

Demand Forecasting and Planning

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Movies with Screens below 2500 – Drivers and Influencers.

- The number of critics heavily influences movies with less than 2,500 screens.
- A higher number of critics positively affects the box office performance in the first week. Specifically, each additional critic boosts earnings by \$22,921.57.
- Seasonal factors and ratings do not significantly impact box office results.

SUMMARY OUTPUT									
Regression Statistics									
Multiple R	0.791871719								
R Square	0.62706082								
Adjusted R Square	0.586228063								
Standard Error	4305987.678								
Observations	153								
ANOVA									
	df	SS	MS	F	Significance F				
Regression	15	4.27108E+15	2.84739E+14	15.3568083	1.4918E-22				
Residual	137	2.54019E+15	1.85415E+13						
Total	152	6.81127E+15							
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%	
Intercept	-2924649.486	1626962.737	-1.797613073	0.07444081	-6141856.383	292557.411	-6141856.38	292557.4115	
No. Critics	22921.57736	7505.055876	3.05415146	0.00271266	8080.845625	37762.3091	8080.845625	37762.3091	
1st wk screens	5268.835972	445.6289577	11.82336983	1.1375E-22	4387.635362	6150.03658	4387.635362	6150.036582	
Budget	-0.00676828	0.021234044	-0.318746624	0.75040409	-0.04875714	0.03522058	-0.04875714	0.035220581	
Winter	1699551.68	900430.3016	1.887488323	0.06120997	-80987.30279	3480090.66	-80987.3028	3480090.663	
Summer	1020699.107	1059955.713	0.962963919	0.33726225	-1075290.403	3116688.62	-1075290.4	3116688.618	
Action	1863495.742	1199305.72	1.553812102	0.12253633	-508048.8219	4235040.31	-508048.822	4235040.307	
Comedy	-763085.275	831200.3436	-0.918052165	0.36020497	-2406726.778	880556.228	-2406726.78	880556.2281	
Drama	1564406.989	845766.2523	1.849691903	0.0665127	-108037.5966	3236851.57	-108037.597	3236851.575	
Docu.	2278793.592	4515664.441	0.504641924	0.61462109	-6650622.218	11208209.4	-6650622.22	11208209.4	
Romance	1230107.693	873616.7721	1.408063275	0.1613775	-497409.3797	2957624.77	-497409.38	2957624.766	
Family	809578.5934	2110236.948	0.383643455	0.70183744	-3363269.812	4982427	-3363269.81	4982426.999	
PG	-1567580.762	1761119.303	-0.89010481	0.37497001	-5050073.04	1914911.52	-5050073.04	1914911.516	
PG-13	-1539803.078	1525818.637	-1.009165205	0.31467446	-4557004.475	1477398.32	-4557004.48	1477398.319	
R	-1072011.487	1406077.324	-0.762412898	0.44712427	-3852432.673	1708409.7	-3852432.67	1708409.7	
Non-US	945755.0604	3388858.488	0.279077767	0.78060599	-5755479.487	7646989.61	-5755479.49	7646989.608	

- The R square value is 0.62706082.
- The Adjusted R square value is 0.586228063.

Movies with at least 2500 Screens – Drivers and Influencers

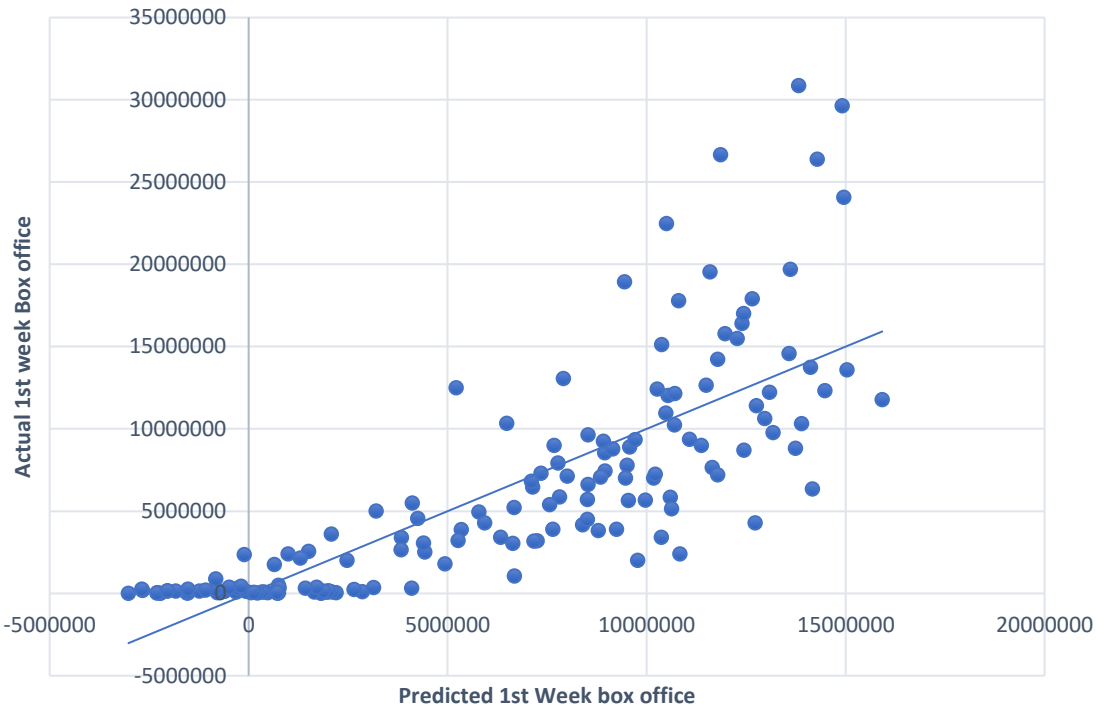
- Each additional screen increases box office earnings by \$22,544.40.
- Each additional critic boosts earnings by \$160,749.95.
- A summer release raises box office revenue by \$11,951,274.12.
- Family-oriented movies see a box office increase of \$26,925,724.55.
- Movies rated PG-13 and R experienced box office gains of \$24,752,413.94 and \$23,608,710.98, respectively.

SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0.766606345							
R Square	0.587685289							
Adjusted R Square	0.491049028							
Standard Error	14552439.35							
Observations	80							
ANOVA								
	df	SS	MS	F	Significance F			
Regression	15	1.93182E+16	1.28788E+15	6.081415875	1.17449E-07			
Residual	64	1.35535E+16	2.11773E+14					
Total	79	3.28717E+16						
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	-94128849.97	22915610.9	-4.107629963	0.000115716	-139908045.4	-48349654.52	-139908045.4	-48349654.52
No. Critics	160749.9506	46860.71926	3.430377364	0.001060156	67134.90214	254364.9991	67134.90214	254364.9991
1st wk screens	22544.40813	8401.279852	2.683449252	0.009264031	5760.922239	39327.89403	5760.922239	39327.89403
Budget	0.026665692	0.088656843	0.300774207	0.764561628	-0.150446713	0.203778096	-0.150446713	0.203778096
Winter	3695177.524	5160730.44	0.716018317	0.476584537	-6614566.714	14004921.76	-6614566.714	14004921.76
Summer	11951274.12	4909942.427	2.434096591	0.017729893	2142536.534	21760011.71	2142536.534	21760011.71
Action	-2229777.317	3987343.339	-0.559213774	0.577967561	-10195411.35	5735856.713	-10195411.35	5735856.713
Comedy	4734622.081	4507669.393	1.050348122	0.297508123	-4270482.736	13739726.9	-4270482.736	13739726.9
Drama	5286785.893	4364211.648	1.211395395	0.230197883	-3431729.133	14005300.92	-3431729.133	14005300.92
Docu.	0	0	65535	#NUM!	0	0	0	0
Romance	4076754.235	5098375.174	0.799618329	#NUM!	-6108421.038	14261929.51	-6108421.038	14261929.51
Family	26925724.55	9486905.956	2.838198742	0.006071839	7973451.194	45877997.9	7973451.194	45877997.9
PG	9195002.252	7362999.484	1.248812019	0.216282524	-5514280.162	23904284.67	-5514280.162	23904284.67
PG-13	24752413.94	8761514.249	2.825129679	0.006295947	7249277.106	42255550.77	7249277.106	42255550.77
R	23608710.98	9123518.734	2.587676056	0.011943116	5382387.051	41835034.9	5382387.051	41835034.9
Non-US	0	0	65535	#NUM!	0	0	0	0

- The R square value is **0.58765289**.
- The Adjusted R square value is **0.491049028**.

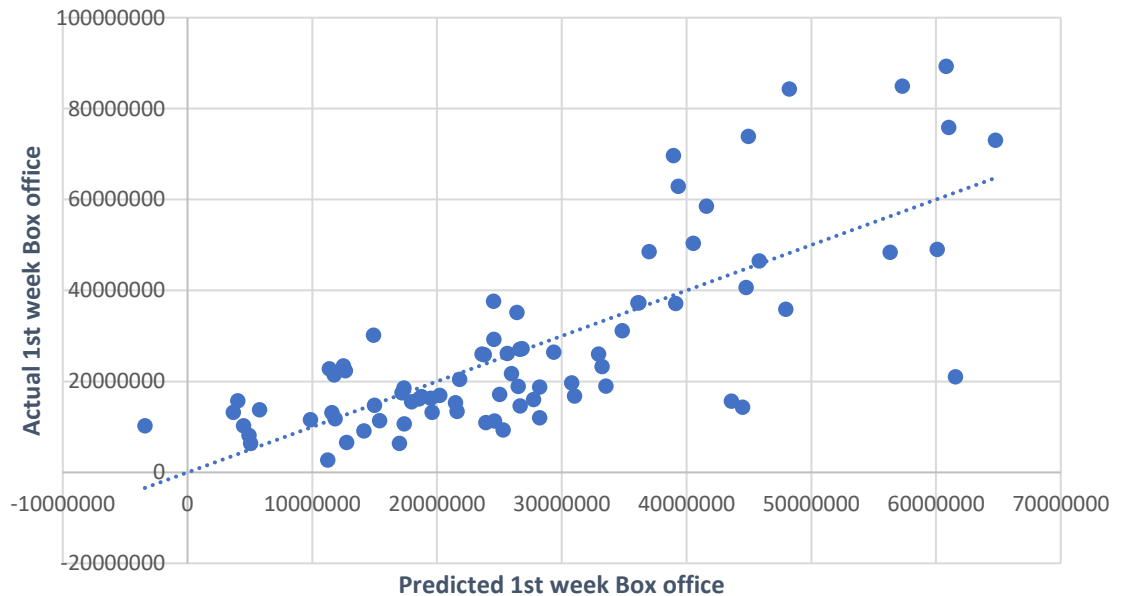
Plot predicted vs. actual box-office revenue For Movies with less than 2500 screens

Predicted vs Actual 1st week Box Office.



Plot predicted vs. actual box-office revenue For Movies with at least 2500 screens

Predicted vs Actual 1st week Box Office.



Forecasting Box Office of Avatar

Since Avatar was released on over 2,500 screens, we will apply the piecewise model for movies with at least 2,500 screens.

	<i>Coefficients</i>	<i>Value</i>	<i>Product</i>
No. Critics	160749.9506	525	\$ 8,43,93,724.08
1st wk screens	22544.40813	3452	\$ 7,78,23,296.88
Budget	0.026665692	\$ 23,70,00,000.00	\$ 63,19,768.92
Winter	3695177.524	1	\$ 36,95,177.52
Summer	11951274.12	0	\$ -
Action	-2229777.317	1	\$ -22,29,777.32
Comedy	4734622.081	0	\$ -
Drama	5286785.893	0	\$ -
Docu.	0	0	\$ -
Romance	4076754.235	0	\$ -
Family	26925724.55	0	\$ -
PG	9195002.252	0	\$ -
PG-13	24752413.94	1	\$ 2,47,52,413.94
R	23608710.98	0	\$ -
Non-US	0	0	\$ -
			\$ 19,47,54,604.03

The Predicted value of the Box office for Avatar is \$ 100,625,754.06.

Y	\$ 10,06,25,754.06
Alpha	-94128849.97

The actual value and the Residual

Predicted Box office for Avatar	\$ 10,06,25,754.06
Actual Office for Avatar	\$ 13,70,94,001.00
Error or residual	\$ 3,64,68,246.94