

JENNIFER LO

Predicting International Box Office Success

Kevin Cole, Metis NYC
Summer '16 Cohort

VIA DALL'INCUBO

C'è un limite oltre il quale nessuno p

COLUMBIA PICTURES PRESENTA UNA PRODUZIONE SPAIN INCUBO IN UN FILM DI MICHAEL APPEL
CON JENNIFER LOPEZ "VIA DALL'INCUBO" (ENGLISH) DUST CAMPBELL, JOSHUA JONES, DAN IZZO, DANIEL L. JOY
MUSIC BY DAVID BOWEN COSTUME DESIGNER JENNIFER KIM EDITOR NICK CALDER EXECUTIVE PRODUCERS JAMES HANSEN
PRODUCED BY NICKOLAS KAZAN DIRECTOR OF PHOTOGRAPHY JIM COOPER EXECUTIVE PRODUCERS JIM COOPER PRODUCED BY MICHAEL APPEL

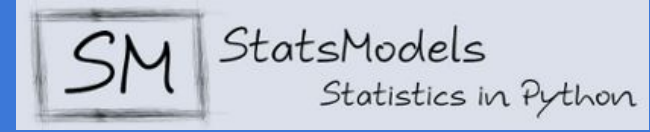
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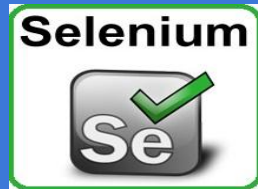
Goals:

- ❑ Predict international success
- ❑ Data
 - ❑ Foreign gross %
 - ❑ MPAA ratings,
 - ❑ Effect of actors and directors
- ❑ Determine which variables have the largest and most statistically significant effect on foreign gross %

Tools:



- ❑ Scraping data from boxofficemojo.com with selenium and beautifulsoup packages
- ❑ Determining statistical significance and predictiveness with scikit-learn and statsmodels



2015 DOMESTIC GROSSES

Total Grosses of all Movies Released in 2015

#1-100 - #101-200 - #201-300 - #301-400 - #401-500 - #501-600 - #601-700 - #701-701

< Previous Year Data as of: Today or (Month / Day / 2015) Go Next Year >

Rank	Movie Title (click to view)	Studio Filter	Total Gross / Theaters	Opening / Theaters	Open	Close
1	Star Wars: The Force Awakens	BV	\$936,662,225 4,134	\$247,966,675 4,134	12/18	6/2
2	Jurassic World	Uni.	\$652,270,625 4,291	\$208,806,270 4,274	6/12	11/19
3	Avengers: Age of Ultron	BV	\$459,005,868 4,276	\$191,271,109 4,276	5/1	10/8
4	Inside Out	BV	\$356,461,711 4,158	\$90,440,272 3,946	6/19	12/10
5	Furious 7	Uni.	\$353,007,020 4,022	\$147,187,040 4,004	4/3	7/24
6	Minions	Uni.	\$336,045,770 4,311	\$115,718,405 4,301	7/10	12/17
7	The Hunger Games: Mockingjay - Part 2	LGF	\$281,723,902 4,175	\$102,665,981 4,175	11/20	2/25
8	The Martian	Fox	\$228,433,663 3,854	\$54,308,575 3,831	10/2	3/17
9	Cinderella (2015)	BV	\$201,151,353 3,848	\$67,877,361 3,845	3/13	9/17
10	Spectre	Sony	\$200,074,609 3,929	\$70,403,148 3,929	11/6	4/7

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Box Office

[Daily](#)[Weekend](#)[Weekly](#)[Monthly](#)[Quarterly](#)[Seasonal](#)[Yearly](#)[All Time](#)[International](#)

Indices

[Studios](#)[People](#)

Star Wars: The Force Awakens

Domestic Total Gross: **\$936,662,225**

Distributor: **Buena Vista**

Release Date:
December 18, 2015

Genre: **Sci-Fi Fantasy**

Runtime: **2 hrs. 16 min.**

MPAA Rating: **PG-13**

Production Budget: **\$245 million**

[Summary](#)[Daily](#)[Weekend](#)[Weekly](#)[Foreign](#)[Similar Movies](#)

Total Lifetime Grosses

Domestic: **\$936,662,225** **45.3%**
+ Foreign: **\$1,131,516,000** **54.7%**

= Worldwide: \$2,068,178,225

Domestic Summary

Opening Weekend: **\$247,966,675**
(#1 rank, 4,134 theaters, \$59,982 average)
% of Total Gross: **26.5%**

[> View All 24 Weekends](#)

Widest Release: 4,134 theaters
Close Date: June 2, 2016
In Release: 168 days / 24 weeks

The Players

Director: J.J. Abrams

Writers: J.J. Abrams
Michael Arndt
Lawrence
Kasdan

Actors: Warwick Davis
Lupita Nyong'o
John Boyega
Daisy Ridley
Adam Driver
Oscar Isaac
Andy Serkis
Rebecca Hall

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2/25 'Gods of Egypt', 'Triple 9' & 'Eddie the Eagle' Hit Theaters While 'Deadpool' Threepeats

2/14 'Deadpool' Smashes Box Office Records On Way to \$260 Million Worldwide Opening

2/11 Updated: 'Deadpool' Targets #1 Opening Over 'How to Be Single' & 'Zoolander 2'

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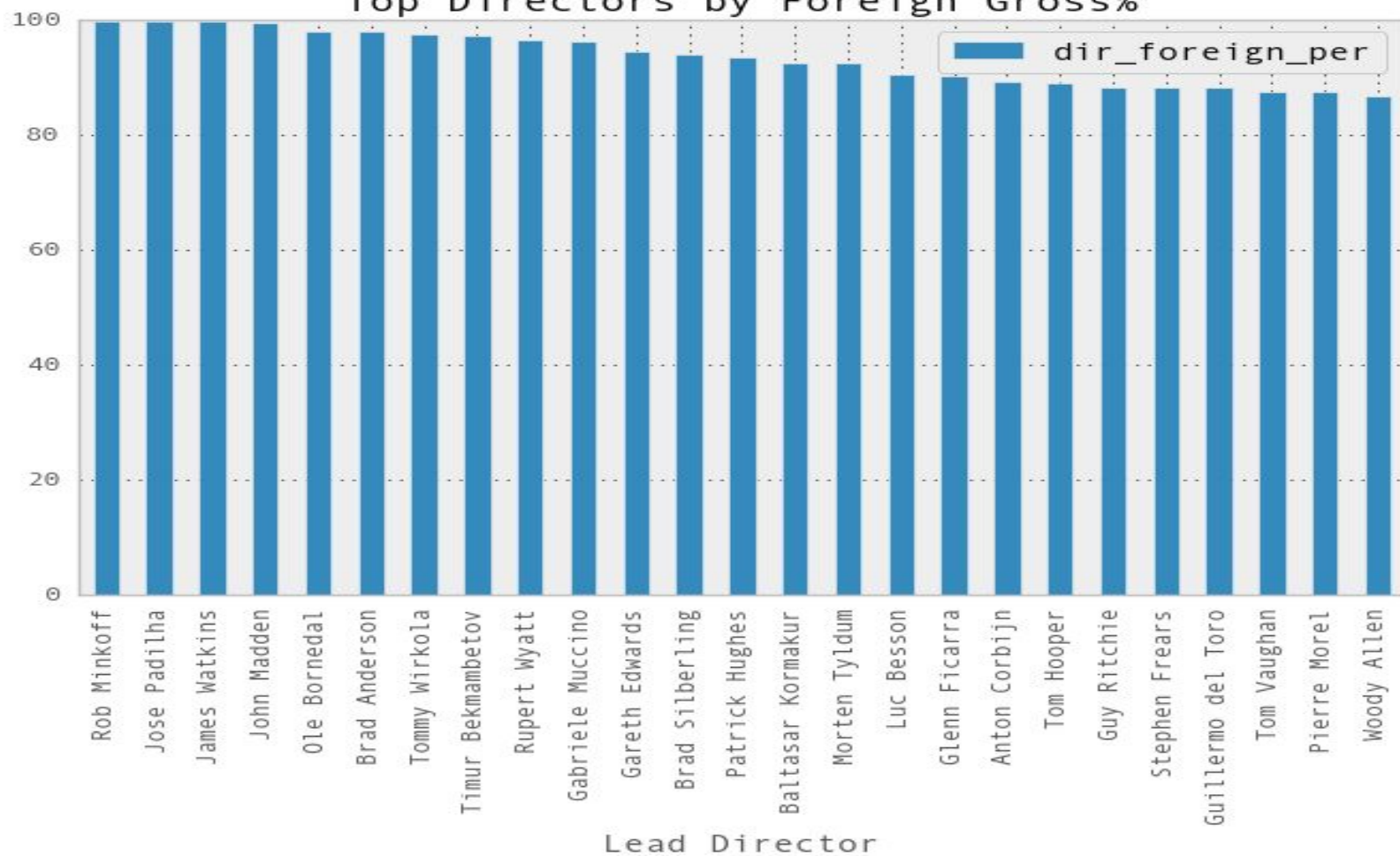
Lead Director & Actor:

- ❑ Historical international success
 - ❑ Filter for all movies within the last 5 years
 - ❑ Calculate mean foreign gross percentage

Data Cleaning & Transformation:

- ❏ Format data frame columns
- ❏ Inspect data
 - ❏ Missing
 - ❏ Nonsensical
 - ❏ Visualize

Top Directors by Foreign Gross%



Rob Minkoff

Director

Producer

Date	Title (click to view)	Studio	Lifetime Gross / Theaters		Opening / Theaters		Rank
3/7/14	Mr. Peabody & Sherman	Fox	\$111,506,430	3,951	\$32,207,057	3,934	3
8/19/11	Flypaper	IFC	\$5,043	2	\$1,098	2	7
4/18/08	The Forbidden Kingdom	LGF	\$52,075,270	3,151	\$21,401,121	3,151	6
11/26/03	The Haunted Mansion	BV	\$75,847,266	3,122	\$24,278,410	3,122	4
7/19/02	Stuart Little 2	Sony	\$64,956,806	3,282	\$15,115,152	3,255	5
12/17/99	Stuart Little	Sony	\$140,035,367	3,151	\$15,018,223	2,878	2
6/15/94	The Lion King	BV	\$422,783,777	2,624	\$1,586,753	2	1

Note: Titles in grey are cameo or bit parts and not counted in totals and averages.

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Note: Titles in grey are cameo or bit parts and not counted in totals and averages.



Flypaper

Domestic Total Gross: **\$5,043**

Distributor: **IFC**

Release Date:

August 19, 2011

Genre: **Crime
Comedy**

Runtime: **1 hrs. 27 min.**

MPAA Rating:
Unrated

Production Budget: **N/A**

Summary

[Weekend](#)

[Weekly](#)

[Foreign](#)

Total Lifetime Grosses

Domestic: **\$5,043** **0.2%**
+ **Foreign:** **\$3,137,111** **99.8%**

= **Worldwide: \$3,142,154**

Domestic Summary

Opening Weekend: \$1,098
(#101 rank, 2 theaters, \$549
average)

% of Total Gross: 21.8%

[View All Weekends](#)

Widest Release: 2 theaters

Close Date: August 25, 2011

The Players

Director: Rob Minkoff

Writers: Jon Lucas
Scott Moore

Actors: Ashley Judd
Patrick Dempsey
Tim Blake Nelson
Jeffrey Tambor

Producer: Peter Safran



Flypaper

Domestic Total Gross: **\$5,043**

Distributor: IFC	Release Date: August 19, 2011
Genre: Crime Comedy	Runtime: 1 hrs. 27 min.
MPAA Rating: Unrated	Production Budget: N/A

Summary

Weekend

Weekly

Foreign

Total Lifetime Grosses

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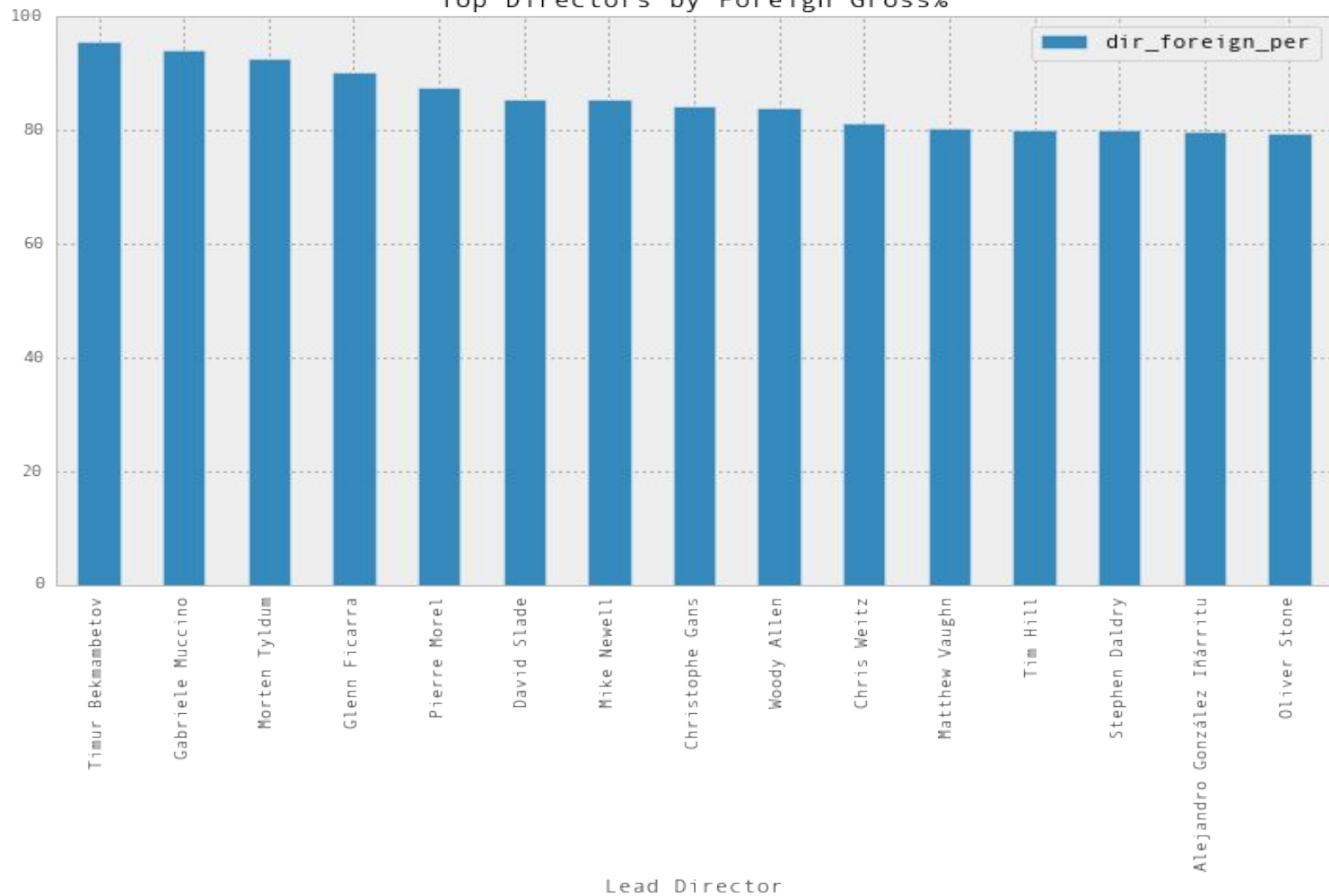
Director: Rob Minkoff

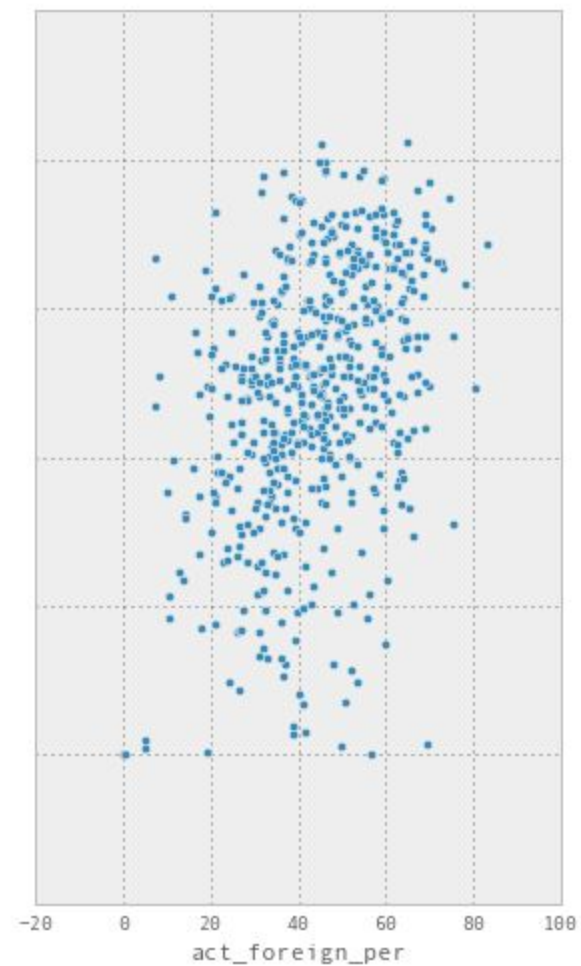
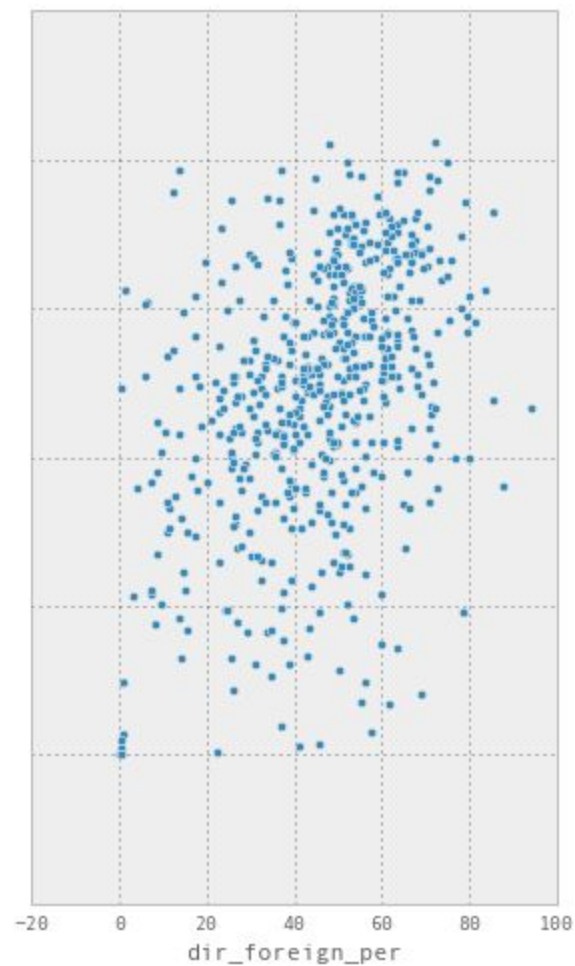
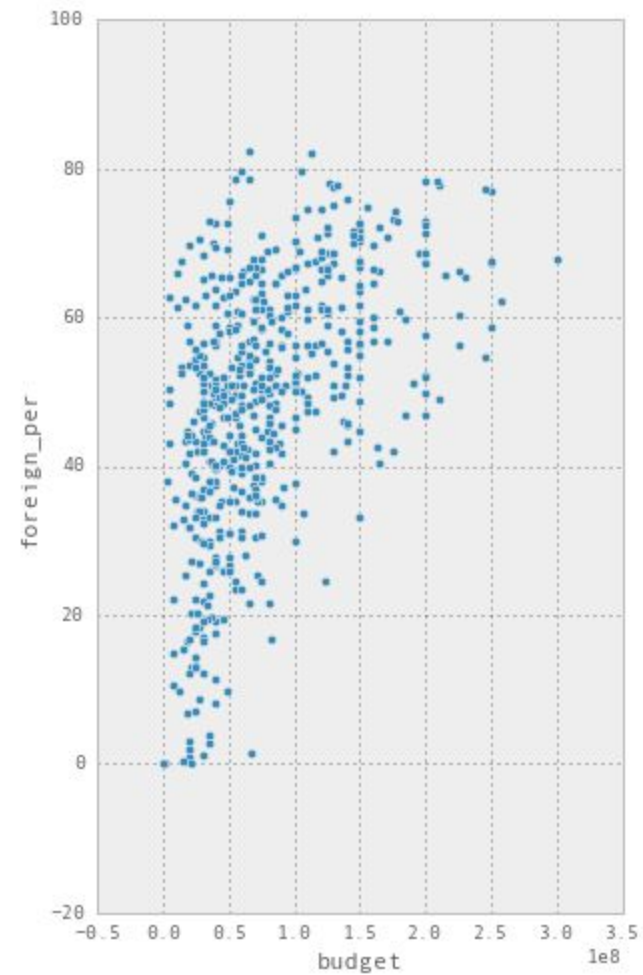
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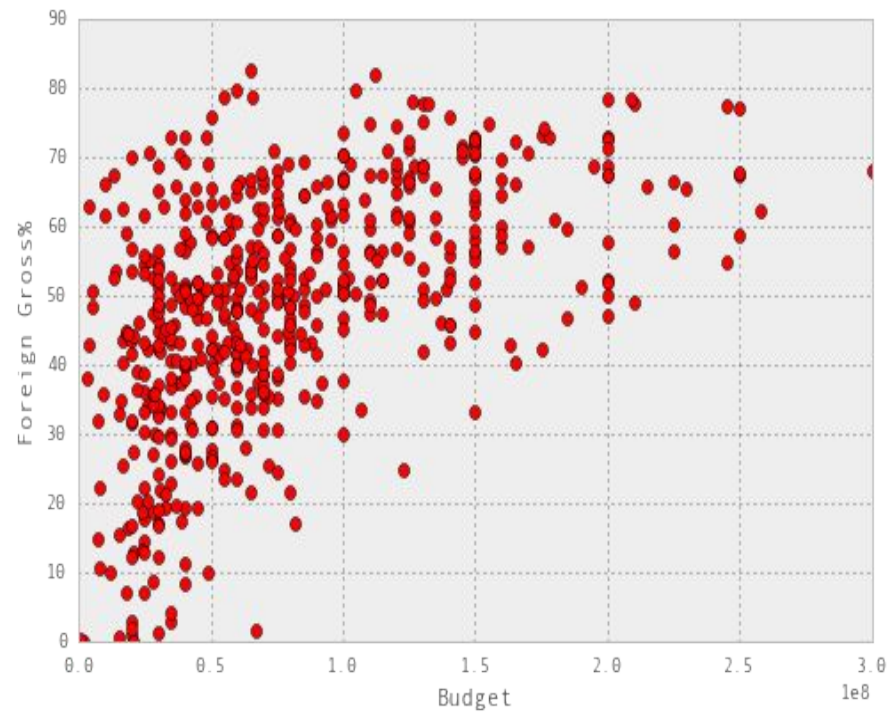
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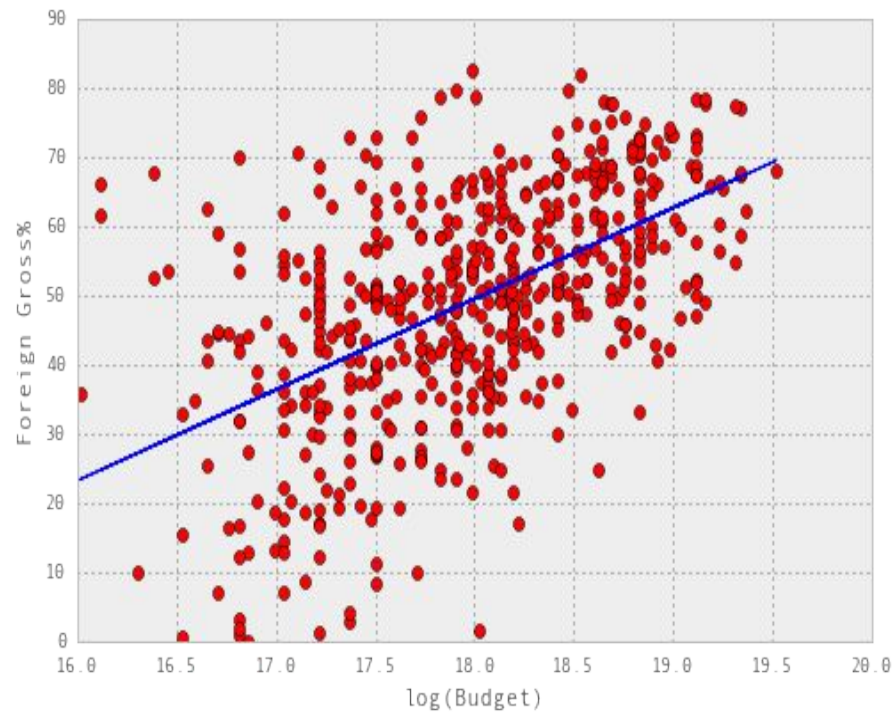
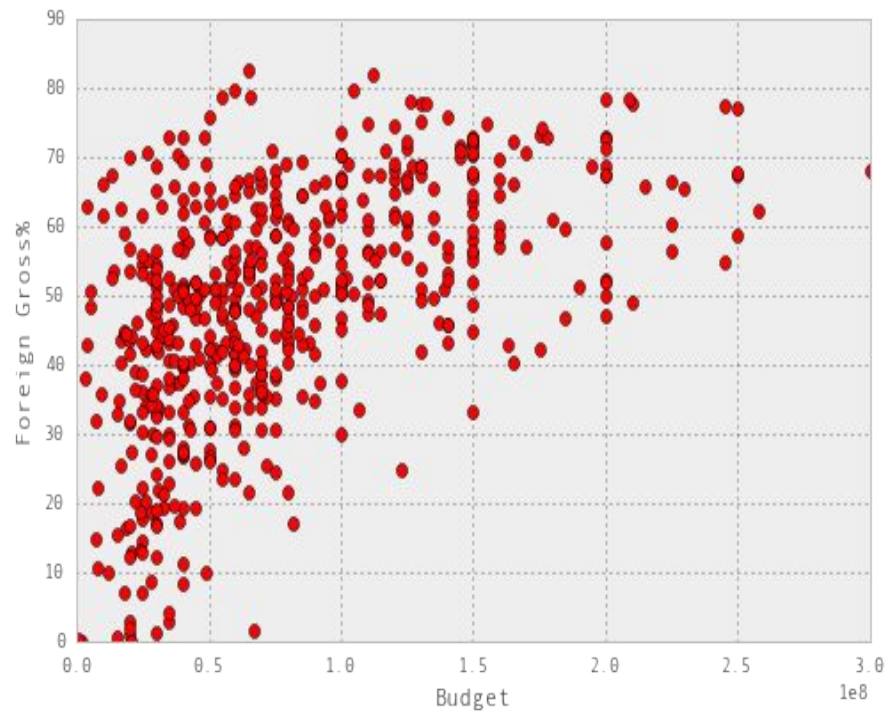
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Top Directors by Foreign Gross%









Ordinary Least Squares (OLS)

	coef	std err	t	P> t 	[95.0% Conf. Int.]
Intercept	-186.5310	17.837	-10.458	0.000	-221.571 -151.491
mpaa[T.PG]	3.5757	6.062	0.590	0.556	-8.334 15.485
mpaa[T.PG-13]	4.0243	5.943	0.677	0.499	-7.650 15.699
mpaa[T.R]	7.0906	6.011	1.180	0.239	-4.718 18.899
log_budget	11.8513	0.954	12.428	0.000	9.978 13.725
dir_foreign_per	0.1903	0.035	5.496	0.000	0.122 0.258
act_foreign_per	0.2017	0.042	4.833	0.000	0.120 0.284

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Training, Cross-Validation & Testing:

- ❑ Split the data 75%-25%, training-testing
- ❑ Ridge Regression found alpha of 0.0
- ❑ 5-fold cross-validation

Cross-Validation

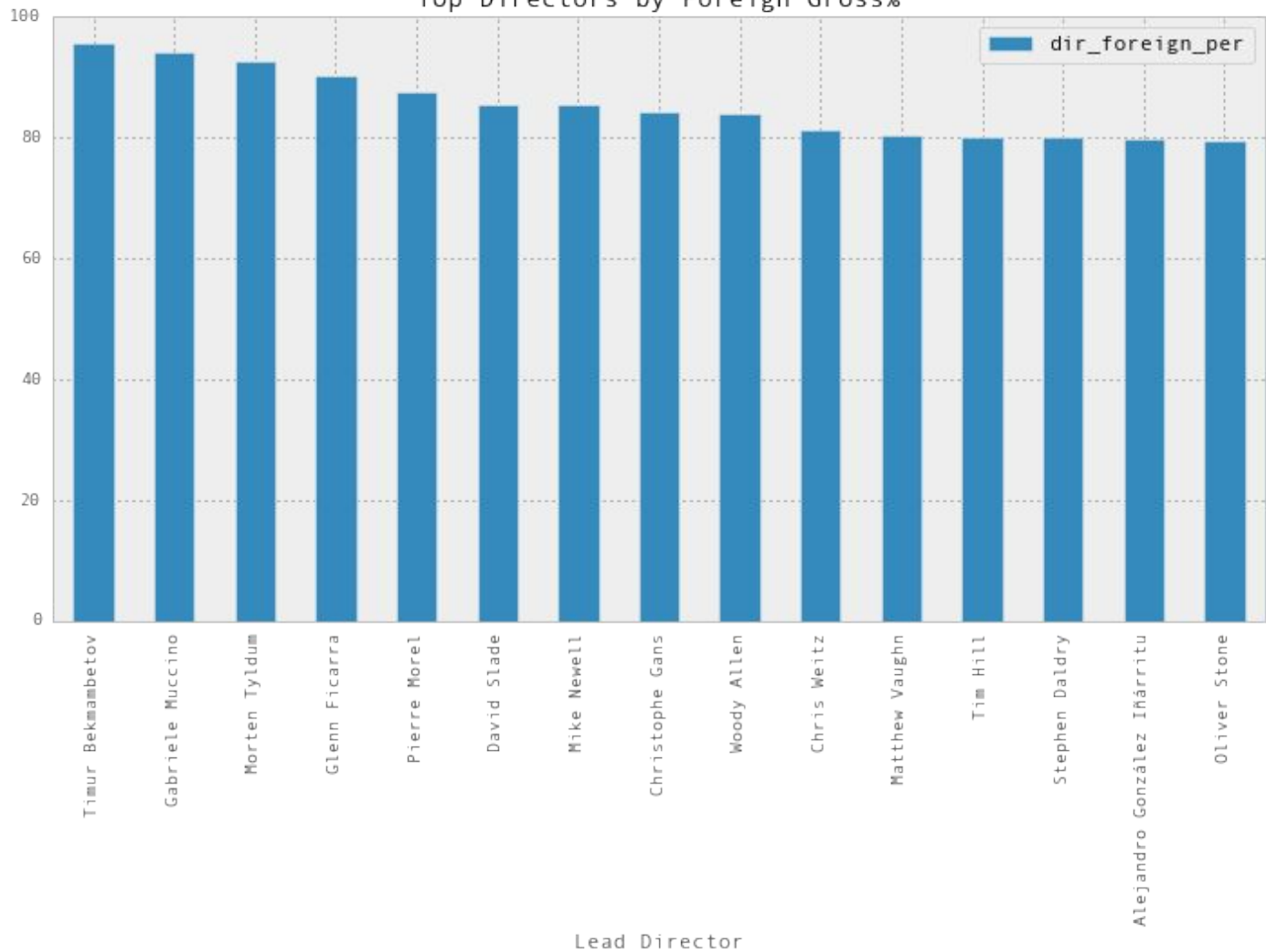
Budget	log(Budget)	Actor Hist Foreign%	Director Hist Foreign%	MPAA Rating	MSE
X		X	X		194.9
	X		X		190.5
	X	X			186.3
	X	X	X	X	184.8
	X	X	X		178.6

Testing:

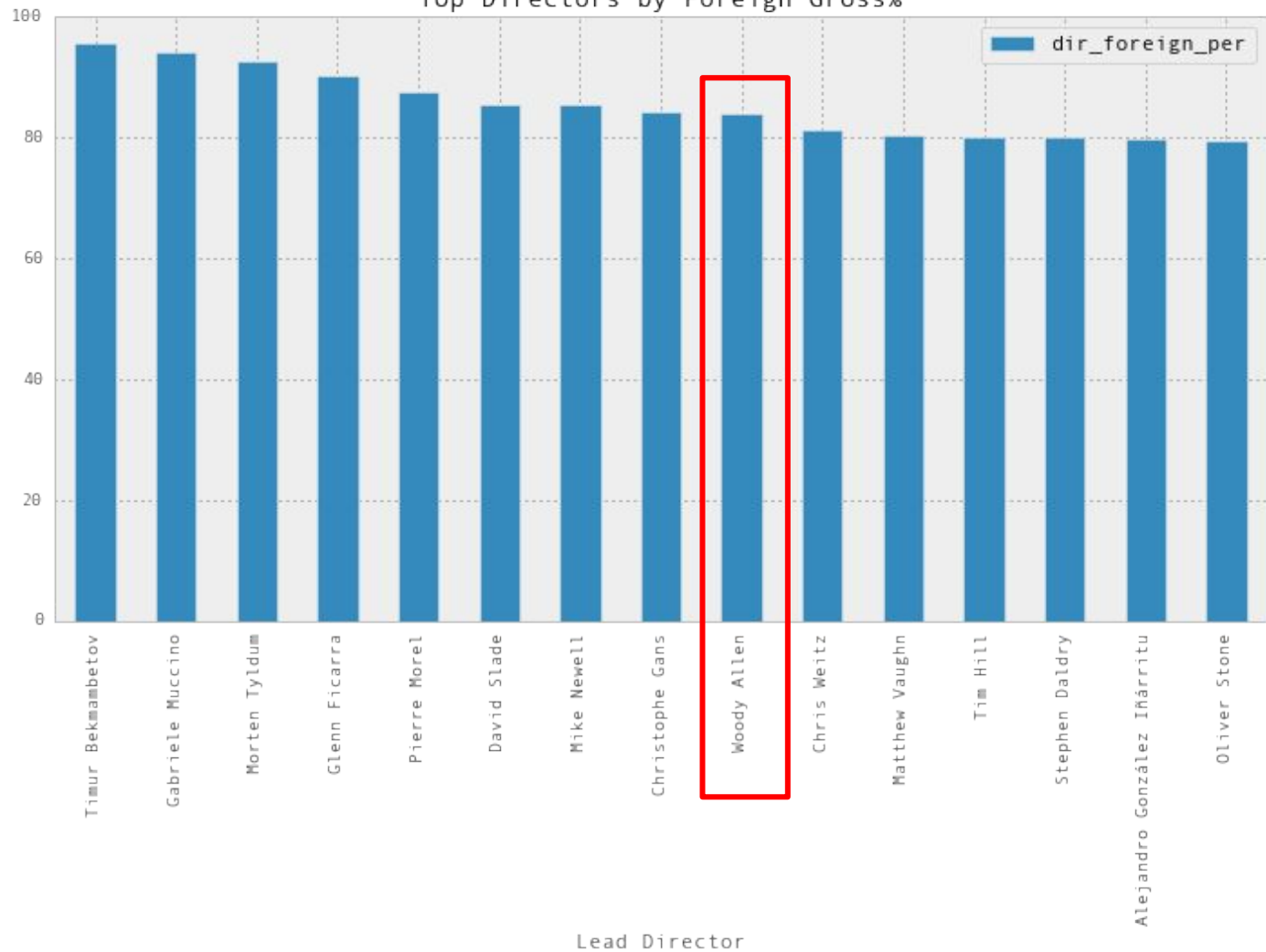
- ❑ MSE of test set (172.2) was slightly *lower* than the training set (178.6)
- ❑ R^2 of test set (0.395) was slightly *lower* than training set (0.386)

	coef	std err	t	P> t 	[95.0% Conf. Int.]
Intercept	-168.3611	15.655	-10.754	0.000	-199.115 -137.607
log_budget	11.0773	0.906	12.233	0.000	9.298 12.856
dir_foreign_per	0.1956	0.035	5.646	0.000	0.128 0.264
act_foreign_per	0.2099	0.042	5.028	0.000	0.128 0.292

Top Directors by Foreign Gross%



Top Directors by Foreign Gross%



Woody Allen

Actor

Director

Writer

Date	Title (click to view)	Studio	Lifetime Gross / Theaters		Opening / Theaters		Rank
7/15/16	Cafe Society	LGF	n/a	5	n/a	5	44
7/17/15	Irrational Man	SPC	\$4,030,360	925	\$175,312	7	35
7/25/14	Magic in the Moonlight	SPC	\$10,539,326	964	\$412,095	17	22
7/26/13	Blue Jasmine	SPC	\$33,405,481	1,283	\$612,064	6	5
6/22/12	To Rome with Love	SPC	\$16,685,867	806	\$361,359	5	13
5/20/11	Midnight in Paris	SPC	\$56,817,045	1,038	\$599,003	6	1
9/22/10	You Will Meet a Tall Dark Stranger	SPC	\$3,248,246	402	\$160,103	6	37
6/19/09	Whatever Works	SPC	\$5,306,706	353	\$266,162	9	31
8/15/08	Vicky Cristina Barcelona	MGM/W	\$23,216,709	726	\$3,755,575	692	6
1/18/08	Cassandra's Dream	Wein.	\$973,018	107	\$361,901	107	41
7/28/06	Scoop	Focus	\$10,525,717	541	\$3,046,924	538	23
12/28/05	Match Point	DW	\$23,151,529	512	\$398,593	8	7
3/18/05	Melinda and Melinda	FoxS	\$3,826,280	302	\$74,238	1	36
9/19/03	Anything Else	DW	\$3,212,310	1,033	\$1,673,125	1,033	38
5/3/02	Hollywood Ending	DW	\$4,850,753	772	\$2,017,981	765	33

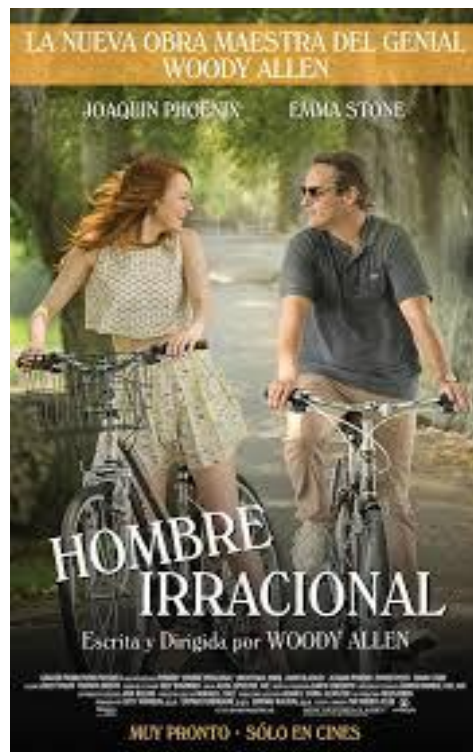
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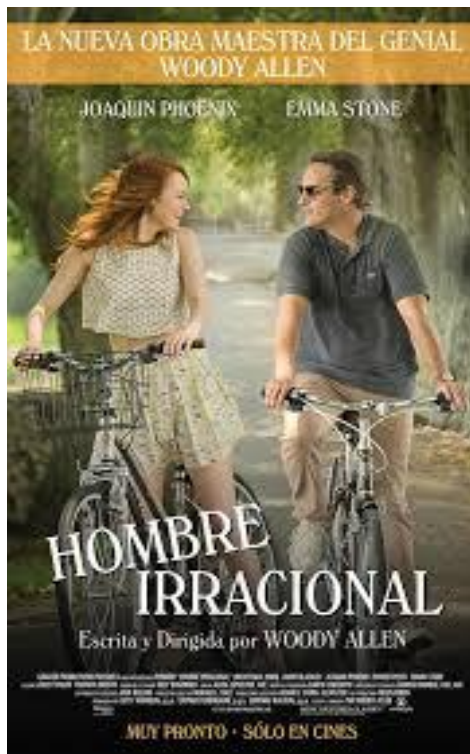
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Total Lifetime Grosses

Domestic:	\$4,030,360	14.7%
+ Foreign:	\$23,360,724	85.3%

= Worldwide: \$27,391,084



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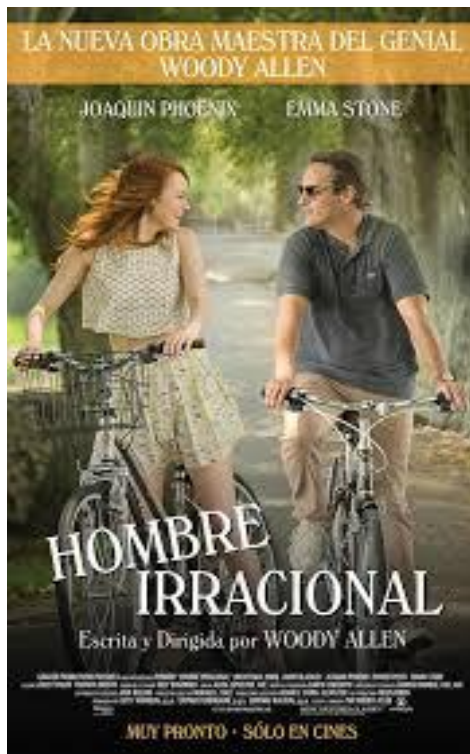
= Worldwide: \$27,391,084



Total Lifetime Grosses

Domestic:	\$3,248,246	9.5%
+ Foreign:	\$31,027,741	90.5%

= Worldwide: \$34,275,987



Total Lifetime Grosses

Domestic:	\$4,030,360	14.7%
+ Foreign:	\$23,360,724	85.3%

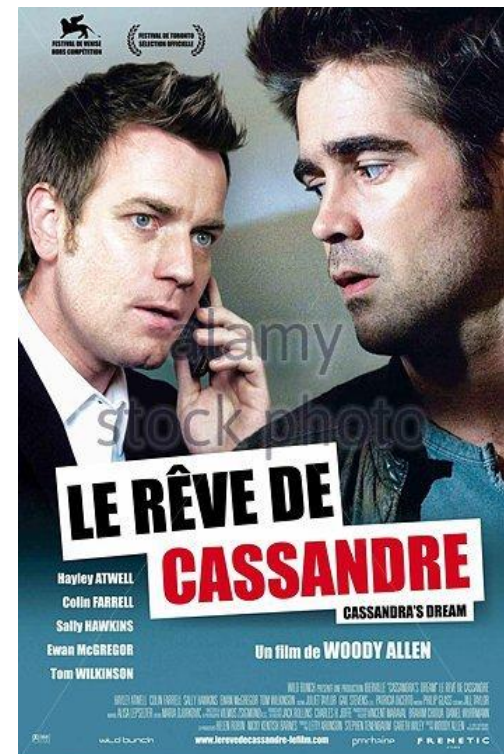
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Total Lifetime Grosses

Domestic:	\$3,248,246	9.5%
+ Foreign:	\$31,027,741	90.5%

= Worldwide: \$34,275,987



Total Lifetime Grosses

Domestic:	\$973,018	4.3%
+ Foreign:	\$21,685,514	95.7%

= Worldwide: \$22,658,532

Takeaways:

- ❑ Budget is significant
- ❑ The international popularity of actors
- ❑ Don't forget about directors!
- ❑ Directors with strong international audiences can make safer investments