

Smoking in top-grossing US movies

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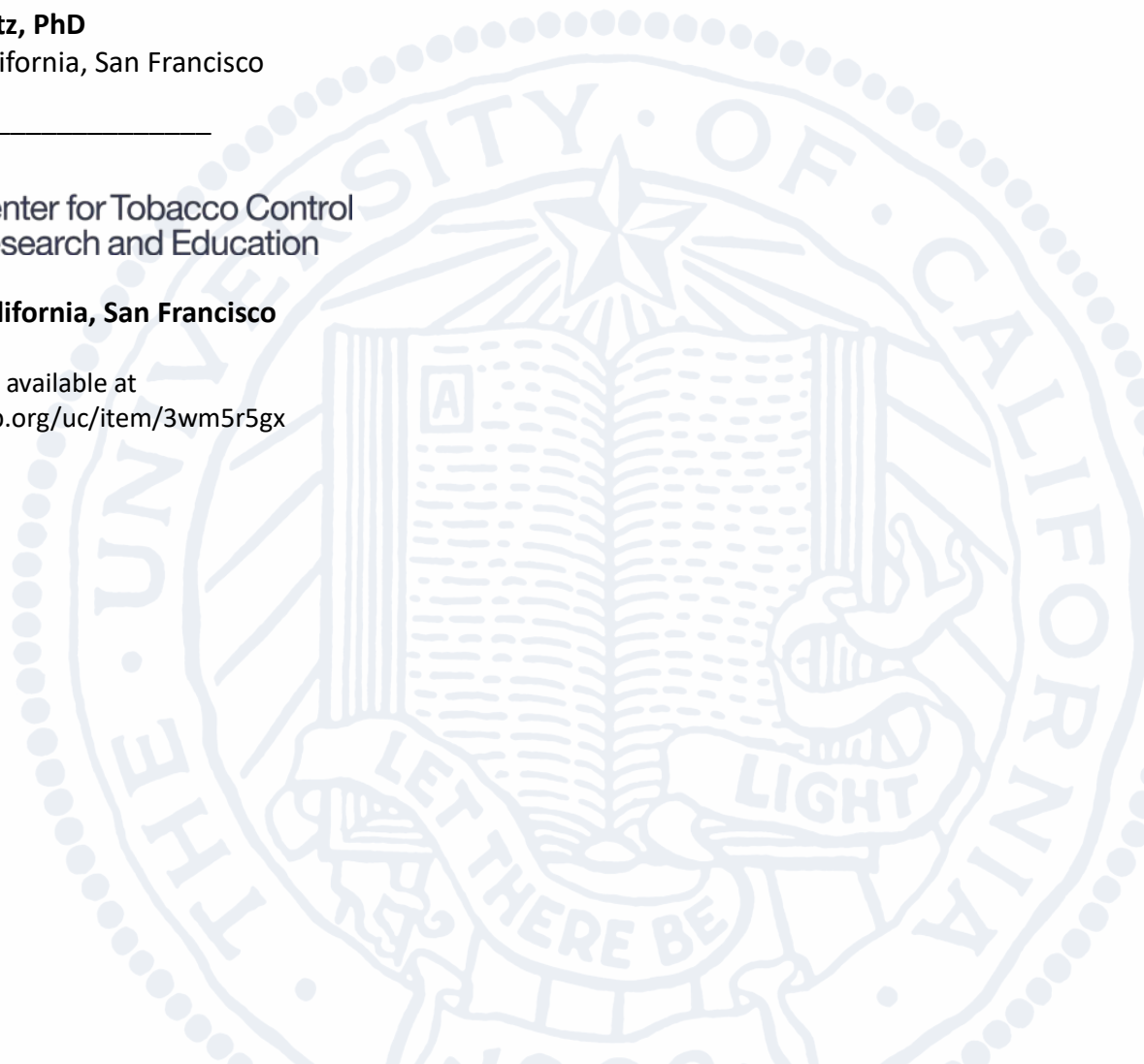
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SUMMARY of FINDINGS

- If historical patterns are maintained, exposure to on-screen smoking will recruit 6.4 million smokers from among today's children. Two million of those recruited to smoke by films will die prematurely from tobacco-induced diseases.
- The number of youth-rated (G/PG/PG-13) films with smoking declined by 61 percent between 2002 and 2016. The number of PG films with smoking (1) and of PG-13 films with smoking (23) reached historic lows in 2016.
- The number of tobacco incidents in youth-rated films declined 37 percent from 2002 (1,296 incidents) to 2016 (813), but 2016 levels were above their historic low (594) in 2010.
- Total in-theater tobacco impressions delivered by youth-rated films declined 75 percent from 2002 (18.2 billion) to 4.5 billion impressions in 2016. Youth-rated impressions in 2016 were 59 percent above their historic low in 2015 (2.9 billion).
- The share of in-theater tobacco impressions delivered by youth-rated films declined from their historic high of 68 percent in 2011 to an historic low of 28 percent in 2016.
- Fewer youth-rated films with large budgets (>\$50 million) feature tobacco imagery than in 2002, but these films still account for most moviegoer exposure to smoking onscreen. Major studios and independents have reduced the number of lower-budget (<\$50 million) youth-rated films with smoking at a slower rate.
- Most decreases in the number of tobacco incidents in youth-rated movie smoking took place between 2002 and 2010, with no substantial change from 2011 to 2016. If the rate of change observed pre-2010 had persisted, youth-rated movies would have been entirely smokefree by early 2015.
- One-quarter of youth-rated films featured smoking in 2016, including one in three films rated PG-13.
- Only the proposed R-rating covering all companies, including the independents, and all films, whether low- or high-budget, will protect children and adolescents by making the films they see most often smokefree.

BACKGROUND

In the last two decades, health researchers in more than a dozen countries have repeatedly confirmed what US tobacco companies have known since the late 1920s: movies sell smoking.¹ In 2012, after reviewing the scientific evidence, the US Surgeon General concluded that exposure to smoking on screen *causes* kids to smoke.²

Harm from film smoking | Exposure to on-screen smoking is a major factor in smoking initiation. Based on large-scale US studies of exposure effects,³ the US CDC estimated that films will recruit 6.4 million new US smokers from among today's children.⁴ Almost 90 percent of those recruited to smoke by on-screen exposure will start smoking before age 18.⁵ Two million of them will ultimately die from tobacco-induced diseases, including heart disease, lung cancer, stroke, and emphysema.⁶ One million of these deaths will be from exposure to smoking in movies that the MPAA rates as appropriate for youth (G/PG/PG-13).

The encouraging news is that reducing kids' exposure to on-screen smoking will reduce kids' risk of smoking. In January 2014, the US Surgeon General reported that eliminating smoking from youth-rated films by R-rating future films with tobacco imagery would reduce teen smoking rates by 18 percent;⁷ doing so would avert one million of the 5.6 million projected future tobacco deaths among children alive today.⁸

Widely-endorsed policy solutions | A modernized R-rating would be based on the Surgeon General's conclusion that on-screen smoking causes youth smoking. The rating for a film is routinely determined as part of the marketing plan for a film before it is made and film producers already calibrate screenplays, film direction, and editing to achieve the rating that is desired for marketing purposes.

An R-rating updated for smoking would supply the same market incentive as today's R-rating exerts on strong language, grisly violence, and sexualized nudity. With an R-rating for smoking, filmmakers would remain free to include smoking in any film they want, just as they are currently free to include strong language, grisly violence, and sexualized nudity, knowing that doing so will trigger an R-rating. All that the R-rating for smoking will do is to keep tobacco imagery *out* of films that media companies expect to be consumed by kids.

The proposed R-rating for tobacco would exempt films that portray tobacco use by actual people who used tobacco, such as the subject of a biographical drama or documentary.⁹ (This exception does not extend to tobacco use by composite or wholly invented characters, or by uncredited extras.) Any genre of film that realistically depicts the health consequences of tobacco use could also be exempted from the R-rating.

Evidence-based policy solutions complementary to the R-rating include:

- (1) strong anti-tobacco spots before films with smoking, in any medium;¹⁰
- (2) producers' certifying that no one associated with their film production entered into any agreement related to tobacco's on-screen presence;¹¹
- (3) ending all tobacco brand display on screen;¹²
- (4) making media productions with smoking ineligible for public subsidies.¹³

These policies have been endorsed by the US Centers for Disease Control and Prevention, the World Health Organization, the Los Angeles County public health department, and leading national health and medical organizations.

Hollywood's response | In December 2003, at a meeting convened by the major film studios' trade association, the Motion Picture Association of America, leading US film companies were put on notice that they needed to eliminate youth exposure to on-screen smoking.¹⁴ In 2007, in response to repeated requests from state attorneys general,¹⁵ the MPAA itself commissioned Harvard School of Public Health to recommend film industry measures to address this serious public health problem.¹⁶ Harvard recommended that the MPAA "Take substantive and effective action to eliminate the depiction of tobacco smoking from films accessible to children and youths."¹⁷ Harvard continued, "What's needed is a movie ratings policy that creates an incentive for filmmakers to consider, and worry about, the depiction of smoking as a factor in determine a film's rating. ... [T]he goal should be the elimination (with rare exceptions) of smoking in youth-rated films."¹⁸

Despite mounting evidence of harm, the advice of its own invited expert consultants, and public calls for action, the US film industry took modest steps

- At their own expense, the six MPAA-member companies added State of California-produced anti-tobacco spots to their youth-rated DVDs with smoking between 2008 and 2014;*
- Between 2005 and 2007, three MPAA-member companies — Disney, Warner Bros. and Universal — published corporate policies related to tobacco depictions. In 2012 and 2013, the three other MPAA-member companies — Fox, Sony and Paramount — followed.
- Most of these policies prohibit tobacco product placement deals with the companies themselves; none extend that stipulation to, or require certification of no payoffs from, the production companies contracted to make the films that the studios develop, finance, promote, and distribute.
- Subjective language in most policies allows any youth-rated film to justify inclusion of tobacco imagery.† None of the policies prohibits tobacco brand display in the films these companies produce or distribute.

* Time Warner (Warner Bros.) suspended its agreement with California in 2011; the others soon lapsed.

- From 2007 to 2016, the MPAA has added small-print “smoking” labels to 11 percent of top-grossing, youth-rated films with smoking.

What is the US film industry really doing? | Since 2002, the University of California, San Francisco has collaborated with Thumbs Up! Thumbs Down! (TUTD), a project of Breathe California of Sacramento-Emigrant Trails, to analyze data that TUTD methodically collects on tobacco incidents in films (shots of tobacco use or implied use within each scene). TUTD also reports tobacco brand appearances and identifies who uses tobacco in films. Film production details, including production budgets and box office results, are obtained from entertainment industry publications and databases.

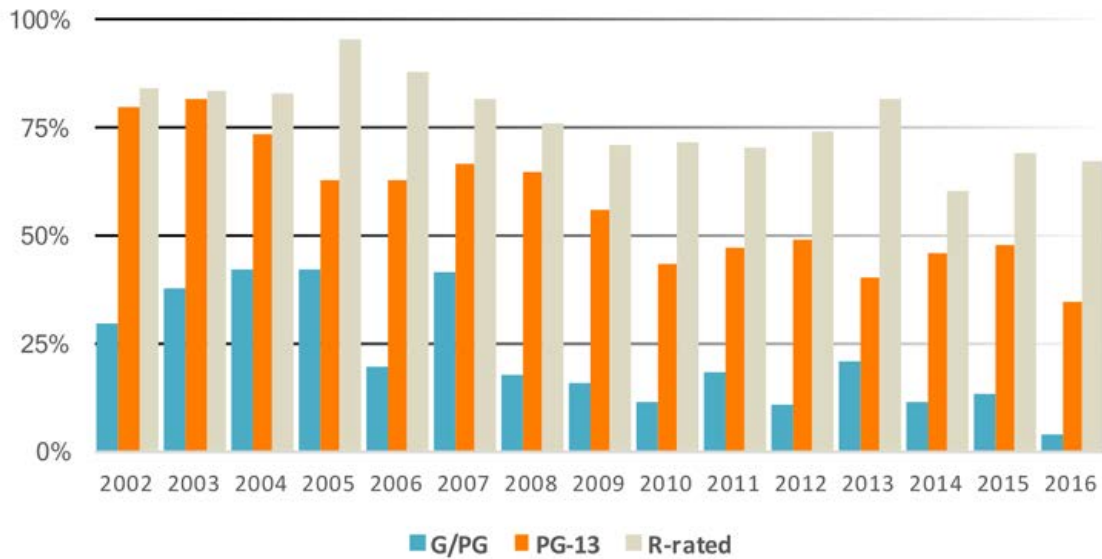
This report analyzes data from the 2,170 top-grossing films in the domestic market from 2002 to 2016. Top-grossing films are those that ranked among the top ten films in box office gross in any week of their first-run theatrical release. This analysis addresses five questions, by film rating and by the company responsible for producing and distributing these films:

- 1) What percentage of youth-rated films feature tobacco imagery? (Fig 1)
- 2) How many tobacco incidents are featured in youth-rated films? (Figs 2-4)
- 3) How much tobacco exposure do moviegoers receive? (Fig 5)
- 4) Does tobacco vary by films’ production budgets? (Figs 6-9)
- 5) Do some companies perform differently than others? (Tables 1- 2)

† For example, the [2013 policy](#) of Paramount (Viacom) says: “Paramount discourages the depiction of smoking or tobacco in youth-rated films. Paramount will communicate this policy to its filmmakers, but also will take into account the creative vision of the filmmakers recognizing that there may be situations where a filmmaker believes that the depiction of smoking or tobacco is important to a film.”

1 | What percentage of films feature tobacco imagery?

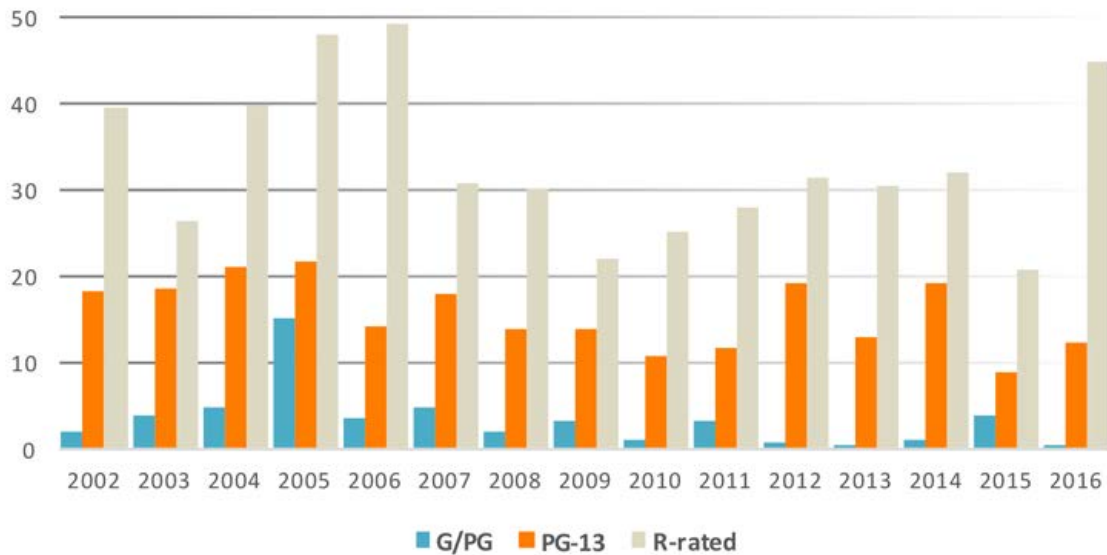
Fig 1 | Percentage of G/PG, PG-13 and R-rated films with tobacco (2002-2016)



Observation: From 2002 to 2016, the percentage of youth-rated (G/PG/PG-13) films depicting tobacco fell from 65 percent to 26 percent. Even so, in 2016, one-third of PG-13 films (23 of 66) still featured tobacco.

2 | How many tobacco incidents are included in films?

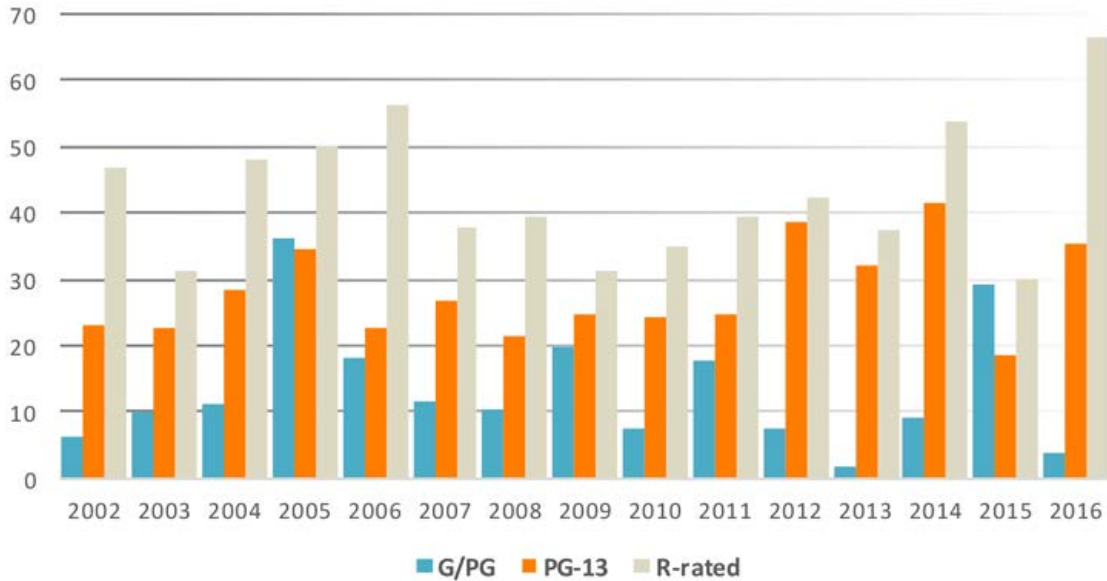
Fig 2 | Tobacco incidents per film (2002-2016)



Observation: To account for fluctuations in the number of films released annually, tobacco incidents are divided by the total number of films in each rating class. G/PG films averaged fewer than one incident per film in 2016,

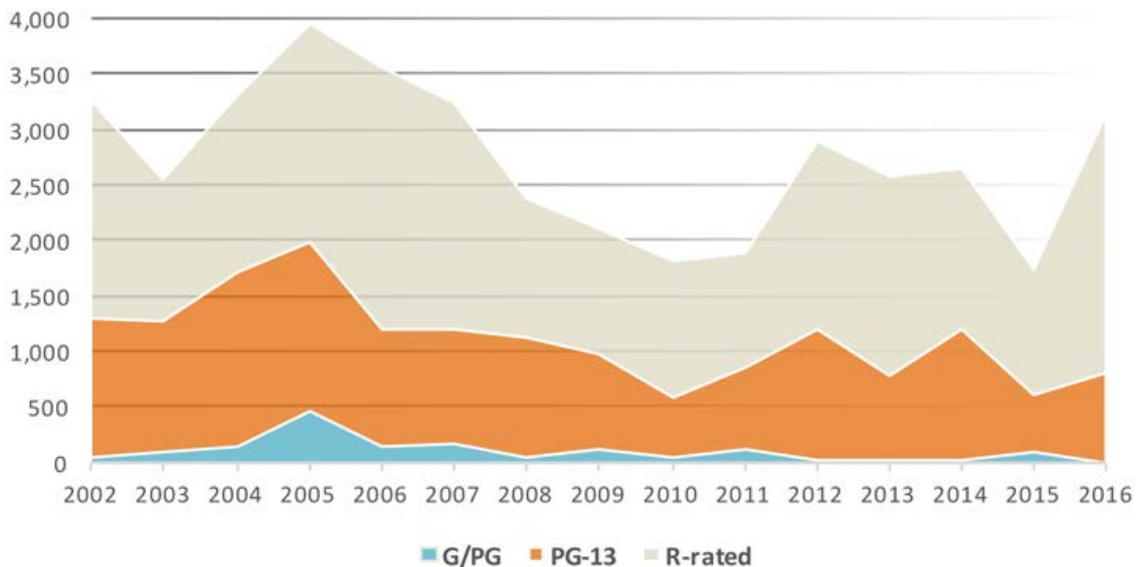
matching their historic low in 2013. PG-13 films averaged 12 incidents per film in 2016, compared to their historic low of 9 incidents per film in 2015. R-rated films averaged 45 incidents per film in 2016, more than double their historic low of 21 incidents per film in 2015.

Fig 3 | Tobacco incidents per film with any smoking (2002-2016)



Observation: Tobacco incidents per G/PG film with any smoking in 2016 were double their historic low of two incidents per film in 2013. PG-13 films with any smoking in 2016 averaged 35 incidents, compared to their historic low of 21 incidents in 2008. Tobacco incidents in R-rated films with any smoking averaged 67 incidents in 2016, the highest level observed since at least 2002 and more than double their historic low of 30 incidents in 2015.

Fig 4 | Total tobacco incidents (2002-2016)

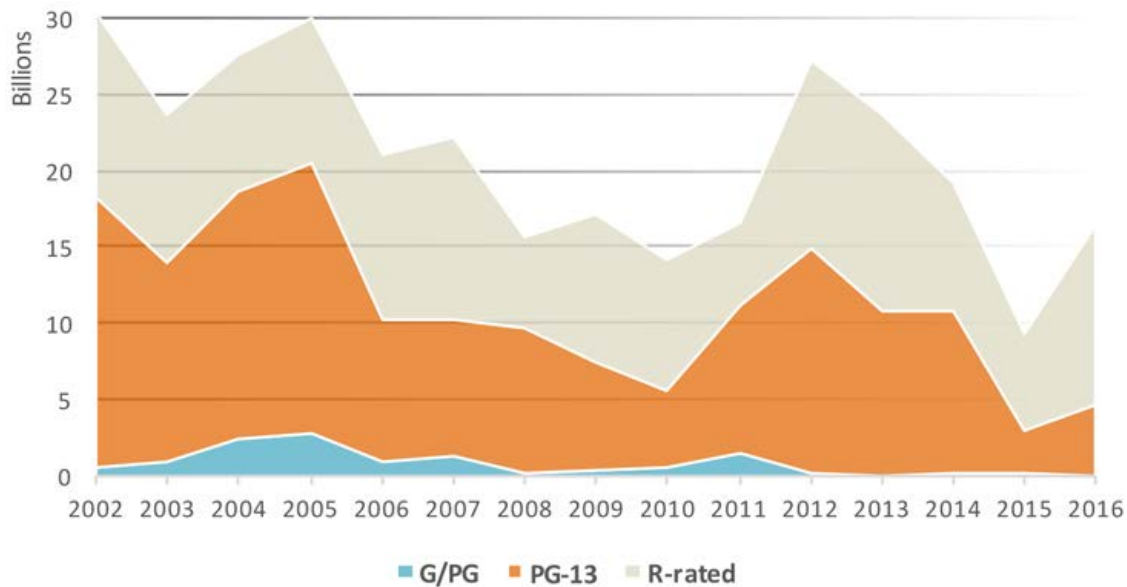


Observation: The total amount of smoking in top-grossing films reached an historic low in 2015 (1,722 incidents), but rebounded to 3,145 incidents in 2016. The total number of tobacco incidents increased substantially in PG-13 films (from 498 in 2015 to 809 in 2016) and more than doubled in R-rated films (from 1,136 in 2015 to 2,332 in 2016).

Incident trends in youth-rated films: As Fig 4 suggests, there was a statistically significant downward trend in the number of tobacco incidents in youth-rated films between 2005 and 2010 ($p=.014$). However, tobacco incidents were essentially flat from 2010 through 2016 ($p=.913$). Had the average rate of decline in tobacco incidents per year observed between 2005 and 2010 been maintained, tobacco incidents would have been eliminated from all youth-rated films by early 2015.‡

3 | How much exposure do moviegoers receive?

Fig 5 | Billions of in-theater tobacco impressions (2002-2016)



Observation: In-theater tobacco impressions measure audience exposure, obtained by multiplying tobacco incidents in a film by the number of viewings (paid admissions).§ Total tobacco impressions from youth-rated films climbed 61 percent to 4.5 billion in 2016 from their historic low of 2.9 billion

‡ The statements about there being a significant decline between 2005 and 2010 but not between 2010 and 2016 is based on fitting linear regressions to the number of incidents in youth-rated films separately. The projection of reaching zero incidents in early 2015 (2015.3) is based on a regression model that allows for a linear decrease between 2005 and 2010 and then a constant value for 2010 and beyond.

§ Only in-theater impressions can be calculated because in-home viewership data for individual films are not publicly available. In-theater impressions are an index of total exposure. The [British Film Institute](#) (2016) reports that (mainly US) films are viewed 17 times more often on terrestrial and cable/satellite video channels than in UK theaters and that video disc sales/rentals and digital streaming also exceed in-theater views.

in 2015. On average, a youth-rated film with smoking delivered 190 million tobacco impressions to domestic theater audiences in 2016, double the historically low 94 million impressions that such films delivered in 2015.

4 | Tobacco performance varies by films' production budgets

Top-grossing films are produced at a wide range of production budgets.** Because larger-budget films generally attract larger audiences through better-known stars and heavy advertising spending, tobacco incidents in these films usually generate more audience tobacco impressions than the same number of incidents in smaller-budget films.

The sample of top-grossing films released from 2002 to 2016 has been divided into quintiles by published production budget to identify changes over time in each stratum.†† The top quintile represents the 20 percent of films with the largest production budgets (\$90 million or more, in 2016 dollars); the bottom quintile represents the 20 percent of films with the smallest budgets (\$18 million or less). The amount of smoking (tobacco incidents) in top-grossing youth-rated films did not vary by production budget ($p=.872$). The size of the audience (paid admissions) and the amount of tobacco exposure (tobacco impressions) generally increased with the film's production budget. (Table 1)

Table 1 | In-theater tobacco exposure from top-grossing youth-rated films, by production budget, 2002-2016

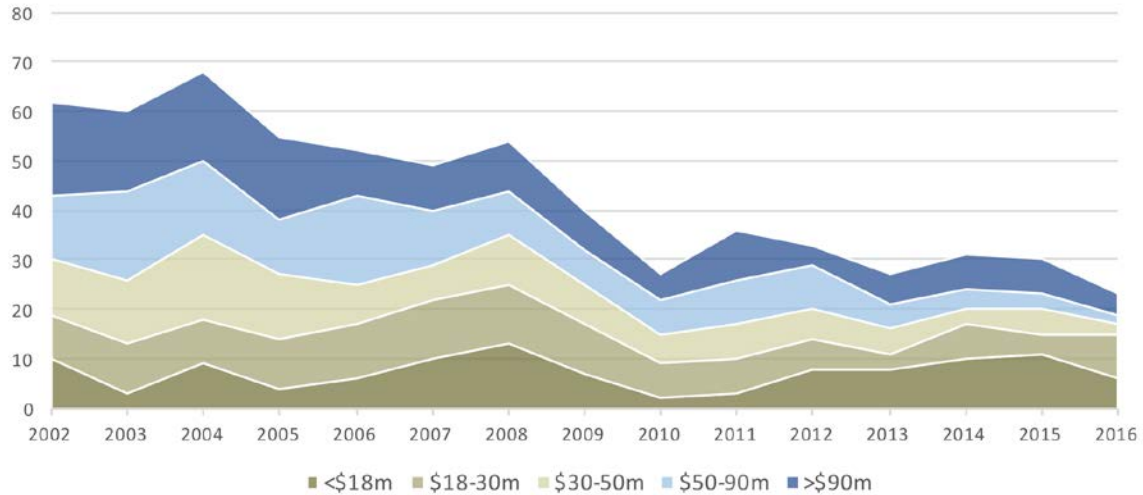
Budget quintile	Film budget (2016 \$)	% of films with tobacco	Per film with tobacco		
			Paid admissions (millions)	Tobacco incidents	Tobacco impressions (millions)
1	<\$18 million	52%	4.6	26	117.5
2	\$18-30 million	50%	5.0	24	127.1
3	\$30-50 million	49%	6.8	23	182.2
4	\$50-90 million	47%	10.1	27	293.5
5	>\$90 million	40%	20.6	26	506.6
	Total	47%	10.0	25	146.7

This series of charts shows that reductions in larger-budget youth-rated films with smoking between 2002 and 2016 have been the major factor in the substantial decline in tobacco impressions since 2002 (Figs 6-9).

** In 2016 dollars, reported production budgets for the top-grossing films in this report's 2010-2016 sample (exclusive of marketing costs) ranged from \$12,320 (*Paranormal Activity*) to \$348 million (*Pirates of the Caribbean: At World's End*).

†† The sample of 2,120 top-grossing films of all ratings, released between 2002 and 2016, omitted 34 films whose production budgets were not reported by entertainment industry trade publications.

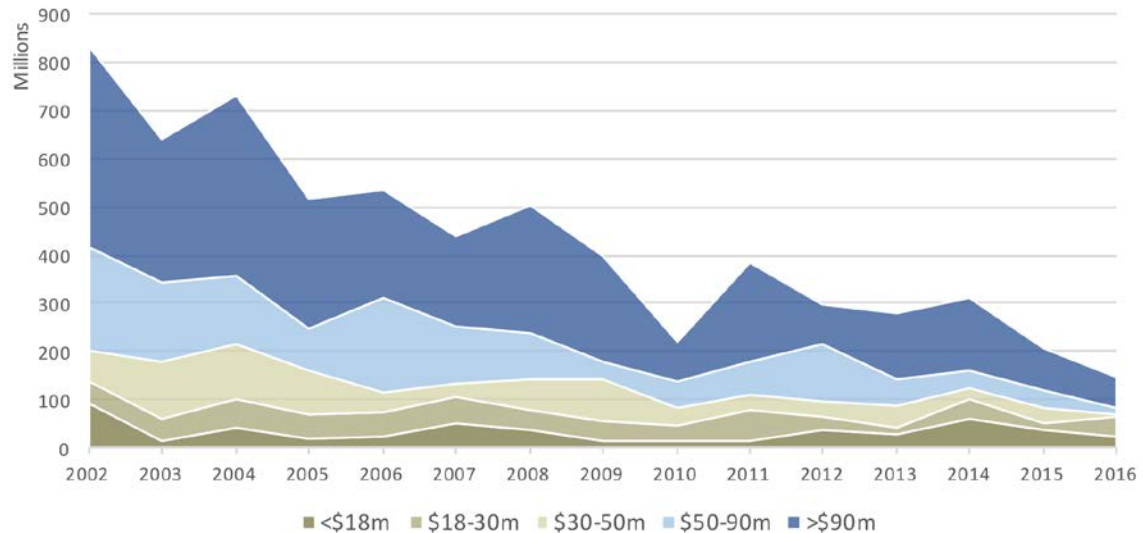
Fig 6 | No. of youth-rated movies with smoking, by production budget, 2002-2016



Observation: In 2002, larger-budget films (top two quintiles, i.e., the 40 percent of films with budgets of \$50 million or more) comprised 52 percent (32 of 62) of youth-rated films with smoking. By 2016, they comprised only 25 percent of youth-rated films with smoking (6 of 24).

Overall, the number of youth-rated films with smoking declined 63 percent (from 62 to 23 films) between 2002 and 2016, but the decline varied by production budget. The number of films in the lowest quintile (budgets less than \$18 million) did not change over time ($p=.705$), while it dropped for all other budget quintiles. The number of films in each of the top three quintiles declined at the rate of about one film per year.

Fig 7 | Admissions to youth-rated films with smoking, by production budget, 2002-2016



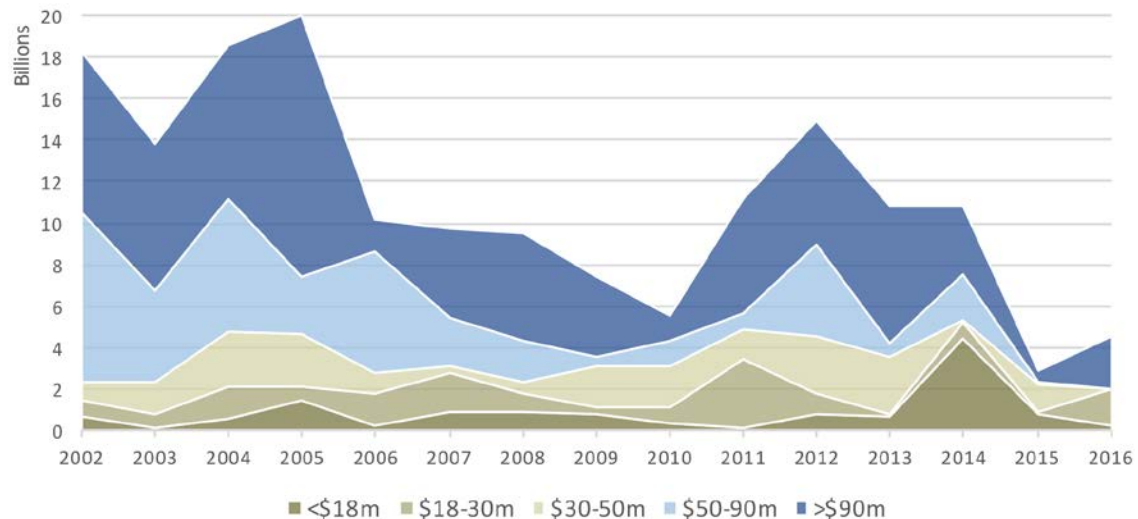
Observation: In 2002, youth-rated films with the largest budgets (\$90 million or more) accounted for 50 percent (416 million of 832 million) of all tickets sold to youth-rated films with smoking. In 2016, these films sold many fewer tickets than in 2002 (66 million vs. 416 million) yet still accounted for more than 40 percent of all tickets sold to youth-rated films with smoking (43%, 66 million of 155 million).

Fig 8 | Tobacco incidents in youth-rated films, by production budget, 2002-2016



Observation: In 2002, youth-rated films with the largest budgets (\$90 million or more) featured one-quarter of all tobacco incidents in youth-rated films (25%, 326 of 1,296 incidents) and films with budgets between \$50 million and \$90 million accounted for more than one-third of all incidents (35%, 447 of 1,296 incidents). By 2016, tobacco incidents had declined in these two top quintiles of youth-rated films. Over the same period, tobacco incidents in films with budgets below \$50 million did not vary significantly.

Fig 9 | Tobacco impressions from youth-rated films, by production budget, 2002-2016



Observation: In 2002, youth-rated films with budgets in the top two quintiles (\$50 million or more) delivered 86 percent of in-theater tobacco impressions (15.8 billion of 18.2 billion impressions delivered by all youth-rated films). By 2016, these top two quintiles of films delivered 56 percent of youth-rated tobacco impressions (2.6 billion of 4.5 billion). At the same time, tobacco impressions delivered by lower-budget films (below \$50 million) did not vary significantly.

From 2002 to 2016, the 13.2 billion drop in the tobacco impressions delivered by youth-rated films with budgets \$50 million and above accounted for almost all (97%, 13.2 billion of 13.6 billion) of the total decline in impressions delivered by youth-rated films. Films with budgets below \$50 million, from both MPAA-member companies and independents, continued to deliver billions of tobacco impressions annually to audiences.

5. Tobacco performance varies by company

Major studios account for most movies with smoking: The major studios (MPAA-member companies) released 88 percent (256 of 290) of all larger-budget (\$50 million or more), youth-rated films with tobacco between 2002 and 2016. The major studios also accounted for two-thirds (66%, 234 of 357) of all smaller-budget (less than \$50 million) youth-rated films with smoking from 2002 to 2016.

The independent film companies (non-MPAA members) released 12 percent (34 of 290) of larger-budget, youth-rated films with smoking between 2002 and 2016. The independents also released one-third (34%, 123 of 357) of all lower-budget, youth-rated films with smoking.

Tobacco content and exposure vary by company | A short list of companies account for all top-grossing films released each year. Table 1 lists the six major film companies that control the Motion Picture Association of America (MPAA-members) and, considered as a group, the independent film companies whose youth-rated films achieved top-grossing status from 2002 to 2016.

Table 2 | Youth-rated movies with smoking, by company (2015-2016)

	Films with smoking			Tobacco incidents			In-theater impressions (millions)		
	2015	2016	Change	2015	2016	Change	2015	2016	Change
Comcast	3	2	-33%	11	266	+2318%	87	900	+934%
Disney	2	1	-50%	123	6	-95%	1,068	9	-99%
Fox	4	4	0%	150	145	-3%	617	858	+39%
Sony	4	3	-25%	98	144	+47%	379	1,490	+293%
Time Warner	4	2	-50%	30	40	+33%	148	562	+279%
Viacom	2	5	+150%	3	80	+2666%	64	301	+370%
Independents	12	7	-42%	192	132	-69%	495	411	-17%
Total	31	24	-23%	607	813	+34%	2,858	4,530	+59%

Observation: MPAA-member companies accounted for 61 percent (19 of 31) youth-rated films with tobacco in 2015 and 71 percent (17 of 24) in 2016. Twenty-First Century Fox (4 films), Viacom (5 films), and independents (7 films) accounted for two-thirds (67%, 16 of 24) of all youth-rated films with smoking in 2016. Disney and Time Warner showed the greatest decline in youth-rated films with smoking from 2015 to 2016, while Viacom showed the largest increase and Fox showed no change.

Year-to-year changes in the number of tobacco incidents in youth-rated films were large at some companies. Youth-rated films released by Viacom showed a 27-fold increase in tobacco incidents (from a total of 3 incidents to 80). Films from Comcast (Universal) increased 24-fold (from 11 incidents to 266). Disney and independent film companies had the largest declines: 95 percent and 69 percent, respectively.

Overall, tobacco impressions delivered by youth-rated films climbed nearly 60 percent from 2015 to 2016 (from 2.8 billion to 4.5 billion). The largest increases were from films released by Comcast (a nearly 10-fold increase), Sony, Time Warner, and Viacom. Sony (1.5 billion impressions), Comcast (900 million), and Fox (858 million) delivered nearly three-quarters of all in-theater tobacco impressions (72%, 3.2 billion of 4.5 billion) in 2016.

The low number of tobacco incidents for some companies, in some years from 2010 to 2016 (Table 3, highlighted in yellow), shows it is feasible for both MPAA-member companies and independents to eliminate nearly all tobacco imagery from their PG-13 films, as they have done from their other (G/PG) youth-rated films. However, tobacco incidents per PG-13 film frequently rebounded after companies adopted tobacco depiction policies, indicating that these individual policies cannot be relied upon to protect young audiences on a continuing basis.

Table 3 | Tobacco incidents per PG-13 film, by company (2010-2016)

	2010	2011	2012	2013	2014	2015	2016
Comcast Universal	3	8	7	8	19	1	24
Disney	0	30	34	11	0	31	1
Fox	12	29	41	1	14	14	24
Sony	17	14	18	4	26	3	16
Time Warner	0	9	29	28	2	4	4
Viacom Paramount	29	8	18	3	8	1	9
MPAA-members	10	14	23	12	13	8	14
Independents	12	2	12	16	33	11	8
TOTAL	11	12	19	13	19	9	12

CONCLUSION

The US film industry has known for more than a decade that their films with smoking put young audiences at substantial physical risk of addiction and early death from smoking.

While fewer larger-budget, youth-rated films now feature tobacco content than in the early 21st Century, reducing in-theater tobacco exposures has stalled since 2010. Major studio films with the highest budgets, more than \$90 million, still contribute more than half of all audience tobacco exposures. Lower-budget youth-rated films from both major studios and independent film companies account for the balance of billions of tobacco impressions delivered to domestic audiences each year.

These smoking films, like all films, have long shelf-lives and will continue to promote youth smoking as they are recycled on television, home video platforms, and streaming video.

Given the tobacco industry's nearly century-long history of exploiting film and television to promote smoking, both overtly and covertly, and the film industry's inability to take individual corporate action that holds up against competitive pressures and lapses in leadership, only the R-rating promises to permanently protect young audiences in the US and around the world who are at palpable risk of tobacco addiction, physical disability, and early death.

Updating the existing MPAA rating system to R-rate tobacco imagery is the only evidence-based method to set a transparent, enforceable, uniform standard covering films of all genres and budgets released by all film distributors. The R-rating will create a self-enforcing, voluntary market mechanism to reserve smoking for films not marketed to kids.

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