Wednesdays at Cinemex – Pricing Strategy for Cinemex

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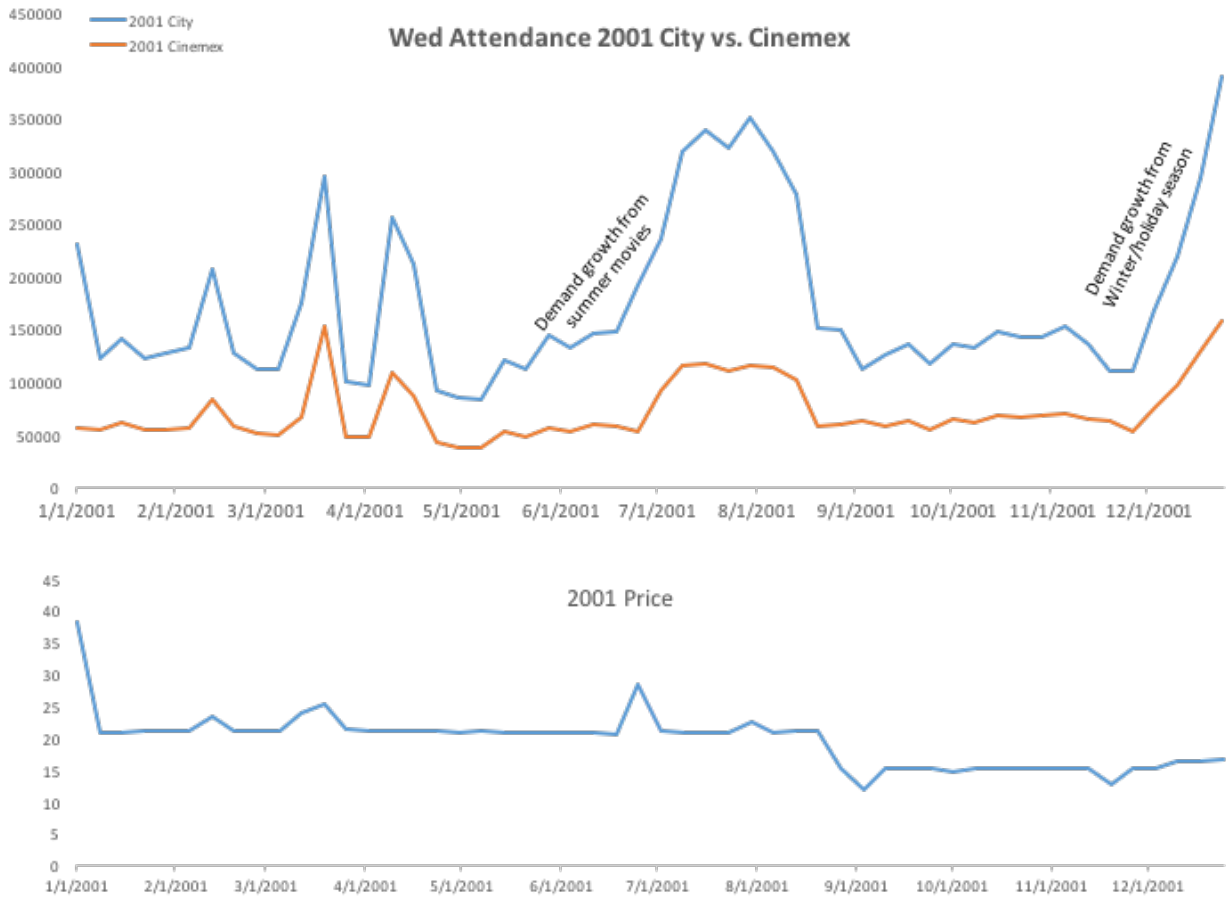
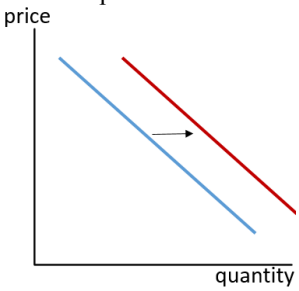
(a) Graph the time series of attendance and prices for each Wednesday in 2001. What factor do you think account for the week-on-week differences in attendance for Cinemex and the city as a whole? (Illustrate with a diagram and explain – in words – what the diagram represents.)

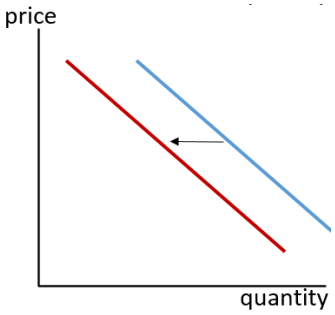


The variations in demand over 2001 are the result of different types of forces.

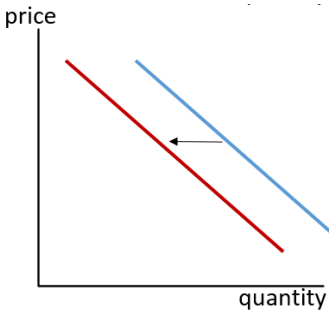
- Cyclical: Movies tend to release more often in the summer (7/1 – 9/1) and holiday seasons (12/1 - 1/1) so you see corresponding spikes in demand at these points



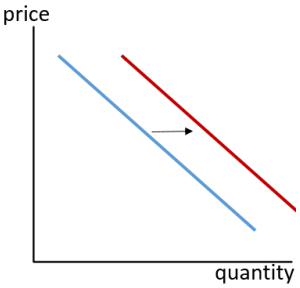
- Macroeconomics: Movies are a luxury product. So if the economy is doing poorly, consumer income will shrink and demand will shrink.



- Competitive forces
    - Substitutes: New forms of entertainment will cause demand to shrink (e.g. On-demand services for movie)

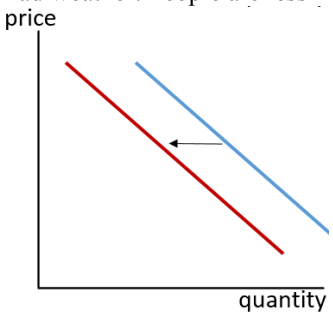


    - Complements: Increased interest in popular franchises will increase demand



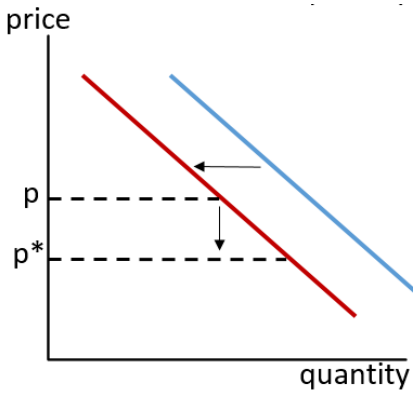
    - Advertising: Highly anticipated and and well hyped films as a result of quality marketing generates demand

- Others:
    - Bad weather: People are less likely to watch movies on rainy, snowy, foggy days



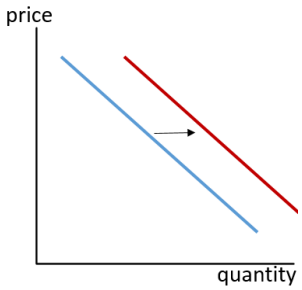
    - Timing of national holidays: Increase in attendance may result from a national holiday when people can spend more time on leisure

(b) In Spring 2001, Cinemex's main competitor introduced 2-for-1 pricing. Describe, in conceptual terms (and using a demand diagram), the effect this had on Cinemex's demand curve. In the same diagram show the effect of Cinemex's price response. Again, interpret your diagram in words.



Movie tickets sold by Cinemex and its competitors are substitutes. Therefore, the introduction of the 2-for-1 deal by competitors' shifts Cinemex's demand curve to the left and increases surplus, which exerts a downward pressure on price. Then, when Cinemex also institutes its own 2-for-1 pricing promotion, it effectively decreased its price and increased its quantity.

(c) How would you construct a counterfactual scenario for what would have happened had this 2-for-1 pricing by competitors had not occurred? Explain your answer in terms of the diagram you drew in the previous question.



If Cinemex's competitors never instituted 2-for-1 pricing, then this specific external pressure to shift the demand curve to the left would have not occurred. In the long run, Cinemex would be free to disrupt the Mexican movie theater industry and change consumer tastes to demand a higher quality movie going experience. Therefore, the demand curve will shift to the right.

This is demonstrated if you compare the time period in 2001 when there was no 2-for-1 pricing (weeks 1-13) to the same time period in 2000. Total annual growth in this period is 13%.

(d) Construct this counterfactual for attendance. Discuss how you isolate the effect of the competitor's price change from the effect of all the other things pushing demand around (The stuff you discussed in part (a)). Be clear about the extent to which you are able to do this. What, if any, are the limitations of your methodology?

First, we want to calculate the average annual growth rate of Cinemex from 2000 to 2001 from weeks 1-13 to predict what Cinemex's attendance would have been from weeks 14-34, if 2-for-1 pricing by competitor had not occurred.

	Wednesday Attendance			
	2000	2001	△ in Attendance	%△
week 1	45,169	55,499	10,330	22.87%
week 2	55,285	55,070	-215	-0.39%
week 3	58,226	61,707	3,481	5.98%
week 4	56,718	54,330	-2,388	-4.21%
week 5	56,842	55,037	-1,805	-3.18%
week 6	51,469	56,681	5,212	10.13%
week 7	52,497	83,893	31,396	59.81%
week 8	50,957	58,505	7,548	14.81%
week 9	58,376	50,909	-7,467	-12.79%
week 10	49,351	49,770	419	0.85%
week 11	48,328	65,487	17,159	35.51%
week 12	37,670	152,496	114,826	304.82%
week 13	43,506	46,954	3,448	7.93%
total/avg.			181,944	34.01%
adjusted total/avg.			67,118*	11.44%*

Our calculation suggests an average growth rate of 31.6% from weeks 1-13, however the 304.82% increase in attendance in week 12 needs to be dropped from the average calculation being the result of an external factor

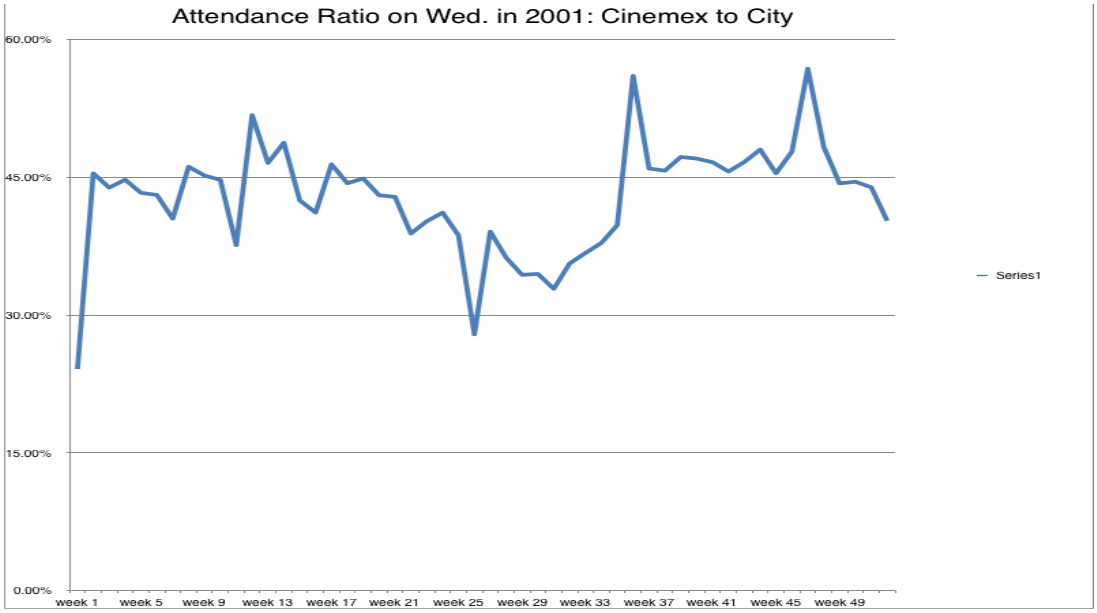
(according to the notes, week 12 in 2001 is a holiday). Excluding week 12 from the calculation, our adjusted average annual growth rate is 11.44%.

With this average annual growth rate, we can forecast Cinemex's attendance from weeks 14-34 if 2-for-1 pricing had not occurred. This is the estimated effect on attendance of the price change if 2-for-1 pricing never occurred:

	Wednesday Attendance	
	2000 (Actual)	2001 (Forecasted, g=11.44%)
week 14	52,233	58,210
week 15	51,641	57,550
week 16	107,387	119,674
week 17	75,704	84,366
week 18	40,236	44,840
week 19	65,757	73,281
week 20	49,669	55,352
week 21	47,324	52,739
week 22	56,907	63,418
week 23	47,267	52,675
week 24	52,974	59,035
week 25	78,559	87,548
week 26	77,746	86,642
week 27	76,582	85,345
week 28	111,878	124,679
week 29	113,380	126,353
week 30	104,875	116,875
week 31	107,222	119,491
week 32	97,482	108,636
week 33	98,213	109,451
week 34	50,968	56,800

The limitation of this methodology is that the estimation is based on the assumption that growth rate variation is negligible over the period where 2-for-1 pricing competition occurred (weeks 14-52).

(e) As an aside, people occasionally try to do this using market shares. Why might basing this analysis solely on market share data be problematic?



Using market share is problematic because it doesn't factor out the influences of external factors on the effect of the 2-for-1 competitor promotion.

Additionally, the market share that is calculated in the data is based exclusively on quantity (attendance) and does not consider the effect of price variation and therefore, it does not represent the true dollar value market share.

(f) Using your counterfactual from (d), quantify the impact of competitor's 2-for-1 pricing on Cinemex's Wednesday attendance? (That is, provide a number: e.g. the 2-for-1 pricing lead to attendance increasing, for a representative week, by 7,654,321 people or 53%.)

Since the competitors started its 2-for-1 pricing on week 14 and Cinemex on week 35, the impact must be calculated from weeks 14-34. Based on our forecasted and actual attendance for weeks 14-34 as calculated from (d), we can quantify the impact of competitor's 2-for-1 pricing on Cinemex's Wednesday attendance:

	Wednesday Attendance				
	2000 (Actual)	2001 (Forecasted)	2001 (Actual)	△ in Attendance	%△ in Attendance
week 14	52,233	58,210	47,119	-11,091	-19.1%
week 15	51,641	57,550	108,314	50,764	88.2%
week 16	107,387	119,674	86,866	-32,808	-27.4%
week 17	75,704	84,366	42,495	-41,871	-49.6%
week 18	40,236	44,840	37,939	-6,901	-15.4%
week 19	65,757	73,281	37,340	-35,941	-49.0%
week 20	49,669	55,352	52,006	-3,346	-6.0%
week 21	47,324	52,739	47,838	-4,901	-9.3%
week 22	56,907	63,418	55,825	-7,593	-12.0%
week 23	47,267	52,675	53,371	696	1.3%
week 24	52,974	59,035	59,804	769	1.3%
week 25	78,559	87,548	57,119	-30,429	-34.8%
week 26	77,746	86,642	53,189	-33,453	-38.6%
week 27	76,582	85,345	92,135	6,790	8.0%
week 28	111,878	124,679	115,121	-9,558	-7.7%
week 29	113,380	126,353	116,274	-10,079	-8.0%
week 30	104,875	116,875	111,012	-5,863	-5.0%
week 31	107,222	119,491	115,224	-4,267	-3.6%
week 32	97,482	108,636	113,276	4,640	4.3%
week 33	98,213	109,451	102,076	-7,375	-6.7%
week 34	50,968	56,800	57,370	570	1.0%
total/avg.				**-8,631**	**-8.96%**

Therefore, on any given week, the impact of competitor's 2-for-1 pricing on Cinemex's Wednesday attendance is an average weekly decrease in attendance of 8,631 people which equals an average weekly growth rate of -8.96%.

(g) Building on your approach from part (d), quantify the impact of Cinemex's own 2-for-1 deal on its Wednesday attendance. Discuss your methodology in terms of a demand diagram framework.

To quantify the impact of Cinemex's own 2-for-1 deal on its Wednesday attendance, we need to extract data from weeks 35-52, the period when Cinemex and competitor's 2-for-1 deal went into effect. Specifically, we need to compare Cinemex's 2001 forecasted Wednesday attendance *with no price change* against the net effect of Cinemex's 2-for-1 deal.

First, we take attendance from 2000 and forecast attendance for 2001 at an annual growth rate of g=11.44%, derived from (d). Then we apply the effect of the competitor's price change on Cinemex at g=-8.96%, to calculate 2001 forecasted attendance with competitor's price change. The net effect of Cinemex's 2-for-1 deal is calculated by subtracting 2001 actual attendance from 2001 forecasted attendance with competitor's price change. This is the increase in attendance when Cinemex implements the 2-for-1 deal.

	Attendance						
	Wendesday				Net effect of Cinemex's 2-for-1 deal		Cinemex's own 2-for-1 deal on its Wednesday attendance.
	2000 (Actual)	x = 2001 (Forecasted, no price change, g=11.44%)	y = 2001 (Forecasted, w/ competitor's price change, g=-8.96%)	z = 2001 (Actual)	△ Attendance (z - y)	△%	△%Attendance (z - y)/x
week 35	49,032	54,642	49,747	59,592	9,845	19.79%	18.02%
week 36	43,432	48,402	44,066	62,889	18,823	42.71%	38.89%
week 37	43,223	48,169	43,854	57,352	13,498	30.78%	28.02%
week 38	46,092	51,366	46,765	62,360	15,595	33.35%	30.36%
week 39	45,422	50,619	46,085	55,188	9,103	19.75%	17.98%
week 40	52,374	58,367	53,138	63,901	10,763	20.25%	18.44%
week 41	49,604	55,280	50,328	61,782	11,454	22.76%	20.72%
week 42	52,015	57,967	52,774	67,502	14,728	27.91%	25.41%
week 43	34,323	38,250	34,824	66,713	31,889	91.57%	83.37%
week 44	56,873	63,381	57,703	68,301	10,598	18.37%	16.72%
week 45	43,721	48,724	44,359	69,257	24,898	56.13%	51.10%
week 46	48,405	53,944	49,112	64,670	15,558	31.68%	28.84%
week 47	44,850	49,982	45,505	62,585	17,080	37.54%	34.17%
week 48	38,045	42,398	38,600	52,889	14,289	37.02%	33.70%
week 49	37,216	41,474	37,759	74,683	36,924	97.79%	89.03%
week 50	43,828	48,843	44,468	97,234	52,766	118.66%	108.03%
week 51	66,895	74,549	67,871	128,883	61,012	89.89%	81.84%
week 52	124,610	138,868	126,428	156,842	30,414	24.06%	21.90%
total/avg.	**919,960**	**1,025,225**	**933,385**	**1,332,623**	**22,180**	**45.56%**	**41.48%**

In terms of a demand diagram framework, this methodology relies on the concept, market demand = sum of individual demand.

(h) Extending the analysis from the previous question, provide an estimate of Cinemex's demand elasticity (with respect to its own price) for Wednesdays.

Demand Elasticity = $(\Delta q / \Delta p)*(p/q)$
The 2-for-1 pricing deal is effectively discounting the price of one movie ticket by 40%. Therefore, the percentage change in price is 100% and it is held constant. Q is the only changing variable.

	Attendance							
	Wendesday				Net effect of Cinemex's 2-for-1 deal		Cinemex's own 2-for-1 deal on its Wednesday attendance.	
	2000 (Actual)	x = 2001 (Forecasted, no price change, g=11.44%)	y = 2001 (Forecasted, w/ competitor's price change, g=-8.96%)	z = 2001 (Actual)	△ Attendance (z - y)	△%	△%Attendance (z - y)/x	ε=△%Q/△%P, where △%P=(2P-P)/P
week 35	49,032	54,642	49,747	59,592	9,845	19.79%	18.02%	0.1802
week 36	43,432	48,402	44,066	62,889	18,823	42.71%	38.89%	0.3889
week 37	43,223	48,169	43,854	57,352	13,498	30.78%	28.02%	0.2802
week 38	46,092	51,366	46,765	62,360	15,595	33.35%	30.36%	0.3036
week 39	45,422	50,619	46,085	55,188	9,103	19.75%	17.98%	0.1798
week 40	52,374	58,367	53,138	63,901	10,763	20.25%	18.44%	0.1844
week 41	49,604	55,280	50,328	61,782	11,454	22.76%	20.72%	0.2072
week 42	52,015	57,967	52,774	67,502	14,728	27.91%	25.41%	0.2541
week 43	34,323	38,250	34,824	66,713	31,889	91.57%	83.37%	0.8337
week 44	56,873	63,381	57,703	68,301	10,598	18.37%	16.72%	0.1672
week 45	43,721	48,724	44,359	69,257	24,898	56.13%	51.10%	0.5110
week 46	48,405	53,944	49,112	64,670	15,558	31.68%	28.84%	0.2884
week 47	44,850	49,982	45,505	62,585	17,080	37.54%	34.17%	0.3417
week 48	38,045	42,398	38,600	52,889	14,289	37.02%	33.70%	0.3370
week 49	37,216	41,474	37,759	74,683	36,924	97.79%	89.03%	0.8903
week 50	43,828	48,843	44,468	97,234	52,766	118.66%	108.03%	1.0800
week 51	66,895	74,549	67,871	128,883	61,012	89.89%	81.84%	0.8184
week 52	124,610	138,868	126,428	156,842	30,414	24.06%	21.90%	0.2190
total/avg.	**919,960**	**1,025,225**	**933,385**	**1,332,623**	**22,180**	**45.56%**	**41.48%**	**0.4147**

The demand elasticity for Wednesdays varies on a week to week basis, ranging from 0.1672 to 1.08. As highlighted, demand is more elastic during the holiday season in weeks 49-51 (ε=0.8184 to 1.08) but for any other week, demand elasticity ranges from 0.1672 to 0.3889. We will drop week 43 from our calculation because week 43 is likely to be the result of an exceptional circumstance (non-holiday week with relatively higher elasticity).

Estimated demand elasticity during holiday week:
(0.8903+1.08+0.8184)/3 = 0.9056

Estimated demand elasticity during non-holiday week:
(0.1802+0.3889+0.2802+0.3036+0.1798+0.1844+0.2072+0.2541+0.1672+0.5110+0.2884+0.3417+0.3370+0.2190)/14 = 0.2775

Therefore, we estimate ε=0.2745 for any given non-holiday week, and ε=0.9056 for any given holiday week.

(i) No model is ever perfect. Discuss what the shortcomings of your analysis are likely to be. If you could, what extra data might you want to collect? Do you think your estimate is likely too low or too high (or is it hard to tell)? Why?

- Since the data we have on market share is based on attendance and not on revenue, we are unsure about Cinemex's profitability after the 2-for-1promotion.
- As we only have access to Cinemex's 2000 income statement, we are assuming that screen advertising, copyright tax, as well as concession per person rates remain constant in 2001.
- We assume in (e) that the external factors that impact attendance variation, including weather and popularity of releases before and after the 2-for-1 pricing are the same.
- We assume the counterfactual information in 2000 is constant in 2001.
- Additional data to collect:
    - Extra costs and profits from concessions in 2001, including expenses such as film rental, cost of facilities, payroll, and the cost of goods sold at concessions
    - Attendance data for Cinemex preceding year 2000 (year 1997, 1998, 1999) to get a better estimation of the annual growth rate

(j) Bottom line: Was Heyman right to match the 2-for-1 pricing? Discuss.

In order to determine whether Heyman made the right choice in instituting 2-for-1 pricing, we have to consider the difference in revenue between the scenario where Heyman didn' institute the 2-for-1 and what actually happened. Irst, we must figure out how many attendees Cinemex would have had if they never instituted a price deal. In order to do so, we sum the total attendees from all Wednesdays in 2001 that Cinemex did not institute 2-for-1 (weeks 1-34). Then, in order to calculate what had happened between weeks 35-52 if Cinemex did not institute the 2-for-1 pricing, we must extrapolate the 11% organic growth rate onto 2000 weekly attendance and factor in the -8.96% negative impact on attendance from the competitor's 2-for-1 promotion. This gives us a total of 3,501,467 attendees for all Wednesdays in 2001 (assuming no Cinemex's 2-for-1 pricing). Now we subtract all of the actual Wednesday attendees from total attendees and add back the hypothetical Wednesdays to get the total number of attendees in 2001, assuming Heyman did not match the 2-for-1 pricing (23,718,867). With the quantities determined, we can calculate revenues:

	2001 Actual	**2001 Without 2-for-1**
Net Box Office	651,617,647.83	604,831,099.57
Concessions	334,454,713.04	331,115,378.43

Other Operating Revenue	5,749,937.76	5,692,528.00
Screen advertising (assume the same)	79,810,789.00	79,870,789.00
Total Net Revenue	1,071,633,087.63	1,021,509,794.99

In conclusion, Heyman was correct in instituting the 2-for-1 pricing because it saved him 50,124,292.63 pesos in 2001.