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California film subsidies and on-screen smoking:

Resolving the policy conflict

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Executive summary

Cumulative exposure to on-screen smoking is a major recruiter of new young smokers. Policy solutions—including R-rating films with tobacco imagery and making productions with tobacco ineligible for public subsidies—are backed by health authorities in California and worldwide.

Exposure to on-screen smoking accounts for nearly 100,000 current smokers in California aged 12-17. Total costs of medical services for this group, through age 50, are estimated at \$1.6 billion (discounted present value). Two-thirds of the cost will be borne by government.

Top-grossing films made in California accounted for one-third of United States audience exposure to on-screen tobacco imagery 2002-11.

From mid-2009 through 2011, California approved \$374 million in film and television production subsidies, in the form of tax credits. \$128 million was approved for 27 feature films, released widely 2010-11, that achieved top-grossing status. Sixteen of these films featured tobacco imagery; \$75 million was approved for these films, which made \$1.1 billion at the box office.

More than two-thirds (\$51 million) of California tax credits approved for top-grossing films with tobacco imagery went to PG-13 films. Nearly 80 percent (2 billion/2.5 billion) of in-theater tobacco impressions delivered in the US and Canada by California-subsidized, top-grossing films came from films rated PG-13. (The rest came from R-rated films.)

Tobacco content of top-grossing films varies by company. Forty-four percent of California subsidies approved for top-grossing feature were reserved for films released by Sony and Viacom (Paramount). Films from these two companies garnered 71 percent of California subsidies for films with tobacco and 83 percent of subsidies for youth-rated (PG-13) films with tobacco.

Of the \$1.6 billion in costs of direct medical services that will be incurred for teen smokers in California recruited by their exposure to films with tobacco imagery, \$510 million is attributable to adolescents' exposure to films made in California.

If the California film subsidy program continues and the pattern of subsidies and smoking films remains the same as in the past, films containing tobacco and subsidized by California taxpayers will contribute an estimated 17,000 new 12-17 year old smokers among the next cohort of 12-17 year old smokers in California, who will incur an estimated \$270 million in smoking-induced costs.

Public health authorities, including the US Centers for Disease Control and Prevention, the World Health Organization, the director of Los Angeles County's Department of Public Health, and the chair of California's Tobacco Education and Research Oversight Committee (TEROC) have highlighted the policy contradiction between state subsidies for films with tobacco imagery and state tobacco prevention programs.

The policy solution is to amend the California tax credit program statute, adding the following to the existing list of productions disqualified from eligibility for subsidy:

...any production that depicts or refers to any tobacco product or non-pharmaceutical nicotine delivery device or its use, associated paraphernalia or related trademarks or promotional material.

Such a change would end the practice of taxpayers paying for commercial films with tobacco imagery that subvert the important public goal of reducing youth smoking and its consequent health costs, many of which are borne by the public.

Exposure to on-screen smoking causes youth smoking in the real world

In 2008 the US National Cancer Institute determined that exposure to on-screen tobacco imagery causes young people to start smoking¹ and subsequent research has demonstrated that it contributed to progression to regular, addicted smoking.² The US Centers for Disease Control and Prevention has included exposure to on-screen smoking as a factor in youth smoking since at least 2002 and has made it a priority to reduce youth exposure to on-screen smoking.^{3,4}

Based on meta-analysis of population studies of thousands of adolescents, the latest published estimate is that 44 percent (95% CI 0.34-0.58) of new adolescent smokers in the United States are recruited by exposure to on-screen tobacco imagery: more than one million current smokers aged 12-17 in the US, including 99,000 adolescent smokers in California.^{5,6}

Costs of on-screen smoking

Using a widely accepted estimate⁷ of the lifetime costs of smoking, it is possible to estimate the total lifetime costs for each new young smoker (including the net health costs, morbidity and mortality costs, net retirement costs, and externalities such as costs incurred by others because of secondhand smoke, and effects on tax payments); total lifetime costs of direct medical services; and costs of medical services consumed through age 50. (Appendix 1)⁸ (Table 1)

Table 1 | Costs for current smokers 12-17 recruited by exposure to on-screen smoking
(discounted present value, in 2011 \$)

	United States (n=1.1 million)	California (n=99,000)
Total lifetime costs	\$268 billion	\$24 billion
Total lifetime costs of medical services	\$11 billion	\$990 million
Total costs of medical services through age 50*	\$17.6 billion	\$1.6 billion

About two-thirds of medical costs are borne by government. Therefore, the *public cost* of direct medical services, through age 50, incurred for the 99,000 12-17 year-old California smokers recruited to smoke by exposure to on-screen smoking is estimated to be \$1.6 billion in today's dollars.

Policy responses to on-screen smoking

Policy responses to this public health challenge have included an enforceable agreement between state attorneys general and domestic tobacco companies prohibiting paid tobacco brand placement in entertainment accessible to young people.⁹ This 1998 policy was impelled by documentary evidence that tobacco companies systematically exploited motion pictures, through direct cash payments and other inducements, to promote smoking and their brands.^{10,11} After educational efforts focused on the US film industry in the 1990s failed to reduce smoking incidents in films (indeed, incidents increased until 2005), public health initiatives shifted to reducing the number of films with smoking and films' tobacco incidence through policies designed to reduce the amount of

* Medical costs through age 50 are greater than lifetime costs, per smoker, mainly because shorter-lived smokers incur medical costs earlier and future costs are discounted.

smoking in films rated for and marketed to youth (including an R rating for smoking*). These policies have been endorsed by the US Centers for Disease Control and Prevention,^{12,13} the World Health Organization,¹⁴ and leading medical and public health organizations.¹⁵

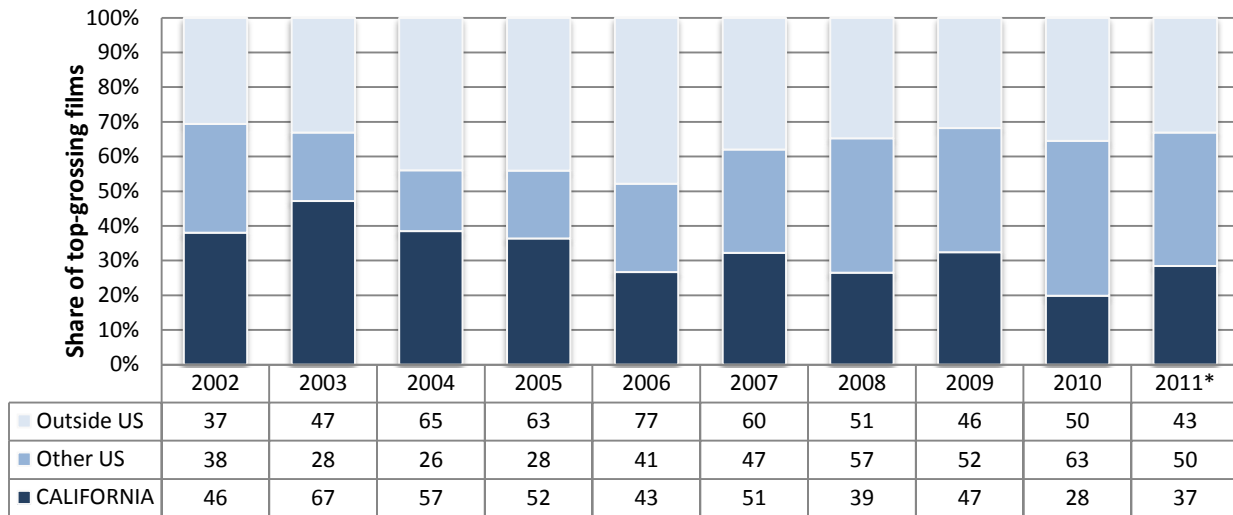
Increasingly intense policy advocacy has been followed by changes in some film companies' practices. Between 2005 and 2010, three of the six major film studios (Disney, Universal and Warner Bros.) reduced the number of tobacco incidents in their top-grossing, youth-rated (PG/PG-13) films by more than 90 percent, but other major studios (Fox, Sony and Paramount) and independent film companies lagged behind.¹⁶ Preliminary data for 2011 indicates that youth-rated (mostly PG-13) movies delivered 70 percent of all tobacco exposure to US theater audiences.

California films' contribution to on-screen tobacco exposure

We used industry sources of production (IMDbPro.com) and box office data (boxofficemojo.com), and tobacco content analysis of the top-grossing films† by Thumbs Up! Thumbs Down! (TUTD), a project of Breathe California of Sacramento-Emigrant Trails (scenemoking.org), to identify top-grossing films with tobacco imagery by their primary production locations.

California remains the #1 producer of top-grossing films. Over the past ten years (2002-11), California has produced one out of every three films that achieved top-grossing status in the domestic market (Canada and US). Another 30 percent of the top-grossing films were shot elsewhere in the US and 38 percent were produced outside the US, almost all by US film companies. (Figure 1)

Figure 1 | Share (graph) and number (table) of top-grossing films, by primary production location, 2002-2011



* Preliminary

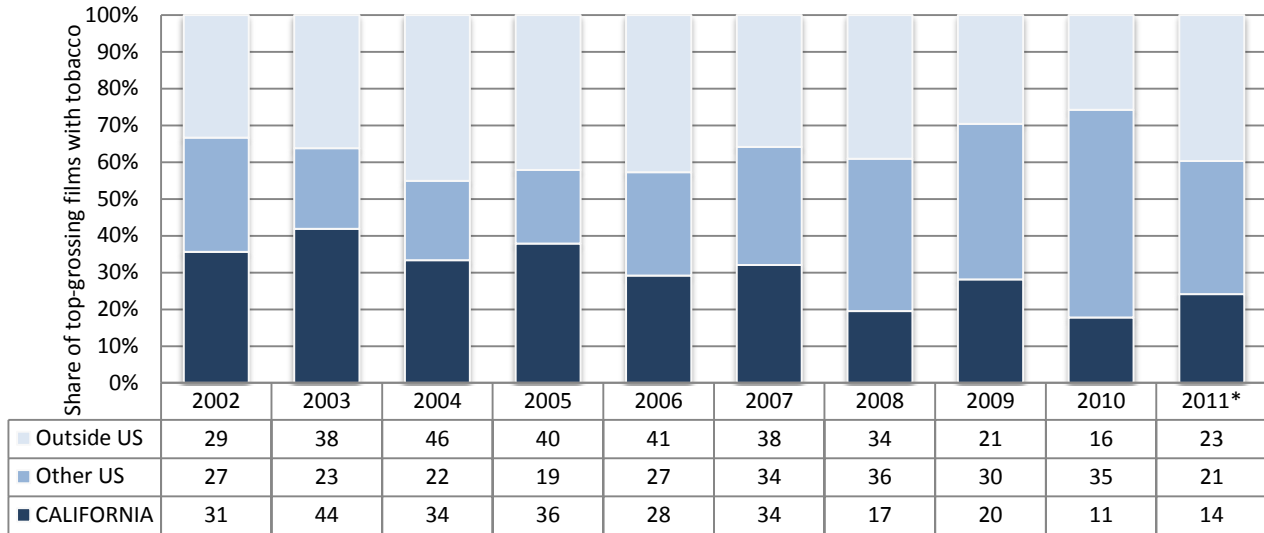
Production of top-grossing films with tobacco imagery is similarly diverse: nearly a third (31%; 269/869) were made in California 2002-11, another third in other states, and 38 percent outside the US. (Figure 2) Over this same period, the percentage of all top-grossing films that included

* There are exceptions for an actual historical figure who actually smoked and for films that show the actual harmful effects of smoking and exposure to secondhand smoke.

† Top-grossing films are those that rank among the top 10 in box office earnings in at least one week of their first-run, domestic theatrical release.

tobacco imagery fell from 72 percent (87/121 in 2002) to 45 percent (58/130 in 2011, prelim.), a shift mirrored by California-made films.

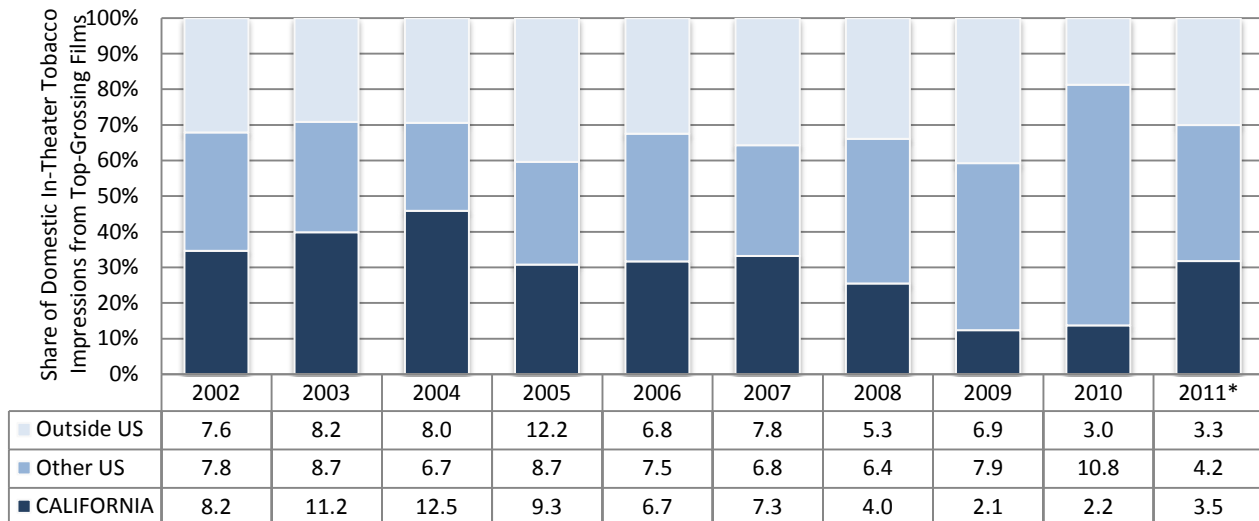
Figure 2 | Share (graph) and number (table) of top-grossing films with tobacco imagery, by primary production location, 2002-2011



* Preliminary

Tobacco impressions (one person seeing one tobacco incident) are an index of audience exposure to tobacco imagery.* California-made films delivered nearly one-third (32%; 69 billion/212 billion) of tobacco impressions to domestic theater audiences from 2002 through 2011. California's share has been lower since 2008: one-fifth of all tobacco impressions (12 billion/60 billion) (Figure 3). Despite growing geographical diversification in film production, from 2008 through 2011 no other state or country delivered more tobacco impressions to US audiences than California.

Figure 3 | Share (graph) and number (table) of tobacco impressions, by primary production location, 2002-2011 (billions)



* Preliminary

* Tobacco impressions are calculated as the number tobacco incidents in each time film (from TUTD) X paid admissions per film (computed as domestic box-office gross from boxofficemojo.com / average ticket price for the year from natoonline.org).

Public subsidies for production of films with tobacco imagery opposed by global and national health authorities

Along with about three dozen other states and a dozen other countries, California offers subsidies for motion picture and television production. US states adopted these subsidies after observing the success of Canadian subsidies (combined with favorable currency exchange rates) in attracting US studio productions beginning in the late 1990s. Between 2008 and 2010, the sixteen US states with the most active film subsidy programs granted an estimated total of \$288 million to producers of top-grossing films with smoking, surpassing their 2011 budgets for tobacco prevention (\$280 million).¹⁷

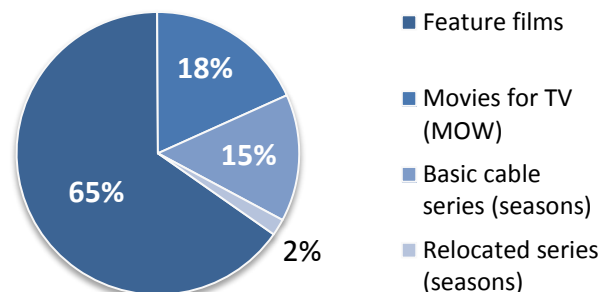
Film production subsidies across the US and in other countries are implicated in films' tobacco-related health effects.¹⁸ In 2011, the World Health Organization noted that subsidizing films with tobacco content violated Article 13 of the Framework Convention on Tobacco Control, a treaty ratified by 174 parties as of January 2012. In July 2011, the US Centers for Disease Control and Prevention recommended that states "harmonize their state movie subsidy programs with their tobacco-control programs by limiting eligibility for subsidies to tobacco-free movies."¹⁹

The California Film & Television Tax Credit Program

In July 2009, California began subsidizing film and television production, offering \$100 million in tax credits annually to qualifying film and television production projects. While productions were able to qualify for credits beginning in 2009, the first certificates for credit against tax were not issued until January 2011, presumably for state fiscal reasons. Film productions with budgets up to \$75 million that meet the program's numerous other statutory qualification standards²⁰ may receive tax credits worth 20 percent of qualifying production costs; "independent" films with budgets less than \$10 million may receive 25 percent tax credits and are allowed to sell their tax credits to another California taxpayer.

In December 2011, an author of this report asked the California Film Commission to provide a list of applicants approved for tax credits since the program's inception and, for each applicant, the title of the production, type of production, the start date (first day of actual production) specified in the application, and the dollar value of the approved tax credit. The Commission responded with a table of the requested data as of December 22, 2011. This table showed that the Commission had approved 160 applications for \$374.1 million in tax credits. Types of projects included feature films (n=103, \$258.3 million in approved tax credits); mini-series (n=2, \$2.6 million); "movies of the week;" i.e., movies for television (n=29, \$14.2 million); TV series relocating production from outside California (n=3, \$14.2 million); and TV series on basic cable (n=23, \$84.8 million).²¹ (Appendix 2) (Figure 3)

Figure 3 | Mix of projects approved for California film & TV tax credits, by type, 2009-11



Analysis of California-subsidized feature films

Since California began offering film and television production subsidies in 2009, 69 percent (\$258 million/\$374 million) of subsidies have been approved for feature films.

Based on production and box office data (IMDbPro.com, boxofficemojo.com), 50 percent (\$128 million/\$258 million) of California feature film subsidies were approved for larger-budget, major studio films that achieved top-grossing status when released in 2010-11 (n=27). As of December 2011, these films had grossed \$1.7 billion at the domestic box office.

Among the other subsidy tax credits for feature films, 18 percent (\$47 million/\$258 million) went to limited-release films, straight-to-video films, and films with specific 2012 release dates (n=22). Thirty percent of feature film credits were reserved for projects lacking reported distribution or definite release dates (\$79 million/\$258 million); their production status at the end of 2011 was unknown (n=50). (Appendix 2) (Table 3)

Status of project	Number of projects	Percent	Approved subsidy	Percent
National release, top-grossing 2010-11	27	26.2%	\$128.2 million	49.6%
Limited release 2010-11	8	7.8%	\$6.7 million	2.6%
Straight to video 2010-11	6	5.8%	\$5.1 million	2.0%
2012 release date set	8	7.8%	\$34.8 million	13.5%
"In development" and/or no distributor reported and/or lacking release date	50	48.5%	\$78.9 million	30.6%
TV movies classed as feature films by CFC	4	3.9%	\$4.6 million	1.8%
Total	103	100%	\$258.3 million	100%

California-subsidized, top-grossing feature films with tobacco imagery

Tobacco content is known for top-grossing films and we analyze their impact below.

From 2009 through 2011 the State of California subsidized a total of 27 top-grossing feature films. These subsidized films comprised 42 percent (27/65) of all the top-grossing films made in California and released in 2010 and 2011.

- Of the 27 top-grossing films approved for California tax credits, 16 (59 percent) included tobacco imagery.
- Of \$128.2 million in tax credits allocated to California top-grossing films, \$75.1 million (59 percent) was awarded to films with tobacco imagery.
- Seventy percent (7/10) of the subsidized PG-13 films and 80 percent (8/10) of the subsidized R-rated films included tobacco. (None of the 7 subsidized G and PG films included tobacco.)

- 69% (\$51.5 million/\$75.1 million) of California tax credits approved for top-grossing films with tobacco imagery went to PG-13 films.
- 79% (2 billion/2.5 billion) of in-theater tobacco impressions delivered in the US and Canada by California-subsidized, top-grossing films came from PG-13 films. (The rest came from R-rated films.)

Tobacco content for California-subsidized films 2010-11 varies by company, reflecting overall company performance on tobacco content.²² For example, 44 percent of California subsidies were approved for top-grossing films distributed by Sony and Paramount (Viacom). These two companies' films garnered 71 percent of California's subsidies for top-grossing films with tobacco and 83 percent of subsidies for top-grossing PG-13 films with tobacco. (Table 4)

Table 4 | Company shares of California's subsidies for top-grossing films, 2010-11

Company	Total subsidies		Subsidies for films with tobacco (all)			Subsidies for PG-13 films with tobacco		
	Subsidy value (millions)	Company share of subsidies	Subsidy value (millions)	Company share of subsidies	% of company's subsidies	Subsidy value (millions)	Company share of subsidies	% of company's subsidies
Comcast (Universal)	\$18.8	15%	\$7.5	10%	40%	\$2.6	5%	14%
Disney	\$14.3	11%	0	0%	0%	0	0%	0%
News Corp.	\$20.2	16%	\$6.0	8%	30%	\$6.0	12%	30%
Sony	\$34.5	27%	\$31.3	42%	91%	\$26.4	51%	77%
Time Warner	\$13.9	11%	\$4.3	6%	30%	0	0%	0%
Viacom	\$21.9	17%	\$21.9	29%	100%	\$16.4	32%	75%
Other*	\$4.6	4%	\$4.1	6%	90%	0	0%	0%
Total	\$128.2	100%	\$75.1	100%	59%	\$51.5	100%	40%

* For this data: CBS, Lionsgate, Relativity

Smoking-induced costs estimated to be incurred as a result of continuing California's film subsidies

Estimating the smoking-induced costs due to California's film subsidy program is difficult because films subsidized by the program have only been appearing recently and because the number of youth aged 12-17 who have started smoking as a result of exposure to onscreen smoking is the result of exposure over several years.

To obtain an estimate of the effects of a decision to continue the practice of subsidizing films with tobacco into the future, we assume that the share of tobacco impressions delivered by California subsidized films in 2011 remains constant for several years, and apply this fraction to the discounted present value of costs incurred by smokers who start as a result of exposure to onscreen smoking in top-grossing films. Specifically:

- Films made in California delivered 32 percent (3.5 billion/11 billion) of all tobacco impressions that top-grossing films delivered to domestic theater audiences in 2011. (Coincidentally, 32 percent also represents the average share of impressions that California-made films delivered over the ten years 2002-11.) (Figure 3)

- Top-grossing films approved for California tax credits delivered 53 percent (1.8 billion/3.5 billion) of the tobacco impressions that all top-grossing, California-made films delivered in 2011. (Figure 3) (Appendix 2)*
- Multiply the discounted present value of smoking-induced costs among current 12-17 year olds (from Table 1) by these fractions to obtain estimates of the future costs estimated to be incurred by youth in this age range if they continue to be exposed to onscreen smoking in films subsidized by California taxpayers.

Table 5 shows the results of these calculations. While the many uncertainties involved in predicting the future (most notably, the assumption that the brief history of California's film subsidy program will be typical of the future) lends considerable uncertainty to these estimates, one conclusion can be confidently drawn: continuing to subsidize films that include tobacco imagery will impose substantial costs on the people of California and the nation, on the order of hundreds of millions to billions of dollars.

Table 5 Estimated costs for smokers 12-17 recruited by top-grossing California films (based on 2011 shares of exposure; discounted present value, in 2011 \$)				
	Costs incurred nationwide		Costs incurred in California	
	All CA films	CA-subsidized films	All CA films	CA-subsidized films
Total lifetime costs	\$86 billion	\$46 billion	\$7.7 billion	\$4.1 billion
Total lifetime costs of medical services	\$3.5 billion	\$1.9 billion	\$320 million	\$170 million
Total costs of medical services through age 50	\$5.6 billion	\$3.0 billion	\$510 million	\$270 million

The same method is used to estimate the number of smokers 12-17 recruited by California films, including those that receive subsidies (Table 6).

Table 6 Estimated smokers 12-17 recruited by top-grossing California films (based on 2011 shares of exposure)				
	Nationwide	Mortality (proj.)²³	In California	Mortality (proj.)
	All CA films	350,000	112,000	32,000
CA-subsidized films	186,000	59,000	17,000	5,500

* For purposes of this estimation, 2011 is a more typical year for the subsidy program than others. Because California's program started in mid-2009, after many films slated for 2010 release had begun production, and also because a substantial portion of early tax credits were reserved for film projects yet to start production by the end of 2011, only 6 top-grossing subsidized films were released in 2010, compared to 21 films in 2011. (Appendix 2)

Policy responses to California subsidies for media productions with tobacco

California public health officials have observed that providing public subsidies to productions with tobacco imagery conflicts with the State's interest in reducing adolescent smoking rates. In January 2011, Dr. Jonathan Fielding, Director of the Los Angeles County Department of Public Health and County Health Officer, wrote the California Film Commission, administrator of the California Film and Television Tax Credit:

[Subsidies for films with tobacco content] run counter to California's long-standing and widely supported efforts to prevent youth smoking and reduce the enormous burden tobacco use places on the health and productivity of Californians ... Any benefit that tobacco-related subsidies for films might have for California's interstate competitiveness must be balanced against proven, catastrophic 'collateral damage' to young audiences and long-term health costs to the state.²⁴

In February 2011, the State of California Tobacco Education Research and Oversight Committee, charged by the Legislature with supervising California's tobacco prevention efforts and making policy recommendations to the Legislature, wrote the California Film Commission:

While California is a world leader in film and television production, our state also has a strong record of leading the nation and the world on tobacco prevention efforts. Our tobacco prevention efforts over more than 20 years have saved more than a million lives and \$86 billion in health care costs. It is unconscionable that one state program threatens to undermine our state's public health achievements and goals, our investment in tobacco prevention, and our savings in health care costs, particularly in a time of declining state revenues. State taxpayers should not be obliged to support film content that contributes to preventable disease and death, and that also exacerbates the state deficit. There is no legal barrier for states to exercise discretion regarding content that makes films ineligible to receive public funding.²⁵

The California Film Commission drafts and implements regulations for the tax credit subsidy program. For example, among the Commission's major decisions when preparing its permanent regulations,²⁶ published March 28, 2011 to replace the "emergency regulations" of 2009 and 2010, was to disqualify all future animated films for tax credits (Sec. 5502(g)). Animated films are not listed among the dozen types of productions disqualified for credits under the program statute. However, on March 4, 2011, the Commission responded to public health officials' requests that it disqualify productions with tobacco imagery that "[a]dding a requirement in regulations for the exclusion of tobacco-related content would have no statutory basis. Introducing such a requirement would be the proper subject of legislation."

If a legislative approach is taken to harmonizing California's film tax credits with its tobacco prevention priorities, it could be accomplished with language added to California Revenue and Taxation Code, Secs. 17053.85(b)(15)(D) and 23685(b)(15)(D) defining "Qualified motion picture."²⁷ Addressing the tobacco imagery, tobacco promotional collateral, and tobacco product placement documented over past decades, by the California Attorney General, among others, along with the emerging on-screen tobacco imagery, such as so-called "electronic cigarettes," being exploited for marketing purposes, and verbal tobacco brand references, the language should disqualify:

...any production that depicts or refers to any tobacco product or non-pharmaceutical nicotine delivery device or its use, associated paraphernalia or related trademarks or promotional material.

Conclusion

Exposure to on-screen smoking helps addict young audiences to tobacco. Long exploited by the tobacco industry to promote smoking and its brands, on-screen tobacco imagery today accounts for nearly 100,000 current smokers aged 12-17 in California and more than one million nationwide. Nearly a third of these smokers will die prematurely from tobacco-induced disease. The personal and social costs mount into the billions of dollars. Two-thirds of the cost of direct medical services will be borne by government.

California is committed, by policy, to reducing the toll from tobacco, but California also remains the leading producer of top-grossing films with tobacco imagery. In FY2011, California allocated \$75 million for tobacco control and prevention. Meanwhile, top-grossing California films with tobacco imagery, released 2010-11, were approved for \$75 million in California subsidies. Since 1990, California's tobacco prevention program has saved Californians more than \$86 billion²⁸ and prolonged tens of thousands of lives. By contrast, California films with tobacco imagery burden California with hundreds of millions in health care costs, tens of thousands of new smokers and their attendant early deaths.

Public subsidies to private interests are intended to further public goals. Taxpayers are now subsidizing film and television productions with tobacco imagery conclusively shown to cause massive public health harm. If future films with tobacco imagery are made ineligible for public subsidy, as both the World Health Organization and the US Centers for Disease Control and Prevention have recommended, film companies could still include tobacco in films financed privately, but the taxpayers will not be forced to underwrite films that will promote tobacco addiction and cost California hundreds of millions of dollars and tens of thousands of early deaths in years to come.

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Appendix 1: Costs of a new smoker

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THE COST OF A NEW SMOKER

We have used attributable risk calculations to estimate the number of new smokers recruited by motion pictures. Several people have asked what costs are associated with these new smokers. This issue is particularly relevant when considering the cost/benefit ratio associated with state film subsidy programs.

The most widely accepted estimate of the cost of the lifetime costs for a new smoker is from the book *The Price of Smoking*, by Frank Sloan, et al. (FA Sloan, J Ostermann, G Picone, C Conover, DH Taylor, Jr.; Cambridge, MA, MIT Press, 2004). The estimates in this book were recently used by the FDA in its cost-benefit analysis of its proposed warning labels.

Sloan and colleagues produced a comprehensive analysis (as of 2000) of the effects of smoking on a number of costs, including health costs, mortality and morbidity costs, effects on Social Security and private retirement systems, and other costs. They also accounted for the effect on cost of quitting smoking and the fact that people who die early because of smoking do not incur health or retirement costs after they die. These cash flows were discounted at 3% per year to estimate the present values of lifetime costs (and cost savings due to things like early death) for a 24-year-old smoker. (They selected age 24 as a starting point to avoid the complications of youthful experimentation that does not lead to established smoking and in recognition that few health and other costs of smoking are incurred by people under that age.)

The methodology left some important things out (like pharmaceutical costs, effects of changing medical technology, most costs of secondhand smoke) and does not account for more recent understanding on the short-term effects of smoking cessation and secondhand smoke exposure on cardiovascular disease, which were not known at the time that Sloan et al. did their analysis. Thus, their estimates are almost certainly underestimates of the actual lifetime costs of smoking.

Despite the limitations of their methods, their findings are still useful for estimating the impacts of creating a new smoker.

We use Sloan et al.'s estimates to develop three values for the cost to society of a new smoker:

- The total lifetime cost of a new smoker, including the net health costs, morbidity and mortality costs, net retirement costs, and externalities such as secondhand smoke and effects on tax payments;

- The total lifetime costs of direct medical services;
- Costs of medical services consumed through age 50, under the logic that shorter term costs are more important to policy makers than complete lifetime costs.

Sloan et al. provide costs in year 2000 dollars. We adjusted total nonmedical costs to 2011 dollars using the Bureau of Labor Statistics hourly compensation index for total lifetime costs except for medical costs and the medical consumer price index for health care costs.

The table below shows the results of these calculations, with references to the specific sources for the estimates in Sloan et al.'s book.

Discounted Present Cost of Smoking for a 24-Year-Old Smoker (from Sloan et al, <i>The Price of Smoking</i>)			
	Source	Dollars (2000)	Dollars (2011) ^a
Total lifetime costs (medical and other)	Table 11.4	\$170,789	\$243,728 ^b
Lifetime medical costs			
Borne by smoker	Table 5.6 ^c	\$3,187	
Due to secondhand smoke	Table 3.3	\$604	
Medical care cost not borne by smoker	Table 11.3	\$2,064	
Total lifetime medical costs		\$5,855	\$10,107
Medical costs through age 50			
Borne by smoker	Table 5.6 ^c	\$5,206	
Due to secondhand smoke	Table 3.3	\$604 ^d	
Medical care cost not borne by smoker	Table 11.3	\$3,372 ^e	
Total medical costs through age 50		\$9,182	\$15,849
^a Medical costs adjusted using medical CPI in October 2000 = 233.7 and 403.4 in October 2011 (Sources: http://www.bls.gov/cpi/cpid1110.pdf and http://www.bls.gov/cpi/cpid0010.pdf ; nonmedical costs adjusted using third quarter business hourly compensation (Source: US Bureau of Labor Statistics, Series PRS84006103 available via www.bls.gov) for third quarter 2000 and 2011, 82.994 and 117.557, respectively. ^b Calculated as (170,789-5855) x 117.557/82.994 for non-medical costs + 5855 x (403.4/233.7) for medical costs ^c Average of male and female costs. ^d Same as lifetime costs; assumption is that most secondhand smoke costs are imposed by the time smoker reaches age 50. ^e A adjusted by lifetime costs borne by smoker, i.e., \$2064 x (\$5206/\$3372) = \$3372.			

Note: Lifetime medical costs for the smoker are lower than the costs through age 50 mostly because shorter-lived smokers incur medical costs earlier than nonsmokers (and future costs are discounted).

Given the uncertainties in these estimates, we round off the numbers to the nearest \$1,000 to obtain:

- The discounted present value of the total lifetime cost of a new smoker, including the net health costs, morbidity and mortality costs, net retirement costs, and externalities such as secondhand smoke and effects on tax payments, is \$244,000.

- The discounted present value of total lifetime costs of medical services to the smoker and nonsmokers is \$10,000.
- The discounted present value of costs of medical services incurred by the smoker and imposed on others through the smoker reaching age 50 is \$16,000. (These short term costs may be more important to policy makers than complete lifetime costs.)

About two-thirds of medical costs are borne by government.

Appendix 2: Feature films approved for California subsidies as of December 22, 2011, by release category (n=103)

Production Title	Start (1)	Released (2)	Applicant	Company (3)	MPAA Rating	Tobacco Content? (4)	Tobacco Incident Bracket (4)	"Estimated Tax Credit" (5)	Domestic Box Office (6)	Tobacco Impressions (7)
TOP GROSSING, RELEASED NATIONALLY THROUGH 2011 ("top-grossing" films subsidized by California)										
Bad Teacher	3/6/10	6/17/11	Columbia Pictures Industries	Sony	R	Yes	1 - 9	\$2,355,408	\$96,718,147	35,085,180
Bridesmaids	6/7/10	5/13/11	So Happy For You Productions	Comcast	R	Yes	1 - 9	\$4,897,487	\$165,457,080	60,020,706
Burlesque	11/9/09	11/24/10	Screen Gems Productions	Sony	PG-13	Yes	10 - 29	\$7,225,306	\$39,290,143	129,473,222
Crazy, Stupid, Love	4/16/10	7/29/11	Warner Bros. Pictures	Time Warner	PG-13	No		\$5,030,276	\$84,244,877	0
Dinner for Schmucks	10/14/09	7/30/10	DW Studios Productions	Viacom	PG-13	Yes	1 - 9	\$6,078,560	\$72,980,108	18,499,394
Drive	9/25/10	9/16/11	Drive Film Productions	Sony	R	Yes	10 - 29	\$2,477,196	\$34,677,497	88,056,522
Faster	2/1/10	11/24/10	CBS Films Productions	CBS	R	Yes	50+	\$3,816,242	\$23,192,262	146,972,510
Friends with Benefits	7/20/10	7/22/11	Screen Gems Productions	Sony	R	No		\$3,238,879	\$55,802,754	0
Hop	4/27/10	4/1/11	Hop Productions	Comcast	PG	No		\$11,292,167	\$107,568,430	0
Horrible Bosses	7/6/10	7/29/11	New Line Productions	Time Warner	R	No		\$4,650,848	\$117,528,646	0
In Time	7/7/10	9/30/11	New Regency Productions	News Corp.	PG-13	No		\$6,527,019	\$36,405,892	0
J. Edgar	2/7/11	11/9/11	WB Studio Enterprises	Time Warner	R	Yes	N/A	\$4,257,900	\$35,718,897	N/A
Jackass 3D	5/19/10	10/15/10	Superstar Productions USA	Viacom	R	Yes	1 - 9	\$2,037,776	\$117,224,271	104,001,254
Judy Moody and the NOT Bummer Summer	8/16/10	6/10/11	Judy Moody Productions	Relativity	PG	No		\$431,841	\$15,000,994	0
Larry Crowne	4/21/10	7/1/11	Larry Crowne Production	Comcast	PG-13	Yes	50+	\$2,638,130	\$35,565,975	249,434,891
Lincoln Lawyer	7/12/10	3/18/11	Lincoln Lawyer Productions	Lionsgate	R	Yes	10 - 29	\$298,093	\$56,837,962	68,727,886
Moneyball	6/7/10	9/23/11	Columbia Pictures Industries	Sony	PG-13	Yes	10 - 29	\$5,869,304	\$74,176,912	152,479,747
No Strings Attached	5/6/10	1/21/11	DW Studios Productions	Viacom	R	Yes	1 - 9	\$3,471,168	\$70,625,986	34,160,090
Priest	8/24/09	5/13/11	Screen Gems Productions	Sony	PG-13	Yes	1 - 9	\$8,349,450	\$29,136,626	3,523,171
Disney's Prom	7/26/10	4/29/11	Romp Productions	Disney	PG	No		\$1,430,767	\$10,106,233	0
Social Network, The	10/19/09	10/1/10	Columbia Pictures Industries	Sony	PG-13	Yes	10 - 29	\$4,978,982	\$91,396,420	278,011,924
Super 8	4/26/10	6/10/11	Gramps Company	Viacom	PG-13	Yes	10 - 29	\$10,282,027	\$125,316,799	212,144,521
Muppets, The	11/12/10	11/23/11	DMP Productions, Inc.	Disney	PG	No		\$7,308,633	\$66,150,360	0

Water for Elephants	5/20/10	4/22/11	20th Century Fox Film	News Corp.	PG-13	Yes	50+	\$6,045,843	\$58,700,247	929,834,626
We Bought a Zoo	1/17/11	12/23/11	20th Century Fox Film	News Corp.	PG	No		\$7,585,129	N/A	0
Winnie the Pooh	11/9/09	7/15/11	Walt Disney Pictures	Disney	G	No		\$2,857,735	\$26,687,172	0
You Again	8/3/09	9/24/10	Briarvale Productions	Disney	PG	No		\$2,736,568	\$25,677,801	0
<i>Subtotal</i>			n= 27					\$128,168,734	\$1,672,381,864	2,510,425,643
GIVEN LIMITED RELEASE										
Good Doctor, The	1/26/10	3/23/11	The Good Doctor	Viddywell	PG-13	N/A	N/A	\$1,162,233	N/A	N/A
Last Godfather, The	3/15/10	4/1/11	TLG, LLC	Lionsgate	PG-13	N/A	N/A	\$1,636,858	\$163,591	N/A
Beginners	11/3/09	6/3/11	Beginners Movie	Comcast	R	Yes	N/A	\$547,945	\$5,776,314	N/A
A Better Life	4/26/10	6/24/11	Jardinero Productions	Summit	PG-13	N/A	N/A	\$1,768,442	\$1,754,319	N/A
Terri	7/7/10	7/1/11	Team Terri	Silverwood	R	N/A	N/A	\$287,349	\$653,578	N/A
Future, The	3/8/10	7/29/11	Leopold	Lionsgate	R	N/A	N/A	\$229,017	\$568,366	N/A
Dirty Girl	3/1/10	10/7/11	DGirl Inc.	Weinstein	R	N/A	N/A	\$697,522	\$53,630	N/A
Answers To Nothing	10/27/09	12/2/11	Answers to Nothing, LLC	Lionsgate	R	N/A	N/A	\$368,117	\$21,304	N/A
<i>Subtotal</i>			n= 8					\$6,697,483		
STRAIGHT TO VIDEO RELEASE										
Beverly Hills Chihuahua 2	10/5/09	2/1/11	Tiny But Mighty Productions	Disney	G	N/A	N/A	\$1,627,187	N/A	N/A
Christmas in Beverly Hills	8/31/09	12/18/09	Fast Lane Productions	Filmauro (Italy)	PG	N/A	N/A	\$903,530	N/A	N/A
Circle of Eight	8/24/09	2/2/10	Jamie Boscardin Martin	Viacom	NR	N/A	N/A	\$374,610	N/A	N/A
Honey II (Honey 2)	5/19/10	8/1/11	MFV Productions	Comcast	PG-13	N/A	N/A	\$954,343	N/A	N/A
Red State	9/22/10	9/1/11	Cooper's Dell	Lionsgate	R	N/A	N/A	\$921,941	N/A	N/A
Slumdog Virgin (aka 41-Year-Old Virgin Who Knocked Up...)	8/2/09	6/8/10	Steinbeck, LLC	News Corp.	NR	N/A	N/A	\$278,525	N/A	N/A
<i>Subtotal</i>			n= 6					\$5,060,136		
DATE ANNOUNCED FOR FUTURE NATIONAL RELEASE (by release date)										
Rampart	10/28/10	1/27/12	End of Watch, LLC	Millennium	R	N/A	N/A	\$2,127,660	N/A	N/A
Project X	7/8/11	3/2/12	Warner Bros. Pictures	Time Warner	R	N/A	N/A	\$2,096,311	N/A	N/A

Tim and Eric's Billion Dollar Movie	2/25/11	3/3/12	Billion Dollar Movie, LLC	2929	R	N/A	N/A	\$91,532	N/A	N/A
Think Like a Man	7/5/11	3/9/12	Screen Gems Productions	Sony	N/A	N/A	N/A	\$1,424,528	N/A	N/A
Argo	8/25/11	9/14/12	Stage 16 Pictures	Time Warner	N/A	N/A	N/A	\$6,397,624	N/A	N/A
Gangster Squad	9/7/11	10/19/12	Warner Bros. Pictures	Time Warner	N/A	N/A	N/A	\$11,577,530	N/A	N/A
My Mother's Curse	5/2/11	11/2/12	DW Studios Productions	Viacom	N/A	N/A	N/A	\$5,320,103	N/A	N/A
This is 40	6/27/11	12/21/12	Forty Productions	Comcast	N/A	N/A	N/A	\$5,829,165	N/A	N/A
<i>Subtotal</i>				n= 8				\$34,864,453		
LACKING DISTRIBUTOR AND/OR RELEASE DATE (by recorded "start" date)										
Fred	11/20/09	N/A	Derf Films	N/A	N/A	N/A	N/A	\$229,139	N/A	N/A
Hirokin	1/17/10	N/A	Hirokin Productions	N/A	N/A	N/A	N/A	\$702,502	N/A	N/A
Max Rose	3/30/10	2012?	Lightstream Pictures	N/A	N/A	N/A	N/A	\$1,533,052	N/A	N/A
Crazy Eyes	4/12/10	N/A	Crazy Eyes	N/A	N/A	N/A	N/A	\$523,585	N/A	N/A
Let Go	4/12/10	N/A	Yeah, Yeah, Pictures & Sound	N/A	N/A	N/A	N/A	\$220,794	N/A	N/A
Artcraft	5/17/10	N/A	Artcraft Productions	N/A	N/A	N/A	N/A	\$349,099	N/A	N/A
10,000 Days	6/15/10	N/A	10,000 Days, LLC	N/A	N/A	N/A	N/A	\$248,268	N/A	N/A
Untitled Wakbie Project	6/25/10	N/A	Tatira 2, LLC	N/A	N/A	N/A	N/A	\$8,257,770	N/A	N/A
B.G.F.A.D.	7/11/10	N/A	WE World Entertainment	N/A	N/A	N/A	N/A	\$910,365	N/A	N/A
Just 45 Minutes from Broadway	7/26/10	N/A	Just 45 Minutes from Broadway	N/A	N/A	N/A	N/A	\$268,985	N/A	N/A
Should've Been Romeo	8/25/10	2012?	Should've Been Romeo	N/A	N/A	N/A	N/A	\$70,625	N/A	N/A
Takin' It Back	9/15/10	N/A	Elixir Entertainment	N/A	N/A	N/A	N/A	\$779,871	N/A	N/A
Breaking the Girl	9/20/10	2012?	BTG Productions	Myriad	N/A	N/A	N/A	\$191,144	N/A	N/A
Rites of Passage	10/13/10	2011?	Party Killer Films	N/A	R	N/A	N/A	\$195,839	N/A	N/A
Thin Line (aka For the Love of Money)	10/22/10	N/A	All Cash Productions	N/A	N/A	N/A	N/A	\$116,338	N/A	N/A
Knife Fight	12/28/10	N/A	Knife Fight, LLC	N/A	N/A	N/A	N/A	\$435,672	N/A	N/A
Futurist Congress, The	2/3/11	N/A	Liverpool, Inc.	N/A	N/A	N/A	N/A	\$286,983	N/A	N/A
Wrong	4/12/11	2012?	Rubber Films	N/A	N/A	N/A	N/A	\$179,129	N/A	N/A

Drunk Dial	5/26/11	N/A	Ten/Four Pictures	N/A	N/A	N/A	N/A	\$1,454,220	N/A	N/A
Sports Camp	6/6/11	N/A	Artcraft Productions	N/A	N/A	N/A	N/A	\$1,491,406	N/A	N/A
To Do List, The	7/1/11	2013?	Summer Break Productions	N/A	N/A	N/A	N/A	\$329,587	N/A	N/A
Struck By Lightning	7/12/11	2012?	Camellia (SBL) Production	N/A	N/A	N/A	N/A	\$20,596	N/A	N/A
Evidence	7/18/11	N/A	Evidence Film Productions	N/A	N/A	N/A	N/A	\$185,676	N/A	N/A
Cinderbiter	7/25/11	N/A	Tiny But Mighty Productions	Disney?	N/A	N/A	N/A	\$9,985,909	N/A	N/A
End of Watch	8/1/11	2012?	Sole Productions	N/A	N/A	N/A	N/A	\$284,222	N/A	N/A
A Glimpse Inside the Mind of Charles Swan III	8/12/11	2012?	The Director's Bureau	N/A	N/A	N/A	N/A	\$571,142	N/A	N/A
It is What It Is	9/2/11	N/A	Red Oods, LLC	N/A	N/A	N/A	N/A	\$853,857	N/A	N/A
Decoding Annie Parker	10/4/11	N/A	Decoding Annie Parker LLC	N/A	N/A	N/A	N/A	\$481,659	N/A	N/A
Happytime Murders	10/17/11	N/A	The Jim Henson Company	N/A	N/A	N/A	N/A	\$1,755,916	N/A	N/A
Lords of Salem	10/17/11	2012?	Beethoven 5 Films, LLC	N/A	N/A	N/A	N/A	\$637,121	N/A	N/A
Moment, The	11/7/11	N/A	Momentous Development	N/A	N/A	N/A	N/A	\$229,286	N/A	N/A
To Believe	12/1/11	N/A	The Gardeners (JPG) LLC	N/A	N/A	N/A	N/A	\$314,406	N/A	N/A
Trust Me	12/12/11	N/A	Howard Holloway Films	N/A	N/A	N/A	N/A	\$449,426	N/A	N/A
Cyber Planet	12/21/11	N/A	Cyber Planet The Movie, LLC	N/A	N/A	N/A	N/A	\$2,388,360	N/A	N/A
Lovelace	12/22/11	2012?	Lovelace Productions	Millennium	N/A	N/A	N/A	\$1,113,740	N/A	N/A
A Little Something for Your Birthday	12/30/11	N/A	Anonymous Content	Relativity	N/A	N/A	N/A	\$618,984	N/A	N/A
Burt Wonderstone	1/9/12	2013?	New Line Productions	Time Warner	N/A	N/A	N/A	\$7,460,464	N/A	N/A
City of Redemption	1/9/12	N/A	9 Ranked Angels Entertain't	N/A	N/A	N/A	N/A	\$2,113,165	N/A	N/A
Five Lies	1/9/12	N/A	Sneak Preview Productions	N/A	N/A	N/A	N/A	\$533,354	N/A	N/A
Insider	1/10/12	N/A	The Gardeners (JPG) LLC	N/A	N/A	N/A	N/A	\$193,248	N/A	N/A
It's a Matter of Time	1/11/12	N/A	Rainshadows Entertainment	N/A	N/A	N/A	N/A	\$3,599,983	N/A	N/A
Pet Sematary	1/30/12	2013?	Paramount Pictures	Viacom	N/A	N/A	N/A	\$5,002,465	N/A	N/A
Night Crew, The	2/6/12	N/A	Maya Entertainment	N/A	N/A	N/A	N/A	\$226,508	N/A	N/A
Fear Clinic	2/21/12	N/A	Fear Chamber, LLC	FearNET?	N/A	N/A	N/A	\$343,478	N/A	N/A
A Girl and a Gun	3/1/12	2013?	All You Need Productions	Royal Road	N/A	N/A	N/A	\$1,645,153	N/A	N/A
Stand Up Guys	3/12/12	2012?	Lakeshore Entertainment	N/A	N/A	N/A	N/A	\$2,498,651	N/A	N/A

Road to Nardo	3/26/12	N/A	Columbia Pictures Industries	Sony	N/A	N/A	N/A	\$4,058,058	N/A	N/A
Moment of Glory	4/16/12	N/A	Moment of Glory LLC	N/A	N/A	N/A	N/A	\$251,343	N/A	N/A
Mortal Instruments, The	4/16/12	N/A	Screen Gems Productions,	Sony	N/A	N/A	N/A	\$8,677,056	N/A	N/A
Abstinence Teacher	6/4/12	2012?	WB Studio Enterprises	N/A	N/A	N/A	N/A	\$3,669,722	N/A	N/A
<i>Subtotal</i>				n= 50				\$78,937,321		
TELEVISION MOVIE (productions labeled "feature film" in CFC data) (8)										
Amish Grace	12/3/09	3/28/10	Larry Thompson	A&E	[Lifetime]	N/A	N/A	\$314,602	N/A	N/A
Cinema Verité	7/6/10	4/23/11	Evil Gavin Productions	Time Warner	[HBO]	N/A	N/A	\$2,769,193	N/A	N/A
Scooby Doo & The Lake Monster (Curse of the...)	3/15/10	10/16/10	Warner Specialty Productions	Turner	[Cartoon Network]	N/A	N/A	\$1,205,456	N/A	N/A
We Have Your Husband	4/12/11	11/12/11	The Gardeners (JPG) LLC	A&E	[Lifetime]	N/A	N/A	\$292,804	N/A	N/A
<i>Subtotal</i>				n= 4				\$4,582,055		
TOTAL				n= 103				\$258,310,182		

Based on: California Film Commission. CFC approved applicants 12.22.11 (PDF table), categorized and with additional production, tobacco content, and box office data compiled by Onbeyond LLC for the University of California, San Francisco, Center for Tobacco Control Research and Education.

NOTES:

(1) Expected first day of production, specified on tax credit application.

(2) Film's US theatrical or video release. Source: IMDbPro.com.

(3) Parent company of producer-distributor (e.g., Universal is a subsidiary of Comcast); ultimate corporate beneficiary of the reduction in costs from public film production subsidies.

(4) Source: Thumbs Up! Thumbs Down! (TUTD), a project of Breathe California of Sacramento-Emigrant Trails. TUTD has tracked on-screen tobacco content since the mid-1990s. It publishes individual results as brackets for "top grossing" films, whose box office gross ranks in the Top 10 in any week of their first-run theatrical release (www.scenesmoking.org). Precise counts are used in calculating aggregate analyses and trends. Tobacco incident data for top-grossing *J. Edgar* was not available for this analysis.

(5) Amount of tax credit approved (reserved) for the production. Source: California Film Commission.

(6) Source: www.boxofficemojo.com. Box office grosses for the smokefree December 2011 release *We Bought a Zoo* not available for this analysis.

(7) Calculated by University of California, San Francisco, Center for Tobacco Control Research and Education. Domestic in-theater tobacco impressions = tobacco incidents per film X paid admissions to the film. Paid admissions = theatrical gross sales for the film (www.boxofficemojo.com) / average ticket price in year of film's release (www.natoonline.org).

(8) The California Film Commission's table includes productions identified as "Movie of the Week" (i.e., movies made for television). These four productions were first shown on cable, and therefore would appear to be movies made for television, but the Commission's table classified the four as "feature films."

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Revenue and Taxation Code Secs. 17053.85(b)(15)(D) and 23685(b)(15)(D), available at http://www.leginfo.ca.gov/pub/11-12/bill/asm/ab_1051-1100/ab_1069_bill_20111009_chaptered.pdf.

²¹ Leah Medrano, Film & TV Tax Credit Program Coordinator, to Jonathan Polansky, Onbeyond LLC, Consultant, University of California, San Francisco, Center for Tobacco Control Research and Education. California Business, Transportation and Housing Agency, California Film Commission: CFC approved applicants 12.22.11 (pdf table). Transcribed for analysis by Onbeyond LLC.

²² Glantz et al. (2011). The article codes companies as follows: A=Time Warner (Warner Bros.), B=Comcast (Universal), C=Disney, D=Viacom (Paramount), E=News Corporation (Twentieth Century Fox), F=Sony, I=Independents.

²³ Tobacco-induced mortality among smokers is 32%. BRFSS Coordinators. Projected Smoking Related Deaths Among Youth — United States. *MMWR* 1996; 45:971-74.

²⁴ Jonathan E. Fielding, Director of the Los Angeles County Department of Public Health and County Health Officer, to Amy Lemisch, Director, California Film Commission, January 14, 2011. Accessible at <http://www.smokefreemovies.ucsf.edu/pdf/LA%20County%20to%20Cal%20Film%20Commission.pdf>.

²⁵ Michael Ong, MD, MPH, Chairperson, Tobacco Education and Research Oversight Committee, to Amy Lemisch, Director, California Film Commission, February 18, 2011. <http://www.smokefreemovies.ucsf.edu/pdf/TEROC%20Chair%20to%20Cal%20Film%20Commission.pdf>.

²⁶ California Film Commission. Title 10. Chapter 7.75. California Film & Television Tax Credit Program. March 28, 2011. Accessible at <http://www.film.ca.gov/res/docs/FilmRegs3%2028%2011%20finaltext%202.pdf>.

²⁷ See note 20.

²⁸ Lightwood JM, Dinno A, Glantz SA (2008) Effect of the California Tobacco Control Program on personal health care expenditures. *PLoS Med* 5(8): e178. doi:10.1371/journal.pmed.0050178. Accessible at <http://www.plosmedicine.org/article/info%3Adoi%2F10.1371%2Fjournal.pmed.0050178>.