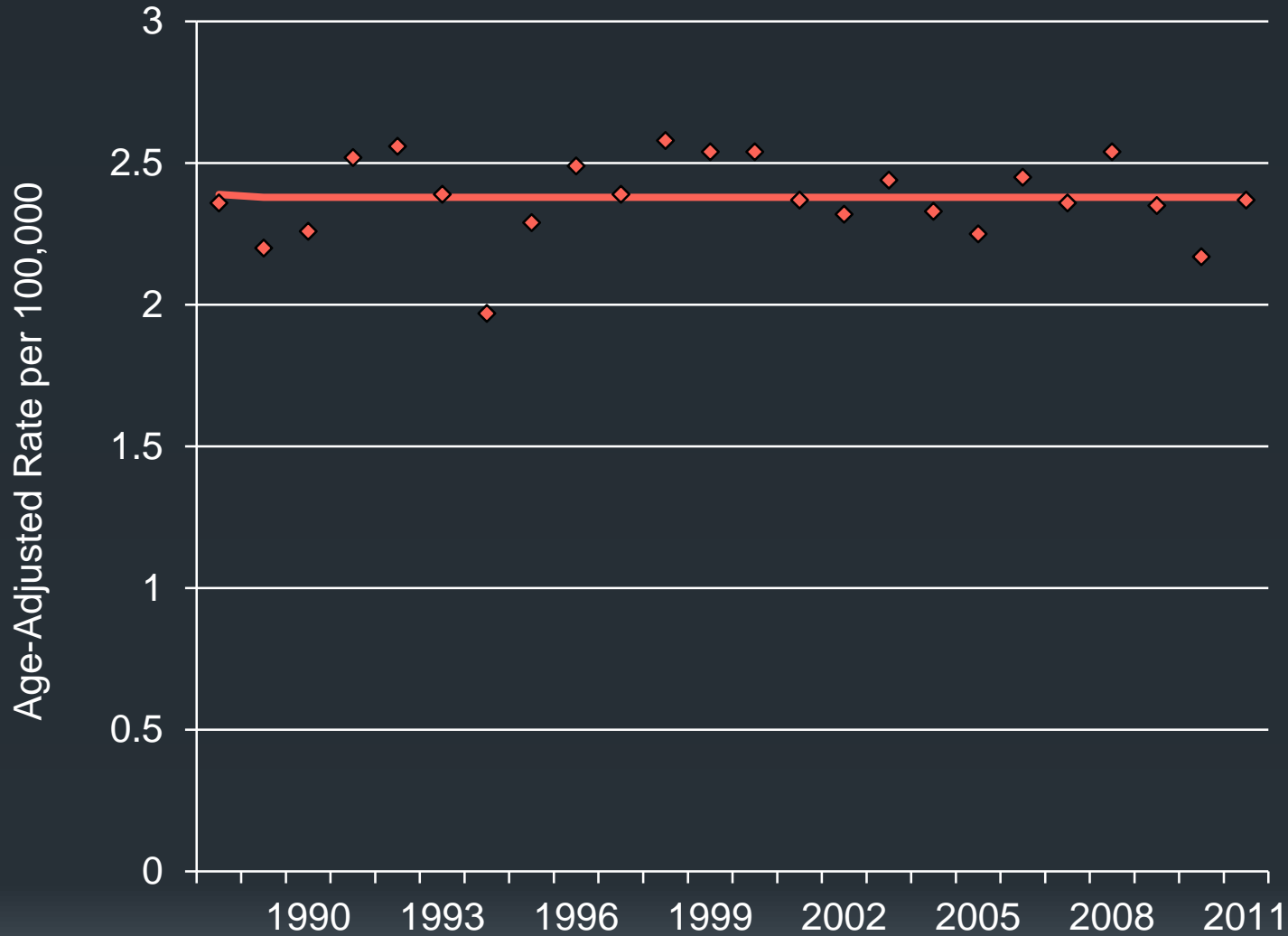


Prevalence of Adult Smoking: California vs. US (excluding CA)

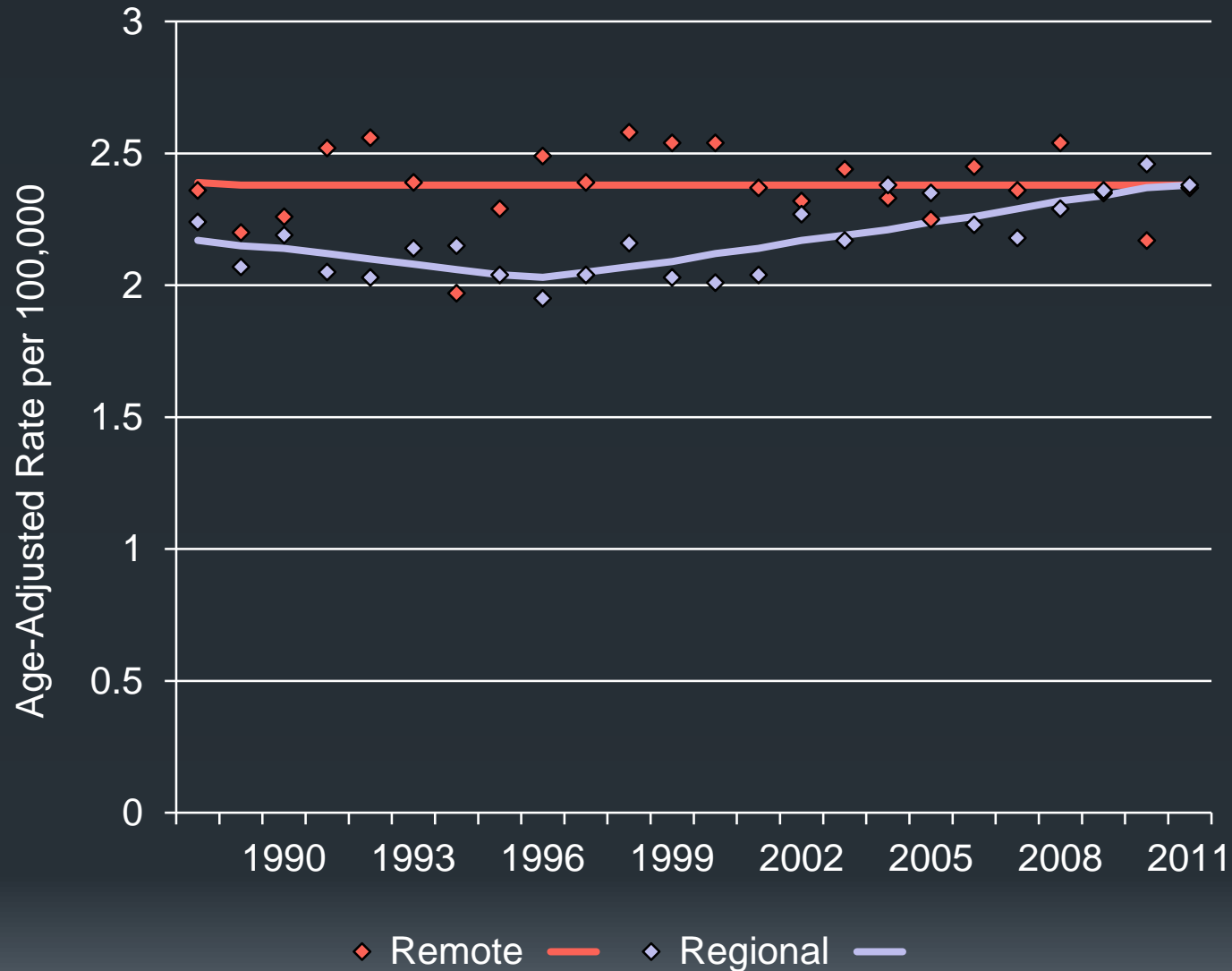


Source: California Tobacco Control Program, CDPH

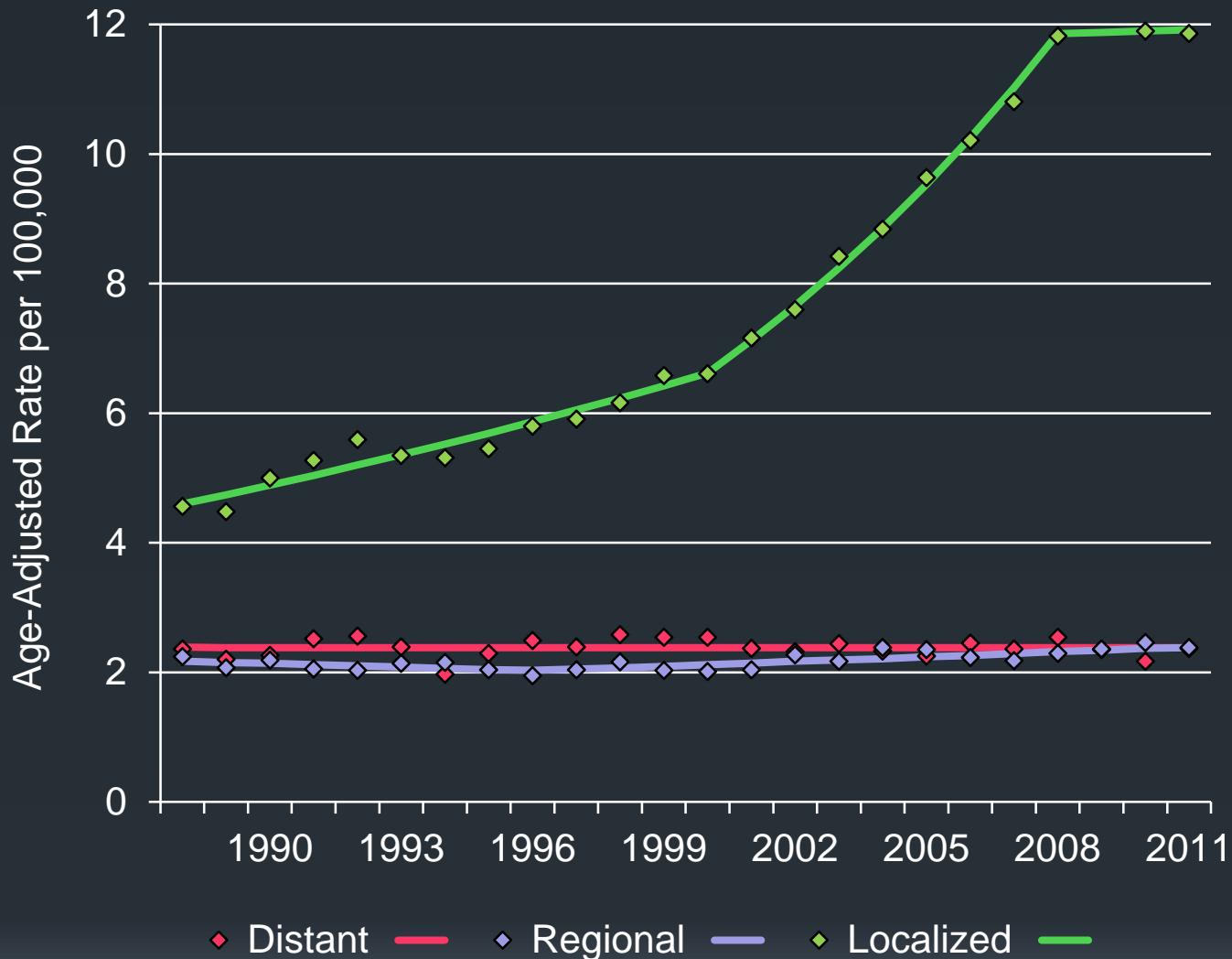
RCC Incidence Trends: Remote Stage at Diagnosis



RCC Incidence Trends: Regional and Remote Stages



RCC Incidence Trends: Localized, Regional, and Remote Stages



Trends in diagnostic imaging use

- From 1996-2010 (UCSF study):
 - Ultrasound **doubled**
 - Computed tomography (CT) **tripled**
 - Magnetic resonance imaging (MRI) **quadrupled**
 - PET scan increased **10X** after 2004
- Use of imaging increased with age
- Increase higher in Emergency Department
- After 2007 increase may be slowing down

Conclusions

- Mortality declined among females, and in the mid 90s' among males as well
- Increasing incidence of kidney cancer limited to RCC
- From the late 90s' forward, incidence increased in all groups
- Among risk factors for kidney cancer:
 - Sharp decrease in smoking
 - Sharp increase in obesity

Conclusions

- Use of advanced diagnostic imaging burgeoned in the last 15-20 years
- Increase in obesity probably implicated in the increased incidence of RCC
- However: increase in RCC limited mostly to early-stage disease
- Trends most likely due to incidental findings from higher use of diagnostic imaging