

What is a sales compensation plan?

A sales compensation plan turns credited results into pay: salary, commission, bonus at quota, caps and period. Its shape also decides when effort pays.

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Management summary A sales compensation plan is the rule that sets a salesperson's pay for a period and how much of it depends on credited results: fixed salary, commission, bonuses at quotas, limits such as ceilings, the period, and the rule that sets the next quota. This concept guide separates the plan from the incentive and from the quota, reports what agency theory says about the split between salary and commission, explains why quotas, bonuses and caps change when effort pays, and sets two field studies side by side whose verdicts on quotas differ, which the second study's authors trace to the two plans' ceilings and quota updates. It ends with a one-page record for writing a plan down with the behaviour it may invite.

Contents	§ 1	What is a sales compensation plan?	2
	§ 2	How common are salary, commission and quota plans?	3
	§ 3	Is a compensation plan the same as a sales incentive?	3
	§ 4	How much of the pay should be variable?	3
	§ 5	Why do quotas, bonuses and caps change behaviour?	4
	§ 6	What did the field studies find?	5
	Figure 1	Simulated revenue under eight alternatives to one firm's plan	7
	Figure 2	What each plan feature does, and what to watch for	9
	§ 7	How do you write a compensation plan down?	11
	Figure 3	A compensation plan record	11
	§ 8	Where does the evidence on sales compensation plans stop?	12
		References	13

What is a sales compensation plan?

§ 1 of 8

A sales compensation plan is the rule that sets a salesperson's pay for a period and how much of it depends on credited results. Chung et al. (2014)² list the parts a plan can have: "A compensation plan can consist of many components: salary, commissions, and bonuses on achieving a certain threshold of performance called quotas." Basu et al. (1985)¹ sort plans by what pay depends on, starting with "(I) Compensation plans which are independent (at least in the short term) of the salesperson's performance (e.g., straight salary)" and "(II) Compensation plans based at least in part on one's own output (commissions, bonus, or any combination of the above with or without salary)."

¹ Basu, A. K., Lal, R., Srinivasan, V., & Staelin, R. (1985). Salesforce compensation plans: An agency theoretic perspective. *Marketing Science*, 4(4), 267-291.

² Chung, D. J., Steenburgh, T., & Sudhir, K. (2014). Do bonuses enhance sales productivity? A dynamic structural analysis of bonus-based compensation plans. *Marketing Science*, 33(2), 165-187.

In this guide a plan is written as six fields: the fixed pay; the credited measure and the rate paid on it; the thresholds (quotas) and what reaching them pays; the limits, such as a ceiling on commission; the period over which results are counted; and the rule that sets the next period's threshold. Leave one out and two plans that look alike on paper can pay for different behaviour.

Which results count, for whom, and how a missed quota should be read are separate questions. The [essay on compensation and coverage](#) treats credit, eligibility and the diagnosis of a miss. Its plan fields (object, eligibility, credit, timing and review) decide which results count and for whom; the six fields here decide how counted results become pay. This page treats the structure of pay and the evidence on how that structure changes effort.

How common are salary, commission and quota plans? § 2 of 8

In the older figures these papers cite, few salesforces were paid by salary alone or by commission alone. Basu et al. (1985)¹, drawing on a 1982 Conference Board report by Peck, report that approximately 18% of salesforces were paid straight salary, 9% straight commission and the remaining 73% a combination of base salary and incentive pay. Chung et al. (2014)², citing a 1998 article by Joseph and Kalwani, write that “only about 24% of firms use a pure commission-based plan; the rest used some form of quotas.” Misra and Nair (2011)⁴ describe what practice looks like: “Actual schemes in practice tend to be discrete and kinked, featuring quotas, bonuses and ceilings.” These shares are secondary reports from 1982 and 1998, and the underlying studies are not held here; they are not a current benchmark.

⁴ Misra, S., & Nair, H. S. (2011). A structural model of sales-force compensation dynamics: Estimation and field implementation. *Quantitative Marketing and Economics*, 9, 211-257.

Is a compensation plan the same as a sales incentive? § 3 of 8

No: the incentive is what the plan makes worth doing, and the plan is the whole rule that creates it. Basu et al.¹'s first category, pay independent of performance “at least in the short term”, carries no short-term incentive, yet it is a plan. Parts that pay nothing directly still shape the incentive: the period decides when it bites, and a rule that sets the next quota from this period's own result adds an incentive of its own, to hold back, as the sections below show.

Two neighbours sit close to the plan. A quota is one input to it; how a quota is built from capacity is the subject of the [quota-setting guide](#). And a plan is one part of salesforce control, beside supervision, training and review, which the [essay on control blends](#) sets out.

How much of the pay should be variable? § 4 of 8

Agency theory says it depends on uncertainty, risk and the salesperson's alternatives. Basu et al.¹ (1985) model a firm that sets pay for a salesperson whose effort it cannot see and whose sales also depend on luck. Among their implications: “increases in uncertainty should be accompanied by increased salaries and decreased commission rates”, and “Improvements in operating costs should be accompanied by higher commission rates and lower salaries”.

Lal and Srinivasan (1993)³ extend the model to a salesperson who adjusts effort many times within the period. In their analysis the commission share of pay rises with the effectiveness of sales effort and with base sales, while the salary share rises with uncertainty, risk aversion, marginal production cost, the cost of effort and better outside job offers. They report that earlier empirical studies support these directions.

³ Lal, R., & Srinivasan, V. (1993). Compensation plans for single- and multi-product salesforces: An application of the Holmstrom-Milgrom model. *Management Science*, 39(7), 777-793.

Both papers say what their answers rest on. Lal and Srinivasan³ name the “key assumptions that drive our results”: exponential utility, a sales response that does not change over time, and normally distributed sales. Basu et al.¹ write that studying one salesperson and one product “could have affected the analysis presented earlier in a significant way”, point to work in which richer settings give similar plans that also reward relative performance, and add that the assumptions behind the comparative statics, the results reported above, are “even more numerous and potentially more limiting”. They call for empirical tests, and note that the guidance before them, on how much of the pay to make variable, rested on common sense rather than tests.

The two field studies below estimated the risk aversion these models turn on, and disagree: Misra and Nair⁴ found it “significantly different from zero” for 81 of their 87 salespeople, while Chung et al.² report that “The risk-aversion coefficients for all segments are insignificant”.

Why do quotas, bonuses and caps change behaviour?

§ 5 of 8

Because they make the value of the next hour of effort depend on where the salesperson stands in the period. Lal and Srinivasan (1993)³ note that salespeople with an unusually good start may ease off, and those with a poor start may push late, when a plan’s rates change with sales; in their model a plan that is linear in total sales over the period avoids this, because it “induces the salesperson to put in a steady effort-rate”.

The linear result is not the whole of the theory. In Basu et al. (1985)¹ the optimal plan is convex or concave in sales, depending on how the salesperson’s risk tolerance changes with income, and Lal and Srinivasan³ themselves caution that their linearity result may not hold where constant absolute risk aversion is not a fair assumption, as in

selling industrial systems. Chung et al. (2014)² describe “considerable controversy in both the theoretical and empirical literatures” about quotas and bonuses against straight linear commission.

Misra and Nair (2011)⁴ name two mechanisms. A salesperson who has made quota “may have a perverse incentive to postpone additional effort to the future”, where it counts towards the next quota; and “ceilings have the obvious disadvantage of destroying the desirable convexity of the plan”. In their data they found “evidence for shirking by agents in the early part of the compensation cycle”.

Misra and Nair⁴ also record why the firm used quotas and the ceiling, and what ratcheting is for in general: quotas and commissions were meant to give strong incentives “for exerting effort in the absence of perfect monitoring”; the ceiling was a hedge against paying for “sales that were unrelated to effort”; and ratcheting, which raises the next quota on the agent’s own results, “can help the firm fine-tune quotas to the agent’s true productivity or territory potential”. Before estimating anything, they treated the net effect of dropping quotas or ceilings as an open, empirical question.

The timing effect also shows up in aggregate data. Oyer (1998)⁵, working with the quarterly revenues of 981 manufacturers over their 1985 to 1993 fiscal years, argues that nonlinear pay gives salespeople and executives an “incentive to manipulate prices, influence the timing of customer purchases, and vary effort over their firms’ fiscal years”, and bounds his own result: the evidence on the link between incentive contracts and fiscal-year effects is, in his word, circumstantial.

⁵ Oyer, P. (1998). Fiscal year ends and nonlinear incentive contracts: The effect on business seasonality. *The Quarterly Journal of Economics*, 113(1), 149-185.

What did the field studies find?

§ 6 of 8

At the contact lens firm, dropping the quotas and the ceiling and paying monthly was followed by about 9% more revenue in two quarters; at the office products firm, a model of the existing plan credits its bonuses and overachievement pay with higher revenue. Misra and Nair (2011)⁴ studied “the sales-force contracts of a Fortune 500 contact lens manufacturer”, using “monthly sales at the client-level for each of these sales-agents for a period of about 3 years (38 months)”. The plan paid a salary plus commission on sales above a quarterly quota and below a ceiling, and “the quota may be updated at end of every quarter depending on the agent’s performance”.

On the model's advice the firm changed the plan from 1 January 2009: "This plan featured no quotas or ceilings, and a monthly incentive based on a straight commission on sales." The firm ruled out individual plans for fear of "a sense of inequity and discontent amongst salespeople", and "simple plans were valued more, as salespeople were clear about their dislike for complexity in compensation".

The authors report that "The new plan resulted in a 9% improvement in overall revenues, which translates to about \$12 million incremental revenues annually". The comparison is before and after, using "data from the first two quarters of the 2009 calendar year", and the authors write that the figures "may be viewed conservatively as a lower bound on the effect of the new plan due to the recession in 2009–2010". There was no control group. The model had predicted a little less: "revenues would increase by about 8.2%, and profits, measured as revenues minus compensation payouts, would increase by about 5.1%". Afterwards, the authors report that "numbers we have obtained from the firm suggest that overall profitability after the implementation of the plan has increased by over 6%", a figure they call "trickier to nail down" than revenue.

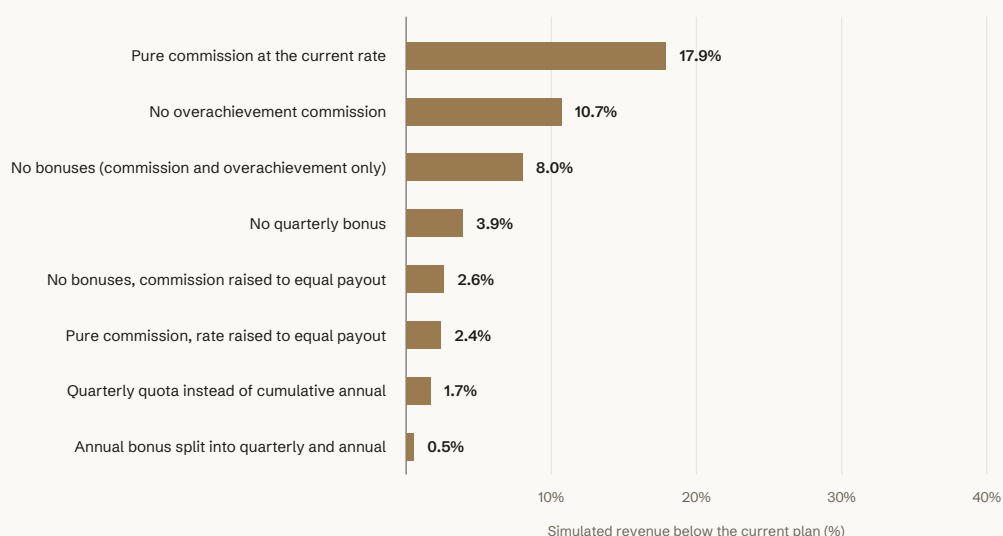
Chung et al. (2014)² studied a firm that "sells durable office products primarily using its own direct sales force", with "sales performance data from 348 salespeople from the regular sales force during the three-year period 1999–2001". Its plan paid "a fixed monthly salary (on average, \$3,585) and a commission of 1.5% of the revenues generated in that month", quarterly and annual bonuses at quota, and "an overachievement commission of 3% is paid for any excess revenues beyond the annual quota. There are no caps on revenues" (the paper gives these rates as approximate, for confidentiality). To avoid ratcheting, "the quota adjustment year after year was done based only on group performance".

Their model finds that "(1) bonuses enhance productivity across all segments; (2) overachievement commissions help sustain the high productivity of the best performers, even after attaining quotas; and (3) quarterly bonuses help improve performance of the weak performers by serving as pacers". In their simulations, "the revenues are about 17.9% greater with the current compensation plan compared with a pure commission plan" at the same rate, and still 2.4% greater when the commission rate is raised so that total pay is the same. "When overachievement commissions are eliminated, not surprisingly, overall revenues drop by 10.7%." The authors add that dropping it lowers profit as well: "Even accounting for the additional commission costs, profits

are lower by about 2% (assuming a gross margin of 33%).” It is the only profit figure among their simulations.

Figure 1 Simulated revenue under eight alternatives to one firm's plan

Taking away the bonuses and overachievement pay cost most in simulated revenue. Raising the base commission to keep total pay equal recovered most of the gap.



Each bar is a separate simulated alternative to the firm's plan, not one part's share: the first removes both bonuses and the overachievement commission, two raise the base rate so that total pay stays equal, and the bars do not add up. Table 9 gives each value as the change in revenue from the current plan; for the quota bar, the authors' text puts the cumulative annual quota's effect at 1.3%, measured with the overachievement commission removed in both runs. Values are model outputs for one firm, not effects to expect elsewhere.

Source Chung, Steenburgh and Sudhir (2014), Table 9, p. 182, read from the page image: counterfactual simulations from a dynamic structural model of 348 salespeople at one Fortune 500 durable office products firm, 1999 to 2001; 25 representative agents per segment, 1,000 simulation paths each, weighted by estimated segment size. Simulated changes, not observed ones.

These are simulations, not field changes: the authors “randomly chose 25 representative sales agents from each segment (a total of 75 salespeople) and simulated 1,000 simulation paths” for each plan. They set their result beside Misra and Nair’s⁴ directly. Of the earlier study they write, “They conclude that quotas reduce performance”; of their own, that “quotas coupled with bonuses enhance performance”; and “Thus, these two papers offer complementary perspectives that enhance our understanding of how quotas impact performance.”

They also explain the difference. Of Misra and Nair's⁴ result they write, "This is because of two characteristics of their quotas", the ceiling and an "explicit policy of ratcheting quotas based on past productivity"; their own firm "offers extra overachievement commissions for exceeding quotas and uses a group quota updating procedure that minimizes ratcheting effects". Misra and Nair's result cannot separate the parts, because the new plan dropped the quotas, the ceiling and the quarterly cycle at once. So the view that plan features, not quotas as such, explain the split is the second study's authors' interpretation, and two firms cannot settle it.

Figure 2 What each plan feature does, and what to watch for

Each feature changes when effort pays. The evidence for each comes from a model, from one firm or from one study of manufacturers' revenues, and says so.

Feature	What it does	Evidence	Watch for
Salary share	Pays regardless of the period's results	Agency models: a larger salary share where sales are more uncertain (Basu et al.; Lal and Srinivasan)	Weak pull towards selling effort
Commission linear in sales	Pays the same rate on every credited unit	Lal and Srinivasan: steady effort under their model's assumptions, which they warn may fail in industrial selling; in Basu et al. the optimum is convex or concave instead	Rate set on the wrong measure, such as revenue where margin matters
Quota with bonus	Pays a lump sum at a threshold	Chung et al.: in their model, bonuses raised productivity in every segment at one firm	Easing off once the bonus is safe or out of reach
Overachievement commission	Pays a higher rate above quota	Chung et al.: without it, simulated revenue 10.7% lower, most for the best performers, and profit about 2% lower at an assumed 33% margin	Cost of the extra rate against the extra revenue

Feature	What it does	Evidence	Watch for
Commission ceiling	Stops paying above a cap	Misra and Nair: less reason for effort at high output; after the cap was dropped, sales exceeded the old caps	Top performers holding orders for the next period
Quota raised on own results (ratcheting)	Ties next period's quota to this period's result	Misra and Nair: current effort changes future quotas, which can lead agents to shade effort; Chung et al.'s firm updated quotas on group results to avoid it	Holding back to keep the next quota low
Period length	Sets when results reset	Oyer: fiscal-year timing of manufacturers' sales; Misra and Nair: once quotas were dropped and pay became monthly, sales no longer differed significantly across the months of the quarter	Orders pulled into or pushed out of the period

A plan is a combination of these rows. The last column is what a review of the plan should look for in the data.

Source Author's summary of Basu, Lal, Srinivasan and Staelin (1985), pp. 267, 269, 286; Lal and Srinivasan (1993), pp. 777-778, 783; Oyer (1998), pp. 149, 160; Misra and Nair (2011), pp. 213-216, 218; Chung, Steenburgh and Sudhir (2014), pp. 165, 167, 169, 182-183. Each row names the study that reports the effect; no row is a general rule.

How do you write a compensation plan down?

§ 7 of 8

As one record per role that states the credited measure, the fixed and variable pay, the thresholds and payouts, the limits, the period and update rule, and the behaviour the plan may invite with the check that would show it. Misra and Nair (2011)⁴ describe one step in the firm's transition to the new plan: "detailed worksheets were provided which showed the compensation the agents would receive under the new plan at various points of performance".

Figure 3 A compensation plan record

Write the role and credited measure, fixed and variable pay, thresholds and payouts with their period, limits and update rule, and the behaviour to watch in five columns.

Role and credited measure	Fixed and variable	Thresholds and payouts	Limits and update rule	Behaviour to watch
Which role, paid on which measure (revenue, margin, units), credited when?	What are the salary and the rate, and what variable share is expected at quota?	Which quotas, over which period, pay which bonus or higher rate when reached?	Ceiling or floor? Is the next quota set on own results, group results or capacity?	Which timing or effort pattern could this plan invite, and which data would show it?

A plan whose update rule is unwritten has an update rule anyway. Write it down before the first quota is reset.

One row per role and period. If the behaviour field is empty, the review has no test to run when results come in.

Source Author's decision worksheet. The fields follow the plan components in Chung, Steenburgh and Sudhir (2014), p. 165; the limits and update-rule field follows Misra and Nair (2011), pp. 212-214, 218; the behaviour field follows the effort-timing mechanisms in Lal and Srinivasan (1993), p. 778, and Misra and Nair (2011), p. 215. The fields are reader inputs; no company data is supplied.

The behaviour field has no counterpart in the pay calculation, which makes it the easiest to leave empty. For a plan with quarterly quotas, the check can be as plain as sales by month of quarter, before and after a change: Misra and Nair⁴ read early-quarter slack from that pattern only because demand for their product had little or no seasonality, so a seasonal business has to take its seasonal pattern out

first. For a plan with an overachievement rate, it is bookings late in the year among those already above quota, the group for which Chung et al.²'s model found it mattered most. Sales data show when results arrive, not which effort produced them: Chung et al. note that a shift between early-stage and closing work “cannot be identified merely from sales data”.

Where does the evidence on sales compensation plans stop?

§ 8 of 8

At two models, two firms and one study of manufacturers' revenues. Basu et al. (1985)¹ and Lal and Srinivasan (1993)³ are analytical models with one salesperson and stylised risk preferences. Misra and Nair (2011)⁴ measured one plan change in the US salesforce of one contact lens manufacturer over two quarters, against the year before. Chung et al. (2014)² simulated changes at one office products firm with data from 1999 to 2001, and name their own limits: “compensation contracts can serve to select the right type of salespeople. We do not address selection issues.” Oyer (1998)⁵ reads fiscal-year patterns in the revenues of 981 manufacturers from 1985 to 1993 and calls the link to incentive pay circumstantial. None of the cited evidence covers B2B software, subscription revenue or German co-determination; carrying its results there is the reader's judgment, not the studies'.

 End of essay

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