Online Appendix

Appendix A: Firm Setting and Compensation Changes

Approximately 600–850 agents were employed at a given point in time during the sample period.

A.1. Firm Setting

The firm contracts directly with national television, phone, and internet providers to market and sell their products. Prospective customers respond to the firm's marketing promotions by calling an 800-number that corresponds to a particular service provider's products. The sales agents respond to these inquiries and, when appropriate, try to upsell customers on high profit margin products (e.g., larger bundles of TV channels or faster internet speeds).

Agents in Division 1, for instance, handle calls from residential customers, inquiring about products from a particular service provider. Agents in the control divisions respond to residential inquiries about products from different, albeit similar, service providers. Agents in Division 2 respond to inquiries from small businesses, but the products offered resemble those of the other divisions. To accommodate the lucrative opportunities of interacting with small businesses, the firm reserves space in Division 2 for its most productive and experienced agents. Inbound calls are routed to a particular division based on the phone number dialed by the prospective customer. Within a division, calls are allocated to the next available agent in the queue (i.e., based on who been waiting the longest). This means sales opportunities are allocated to agents randomly. The firm is almost exclusively an *inbound* call center, meaning that agents answer calls from interested customers. Less than 3% of calls are outbound—most of which are agents following up on earlier inbound calls (e.g., returning a dropped call).

Agents rely on designated sales protocols and their understanding of the caller's needs to sell the products. Success depends on an agent's understanding of the products, his or her ability to master the sales protocol, and his or her ability to upsell customers onto high profit margin products. In most cases, the highest margins are earned on the most expensive products (e.g., a satellite subscription with all possible channels) or bundles of products (e.g., a service contract covering internet, telephone, and television), which are more difficult to sell. Agents generally earn more in commissions for selling high profit margin products than they do for selling low profit margin products. Agents spend about 80% of their workday either on calls or waiting for another call to arrive, and they have little scope to change the number of calls they receive.

All the agents in our sample have an employment contract requiring their presence during scheduled hours. Approximately 85% of the agents work at least 30 hours a week, and they have limited scope to adjust their hours.

A.2. Agent Compensation

Agent pay is made up of a fixed hourly wage, commissions, and occasional small bonuses. Agents start at an hourly wage of approximately 150% of minimum wage and receive small raises for every three months of tenure. Hourly wage rates are capped at approximately 200% of the minimum wage. Agents who stay with the company beyond a waiting period are eligible for health benefits. In addition to fixed wages, commissions are a significant part of an agent's total compensation. During the eight weeks before the compensation changes occurred, the average Division 1 agent earned $318 per week in commissions, and the average control division agent earned $201.

A.3. Changes to the Commission Schedule

Table A.10 provides a more detailed example of the commission schedule changes for a set of products that can either be sold individually, in a bundle of two products, or in a bundle of three products. The example suggests that an agent's revenue would drop from $375 to $315 if the agent was unable to sell a greater proportion of higher quality internet packages.

Based on the productivity data provided by the firm, we estimated that the commission schedule changes would reduce the commission pay of the average Division 1 agent by 18%, holding fixed the pre-treatment period mix of products sold. When we compare average commission levels in the pre-territory shock period ($318.39 from Weeks -8 to 0) to those in the post-treatment period ($249.71 after Week 0), the implementation of the new commission schedule led to a 21.5% decrease in commission pay for the average Division 1 agent.

Appendix B: Empirical Details

Our immediate sample includes proxies of worker effort—e.g., adherence, conversion rate, phone hours, revenue generated per call, total revenue generated per week—demographic details—e.g., age, race, tenure, gender, marital status—and commission pay data. Adherence equals the fraction of time an agent is available to answer calls over the total time an agent is scheduled to be available; conversion rate equals the ratio of calls received where a sale is made to total calls received; and phone hours equals the number of hours in a week an agent spends talking to a customer.

To estimate turnover responses, we extend our data. This extended data has limited performance data on sales revenue, but it does contain commissions, allowing us to identify and control for seasonal (year-to-year) patterns in compensation and attrition. We use this extended dataset, called the extended sample, for our turnover analysis.

B.1. Estimating Baseline Agent Productivity

We estimate productivity by using a fixed effects regression analysis of log commissions, which is an omnibus measure of sales productivity that is available in both the immediate sample and the extended sample. We calculate an agent's adjusted worker fixed effect using a regression of log commissions on the worker's tenure profile, division-by-week fixed effects, and agent fixed effects. We use data leading up to four weeks before the changes. Log commissions are used, rather than commissions-per-call/hour, revenue-per-call/hour, or log revenue, because we do not have data on the number of calls received, the number of hours worked, or the revenue generated in the extended sample for 2015. In addition, accounting for the tenure profile makes this measure one about underlying talent, rather than productivity improvements that may come from learning or on-the-job experience. We include agent tenure in the main specification because those with higher productivity are less likely to leave the firm and may have greater tenure. To minimize the impact of measurement and sampling error, we adjust the raw worker fixed effects, according to best practices in the literature. The adjusted worker fixed effects are interpretable up to a division-level average that is removed through the division-by-week fixed effects. To account for sampling variation in the estimated fixed effects, we run the main regression and collect the residuals plus the estimated worker fixed effects. We then follow the procedure of Lazear et al. (2015) and fit a restricted maximum likelihood random effects estimator

and recover each worker's expected best linear unbiased predictor of their latent fixed effect. The estimator resembles an empirical Bayes procedure, where noisier sequences of data on individual workers receive less weight; less noisy data moves the estimated fixed effect away from 0 (a normalization). We call the resulting output the adjusted worker fixed effects. The adjusted worker fixed effects guard against mean reversion or classification being driven by sampling error from a short panel. We use the resulting adjusted worker fixed effects as a measure of agents' baseline productivity, allowing us to identify high and low performers in each division before the commission schedule changes occurred in Division 1.

B.2. Test of Heterogeneous Commission Change Exposure by Agent Productivity

To test whether agents with different fixed effects were more or less affected by the commission change, we calculate the expected percentage change in commissions based on the sales mix in the pre-treatment period. The variable *Predicted Pct* Δ *Commission Post-Treatment* in Table A.1 reports this measure. The predicted percentage change in commissions, due to the pre-treatment period sales mix, is 17%–18% across all tercile groups of workers. Although the top tercile of workers has average weekly commissions that are more than 2.5 times greater than the bottom tercile, the product mix of sales does not impact percentage changes in commissions significantly more for any one group based on pre-treatment sales behavior. Put differently, the commission schedule changes affected the expected percentage change in commissions equally across all terciles of agents in Division 1.

B.3. Surveys of Sentiment and Reactions to the Changes

We conducted a firm-wide survey before the announcement of the changes to gather information regarding agents' sentiment toward the firm. We asked sales agents from all divisions the following three questions: (1) "How likely are you to agree with the following statement, [the firm's] policies, for example on adherence, compensation, and promotion, are justified and fair?" (2) "Suppose your friend is looking for a job, how likely are you to recommend them to apply at [the firm]?" (3) "Do you think you will be promoted in the future?" The possible answers to these questions are as follows: (1) Unit increment slider from 0 (Strongly Disagree) to 100 (Strongly Agree). (2) Unit increment slider from 0 (Not Likely) to 100 (Very Likely). (3) "Yes, within 0–3 months," "Yes, within 3–6 months," "Yes, within 6–12 months," "Yes, in over 12 months," "I don't want a promotion," and "No, promotion is not likely."

In addition, we conducted a follow-up survey among agents in Division 1 after the announcement of the changes and before these agents received their first paycheck reflecting the new commission schedule. In this survey, we again asked the three sentiment questions (which are discussed in detail in Section 5.4), and we also asked agents several questions related to the effects of and motivation for the commission schedule changes. The first prompt of both surveys told respondents "This project was specifically outsourced to increase privacy, so you can answer these questions truthfully." We believe agents responded truthfully to the survey questions, though we can never be sure how agents will interpret this statement.

In the follow-up survey we asked:

"By how much will the changes affect your commission pay (assuming you work just as many hours and just as hard as before)?" Agents responded using a slider from -50% to 50%, indicating a 50% decrease to 50% increase.

"How would your level of effort have to change in order to maintain your usual commission pay?" Agents responded using a slider from -20% to 20%, indicating a 20% decrease to 20% increase in effort exertion.

"How will the revenue change affect your choice of effort relative to before the change?" Agents responded using a slider from -20% to 20%, indicating a 20% decrease to 20% increase in effort exertion.

B.4. The Firm-Level Effects of the Compensation Changes

Because the loss of high performers occurred with a significant lag, as shown in Figures 4b and 6, the short-term return to the firm was positive, due to the compensation savings, negligible short-run workforce changes, and minimal overall effort change. We attempt to quantify the inflection point when the unit profit change to the firm, on a per-call (or per-transaction) basis, might turn negative, due to changes in workforce composition.

We calculate the unit profit change to the firm by combining changes in revenue-per-call and commission-per-call. We calculate these changes in revenues and costs using several estimated statistics while making several plausible assumptions. All that is required for this calculation is a measure of the agent's average RPC in the pre-treatment period, adjusted worker fixed effects, and an estimate of the change in the turnover probability as a function of adjusted worker fixed effects. We make five further simplifying assumptions. First, as supported by the lack of empirical evidence of changes in worker effort and revenue generation, we assume these effects are zero. Put simply, we assume the brands' actual payments to the firm remained fixed. Second, we assume that calls are re-routed to an average agent (based on the pre-treatment sales distribution) in the face of turnover. (This is a conservative assumption. New workers who join are likely to have expected sales that are below the average sales of the cross-section of agents.) Third, we assume that the per-call commission expense (CPC) for replaced agents reflects the median agent's commissions, which yields slightly greater cost savings compared to using the average. Fourth, we assume replacement agents earn hourly wages that are \$1.00 lower than departing agents; at two calls per hour, this translates into a per-call savings of about \$0.50. Fifth, to match the timing of turnover empirically, we assume that week-to-week turnover differences begin to accumulate with a five-week lag after the implementation of the commission schedule changes.

Using these assumptions, we first calculate the change in per-call revenue to the firm t weeks after the compensation adjustment as:

$$\overline{\Delta RPC_t} = \frac{1}{N}\sum_i \left[(RPC_i^{Pre} - \overline{RPC^{Pre}}) \times [(1-\tau_i^{Pre})^t - (1-\tau_i^{Post})^t]\right], \tag{5}$$

where τ_i^{Pre} is the per-week turnover probability for each agent prior to the changes and τ_i^{Post} is the per-week turnover probability for each agent after the changes, which is estimated from agent productivity and the parameter δ_2 in Equation (2). The expression $[(1-\tau_i^{Pre})^t - (1-\tau_i^{Post})^t]$ captures the change in the probability of retaining worker i through week t as a result of the compensation changes. The expression inside the summation operator captures the change in average revenue-per-call as the product of agent i's baseline RPC, relative to the mean RPC, multiplied by the change in retention probability through week t for that agent.

Second, we calculate the change in commission-per-call and the fixed-wage bill using a similar expression, shown below. These calculations reflect the baseline cost savings, absent agent turnover, where ΔCPC_i is the change in commission-per-call as a result of the compensation changes for each agent. We take $\overline{\Delta CPC}$ as the average change in commission-per-call in the absence of turnover and then adjust the compensation savings due to agent composition as follows:

$$\overline{\Delta CostPerCall_t} = \overline{\Delta CPC} + \frac{1}{N}\sum_i \left[(\Delta CPC_i - \Delta CPC_{Med.} - 0.5) \times [(1-\tau_i^{Pre})^t - (1-\tau_i^{Post})^t]\right], \quad (6)$$

where the term in the summation is the per-call change in commissions less the change in per-call fixed wages ($0.50) weighted by the difference in retention probability.

Finally, we compute the unit profit change to the firm through week t as any revenue change plus net cost savings: $\overline{\Delta RPC_t} - \overline{\Delta CostPerCall_t}$. To get a rough estimate of the present value of these weekly changes, we use a 12.5% annual interest rate and project forward for six months. We stop the data at six months, because this firm has seasonal hiring that begins in the summer, often a period of substantial workforce changes.

Initially, the cost savings from the commission schedule changes look attractive, saving the firm about $0.68 in compensation expense per-call. Because turnover is minimal in the first few weeks after the changes, there is no offsetting reduction in revenue. However, about two months after the changes (eight weeks), the workforce composition effect reduces average revenue-per-call by $0.58, whereas the labor cost savings in Week 8 equals $0.71. Over time, the decrease in the average revenue-per-call grows more quickly than does the cost savings, and we find that Week 18 is the inflection point (a bit more than four months post-treatment), after which the net present value of the commission schedule changes is negative. Six months after the changes, the firm's gross margin per-call fell by more than 1.7 percentage points.

To put these numbers into context, we estimate the total net present value of the commission schedule change by multiplying the per-call numbers by the actual number of calls per week. At the six-month horizon, the net present value of the commission schedule changes totaled -$75,500.

Appendix C: Robustness

C.1. Re-weighting Estimators

This section provides details about the implementation of the re-weighting estimators that attempt to match individuals in control divisions with individuals in Division 1. The purpose is to match individuals based on their sales trajectories. The first step is to estimate the probability of being in Division 1. We use the data from the pre-treatment period for this purpose but hold out the data one month prior to the commission schedule changes. The second step is to use the propensity score from this estimation procedure to form weights which will be used in later regressions. The third step is to assess how well the re-weighting estimates fit, using a "hold out" sample of data one month prior to the commission schedule changes.

In the first step, we estimate logit models where the dependent variable is being in Division 1. Each worker present in the pre-treatment period for Division 1 and the control divisions enters the sample once. The first month of available data includes the X variables and demographic characteristics in levels. The regressors in X are an indicator for male, the agent's age, and the agent's monthly averages of log commissions, log commission per call, log revenue, log total calls, tenure, and adherence. For each of the regressors on

productivity, we also include one and two month differences over future months to capture trends in these measures. We then estimate the logit model and form $\hat{P}$, the predicted probability of being in Division 1.

The weights in the second step are formed as $W_i = Treated_i + (1 - Treated_i)\frac{\hat{P}}{1-\hat{P}}$ where $\hat{P}$ is the treatment probability estimated from the logistic regression on pre-treatment data and $Treated_i$ indicates the worker is in Division 1. Figures A.3a and A.3b assess fit, making it clear that per-call fit works reasonably well. Fit for overall revenue is not as good, suggesting that the territory shock yielded an up-tick in sales success among Division 1 agents. As a result, we prefer specifications at the per-call level to remove potential demand confounders when interpreting changes in effort supply. These per-call measures of productivity allow us to measure output while controlling for demand. Given that the divergence between the re-weighted control group trend and the trend for Division 1 occurs before the commission schedule changes, we suspect demand changes are responsible for divergence in the levels measures.

C.2. Spillovers to the Control Group

To test another identifying assumption, the lack of spillovers to control divisions (Obloj and Zenger 2017), we conduct structural break tests for the control group. Figure A.7 plots the parameter estimates from various specifications of these break tests. Structural break tests come from regressions using the control sample. The figure reports the post-treatment indicator parameter estimates and confidence intervals. We consider several different dependent variables, and each regression includes a post-treatment indicator for Division 1, the matrix of agent characteristics X_{it}, division fixed effects, and trends for each division. These results suggest that there are minimal spillovers to the control group.

Figure A.8 plots the time series process for the control groups around the event date for Division 1. Within a month of the event date, there is minimal movement in the control group averages. Conversion rates and RPC do show some mild deterioration after the first month, which is likely due to seasonality based on the time of the year.

C.3. Substitution to Different Products

Whether agents could reduce the impact of the commission schedule changes because of substitution to other products is an empirical question. The approach is to estimate whether sales revenue becomes more heavily weighted to items with more favorable relative prices under the new commission schedule. Although there were some relative price changes that may have given rise to agent substitution, we find that agents could not offset the adverse effects of the commission schedule changes by changing their mix of products sold. That is, the overall change in commissions-per-call that we estimate closely follow the predicted reductions given the pre-treatment mix of products sold.

Appendix D: Motivating Framework

We motivate the analysis with a simple model of heterogeneous agent responses to commission changes as a function of productivity differences. Heterogeneous responses are difficult to sign without assumptions, making them empirical objects of analysis. We then consider how turnover changes across the productivity distribution affect profitability.

Let e_i denote agent i's sales effort and assume further that his sales revenue, y_i is given by $y_i = \theta_i e_i + \epsilon$ where $\theta_i > 0$ is the agent's productivity or type, and ϵ is mean-zero noise. To simplify the exposition, all agents are assumed to be risk-neutral and collect a linear share of their revenues, R, in addition to a common fixed wage, α, such that we can represent agent i's expected utility by $U(\alpha, R, \theta_i, e_i) = \alpha + R\theta_i e_i - c(e_i)$.

The cost of effort function $c(\cdot)$ is strictly increasing and convex, with $c(0) = c'(0) = 0$. Let e^* denote the unique solution to the agent's problem:

$$e^* = \underset{e}{\text{argmax}} R\theta e - c(e)$$

such that agent i's value function evaluated at e^* can be expressed as $V(\alpha, R; \theta_i)$.

The optimal effort, e_i^*, is strictly positive, as $c'(0) = c(0) = 0 < R$. Accordingly, the function U has strictly increasing differences in e_i and R, as well as in e_i and θ_i. By application of Topkis's Theorem, both $\frac{\partial e_i^*}{\partial R}$ and $\frac{\partial e_i^*}{\partial \theta_i}$ are themselves strictly positive. However the heterogeneous effort responses across agents of different pre-treatment productivity are captured by $\frac{\partial^2 e_i^*}{\partial R \partial \theta_i}$, which we cannot sign without additional assumptions.

PROPOSITION 1. *An agent's change in effort with respect to commissions is increasing in agent productivity, θ, as long as c''' is sufficiently small.*

Proof of Proposition 1. The goal is to show that the marginal effect of productivity, θ, on agent i's effort response to a change in commissions is directly proportional to the curvature of the agents' cost function. Specifically:

$$\frac{\partial^2 e_i^*}{\partial R \partial \theta_i} \propto \left(c''\left(e_i^*\right)\right)^2 - c'''\left(e_i^*\right) R\theta_i. \tag{7}$$

To prove Equation (7), we begin with the first order condition $R\theta_i = c'\left(e_i^*\right)$. Differentiating both sides with respect to R yields $\theta_i = c''\left(e_i^*\right) \frac{\partial e_i^*}{\partial R}$. Differentiating again by θ_i yields: $1 = c'''\left(e_i^*\right) \frac{\partial e_i^*}{\partial R} \frac{\partial e_i^*}{\partial \theta_i} + c''\left(e_i^*\right) \frac{\partial^2 e_i^*}{\partial R \partial \theta_i}$, substituting the earlier terms and rearranging yields:

$$\frac{\partial^2 e_i^*}{\partial R \partial \theta_i} = \frac{\left(c''\left(e_i^*\right)\right)^2 - c'''\left(e_i^*\right) R\theta_i}{\left(c''\left(e_i^*\right)\right)^3},$$

which completes the proof as $c'' > 0$ by assumption. □

When the agent's costs follow a standard power function, e.g. $c(e) = e^n/n$, the expression characterizing $\frac{\partial^2 e_i^*}{\partial R \partial \theta_i}$ is strictly positive. We conclude that in most standard settings, agents have weakly larger effort responses to commission changes as their type increases. Accordingly, we treat effort changes by agent type as an empirical question, and instead turn our attention to turnover effects.

Beginning with the seminal work of Burdett and Mortensen (1998), the job ladder model has been used extensively to capture worker mobility. The standard model maintains an attrition (quit) rate of $Q(w) = \delta + \lambda[1 - F(w)]$, where $\delta > 0$ captures exogenous job destruction, $\lambda \in [0, 1]$ captures search frictions via an arrival rate of outside job opportunities, and w is a random variable with density $f(\cdot)$ and associated CDF $F(\cdot)$ capturing the distribution of *fixed* wage offers to the agent from outside firms. We define the agent's reservation wage, $w(\theta_i)^*$, as the lowest fixed-wage yielding an expected utility of $V(\alpha, R; \theta_i)$. (Without loss of generality, we assume that the fixed-wage offers require the agent to exert a fixed level of (un-modeled) effort with known dis-utility equal to 0.) To simplify the ensuing analysis, we assume that the agent's type, θ_i, does

not influence his expected utility outside of the firm—that is, we assume that agent productivity is entirely firm-specific. As the following proposition shows, however, the agent's type will influence his reservation fixed-wage.

PROPOSITION 2. *First, low-productivity agents are more likely to leave the firm than high-productivity agents. Second, the marginal attrition associated with a commission reduction is greatest for high-productivity agents. Third, the distribution of incoming offers ultimately determines if the change in turnover rate is increasing in agent productivity.*

Proof of Proposition 2. The optimal effort e_i^* is increasing in type (see proof to Proposition 1), therefore revealed preference implies that the agents' expected utility $V(\alpha, R; \theta_i)$ is itself increasing in θ_i. Because the agents have a (strictly) positive utility for wages, the unique fixed-wage, $w(\theta_i)^*$, which makes an agent indifferent between the outside offer and his internal utility, $V(\alpha, R; \theta_i)$, must itself be increasing in θ_i. Consider two agents, with productivity levels $\theta_j > \theta_i > 0$. Since $w(\theta_j)^* > w(\theta_i)^*$, all offers $\overline{w} \geq w(\theta_j)^*$ are sufficient to lure both types of agents away from the firm. Offers $\underline{w} \in [w(\theta_i)^*, w(\theta_j)^*)$, on the other hand, will lure the agent with type θ_i but are insufficient to lure the agent with type θ_j. Accordingly, an agent with productivity θ_i will leave the firm while an agent with productivity $w(\theta_j)^*$ will remain with probability $F(w(\theta_j)^*) - F(w(\theta_i)^*) > 0$.

To prove the second statement, we must establish that $\frac{\partial^2 w(\theta_i)^*}{\partial R \partial \theta_i} > 0$, which suffices as the distribution of outside offers is independent of internal compensation contracts. By definition, $w(\theta_i)^*$ is the lowest external, fixed-wage offer that yields utility $V(\alpha, R; \theta_i)$ to agent i. Revealed preference guarantees that an agent's expected utility $V(\alpha, R; \theta_i)$ is strictly increasing in R. Accordingly, the minimum external wage $w(\theta_i)^*$ increases (decreases) for all types as the commission rate R increases (decreases). To see this formally, note that the envelope theorem yields $U'(e_i^*) = 0$, hence:

$$\frac{dV}{dR} = \frac{\partial U}{\partial R} + U'(e_i^*)\frac{\partial e_i^*}{\partial R} = \frac{\partial U}{\partial R} = \theta_i e_i^* > 0,$$

where the final inequality holds by the strict convexity of $c(\cdot)$ and the fact that both $c(0)$ and $c'(0)$ are equal to zero.

We must next prove that the marginal effect increases concomitantly with agent productivity:

$$\begin{aligned}\frac{d^2 V(\alpha, R, \theta_i)}{dR d\theta_i} &= \frac{\partial^2 U}{\partial R \partial \theta_i} + \frac{\partial U}{\partial R} U'(e_i^*)\frac{\partial e_i^*}{\partial \theta_i} \\ &= \frac{\partial^2 U}{\partial R \partial \theta_i} = 2e_i^* > 0.\end{aligned}$$

We have thus established that: (1) decreasing the commission rate R makes all agents more vulnerable to poaching, and (2) following a reduction of R, a highly productive agent, say an agent with productivity θ_j, decreases their external reservation rate, $w(\theta_j)^*$ by more than a less productive agent reduces their own external reservation wage $w(\theta_i)^*$, where $\theta_i < \theta_j$. This does not, however, establish that high-productivity agents are more likely to leave the firm following a wage reduction, because separation nonetheless requires an external offer. To see this, consider a discrete change in R from $\overline{R}$ to $\underline{R}$ with $\overline{R} > \underline{R}$. Abusing notation, let $\underline{w}(\theta_i)^* = V(\alpha, \underline{R}, \theta_i)$ and $\overline{w}(\theta_i)^* = V(\alpha, \overline{R}, \theta_i)$. Accordingly, we can define $W(\theta_i)^* = [\underline{w}(\theta_i)^*, \overline{w}(\theta_i)^*)$ as the

set of external wages which would suffice to lure an agent with productivity θ_i under the commission rate $\underline{R}$ but not under the commission rate $\overline{R}$. For $\theta_i < \theta_j$, we have shown that $\|W(\theta_i)^*\| < \|W(\theta_j)^*\|$, however $\int_{W(\theta_i)^*} f(w)dw$ may exceed $\int_{W(\theta_j)^*} f(w)dw$. In other words, the distribution of incoming external offers ultimately determines whether high- or low-productivity workers are more likely to separate from the firm following a reduction in the commission rate, R. □

The intuition behind the first statement in Proposition 2 is relatively straight-forward: because all agents face the same distribution of outside offers, those with the lowest reservation utility are more likely to accept a relatively low outside offer, and hence are the most likely to leave. The second finding is slightly more nuanced; while all agents are more likely to accept an outside offer once their (internal) commission rate, R, decreases, a commission reduction will decrease a high-productivity agent's reservation wage $w(\theta_j)^*$ by more than the same commission rate change affects a low-productivity agent's reservation wage $w(\theta_i)^*$—the difference in reservation wage adjustment is determined by the agents' (common) effort cost function, $c(e)$. Despite the larger reservation wage adjustment, the theory is unable to predict how a change in the commission rate, R, will effect relative attrition rates because we have not imposed restrictions on the distribution, $f(\cdot)$ of external offers w. If, however, internal productivity did influence external offers; e.g. if agents can project their productivity to external employers, then highly-productive agents will be that much more likely to separate from the firm. Even had we modeled such a mechanism, without very strict assumptions now on the conditional distribution of external opportunities, whether or not highly-productive agents are more likely to separate from the firm following an adverse commission change, would remain an empirical question. The answer to this question influences how compensation changes map into firm profits.

PROPOSITION 3. *The sensitivity of changes in profits with respect to sales commissions depends on the turnover propensity of high-productivity agents relative to low-productivity agents. The turnover of highly productive agents mitigates any cost savings from reducing R.*

Proof of Proposition 3. We consider a representative sales opportunity allocated to a random agent. Let $g(\theta|R)$ denote the density of agent types at the firm under the commission structure R. The expected profits from the sales opportunity are

$$(1-R)\int \theta e^*(\theta,R)\,dG(\theta|R).$$

Differentiation with respect to R yields

$$\frac{\partial \pi}{\partial R} = -\int \theta e^*(\theta,R)\,dG(\theta|R) + (1-R)\int \left\{\theta \frac{\partial e^*}{\partial R} g(\theta|R) + \theta e^* \frac{\partial g(\theta|R)}{\partial R}\right\} d\theta.$$

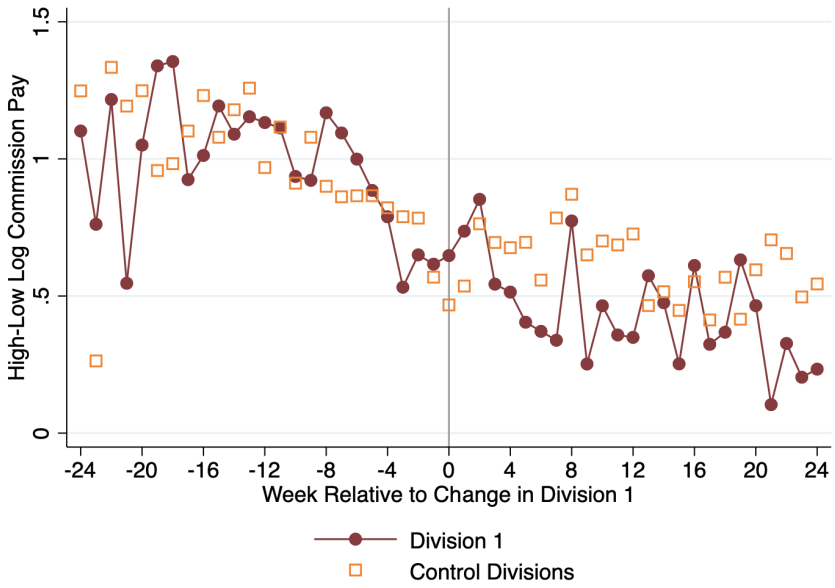
The first term, $-\int \theta e^*(\theta,R)\,dG(\theta|R)$, is negative, as raising commissions while holding sales fixed provides the agent with a transfer. When $\frac{\partial g(\theta|R)}{\partial R} = 0$, such that there is no sorting, the sign of the second term is positive, meaning the agent's positive effort response may offset the firm's decreased profits from the transfer made to the agent. When $\frac{\partial g(\theta|R)}{\partial R} > 0$, the average quality of the workforce increases with R, further offsetting the firm's decreased profits stemming from marginal transfers to the agent. □

A reduction in commissions has two different effects: profits increase because of cost savings, while effort reductions offset some of these savings. When the change in the composition of the workforce is greatest for highly productive workers, that is $\frac{\partial g(\theta|R)}{\partial R}$ is increasing in θ, the loss of highly productive workers further offsets the cost savings from the commission changes. The magnitude of the composition and effort changes is the empirical question that we examine.

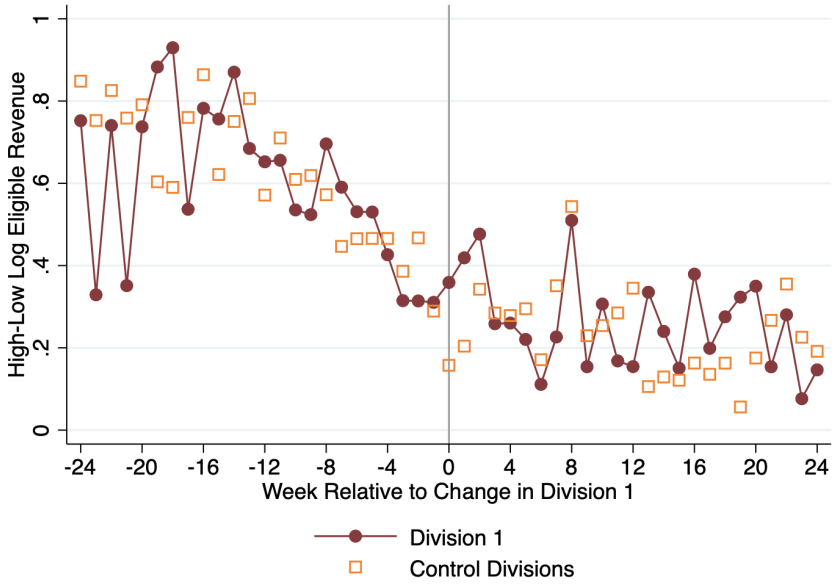
Appendix Figures and Tables

Figure A.1 Common Trends by Worker Type within Division

(a) **Log Commissions by Median Ability**



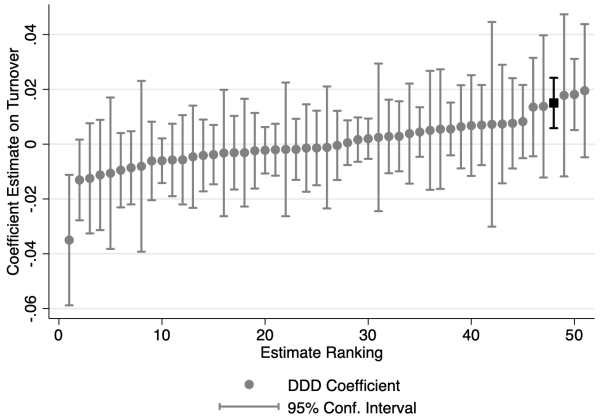
(b) **Log Revenue by Median Ability**



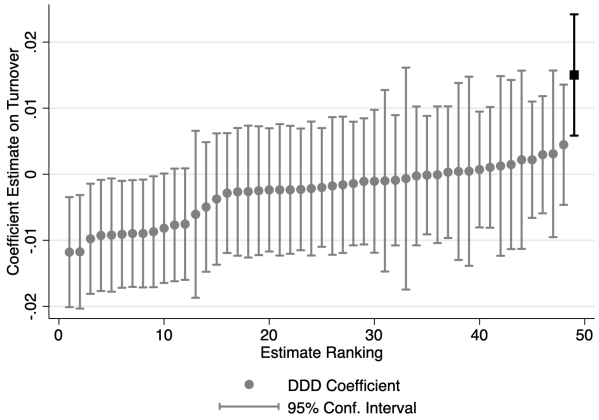
Notes: These figures plot the evolution of within-division differences in performance by worker pre-treatment productivity. Figure (a) considers trends in log commissions, whereas Figure (b) considers trends in log revenue. Week 0 on the x-axis denotes the week immediately before the commission schedule changes occurred. The y-axis in each figure captures the differences in output between high and low performers.

Figure A.2 Placebo Treatment Tests

(a) **Agents and Treatment Date Randomized**



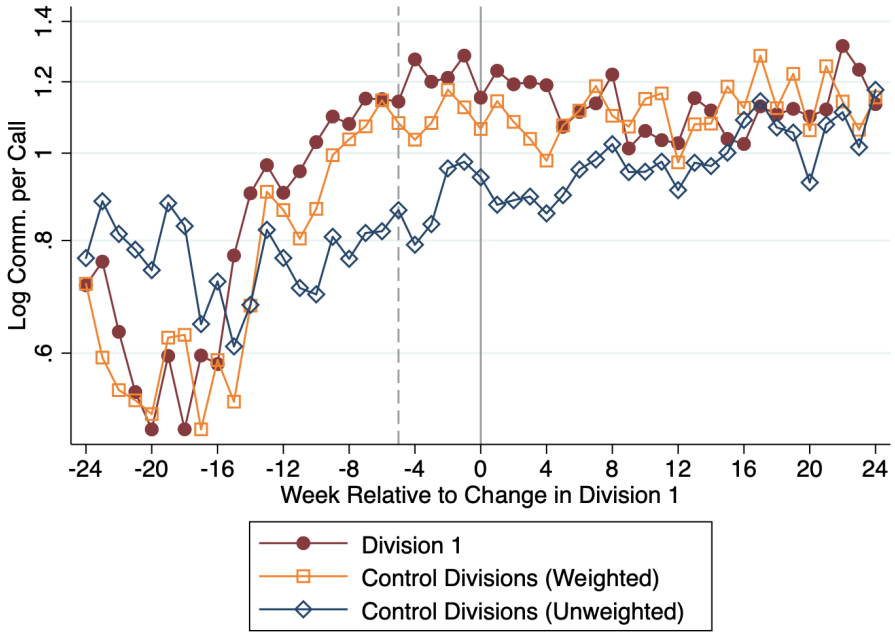
(b) **Divisions and Treatment Date Randomized**



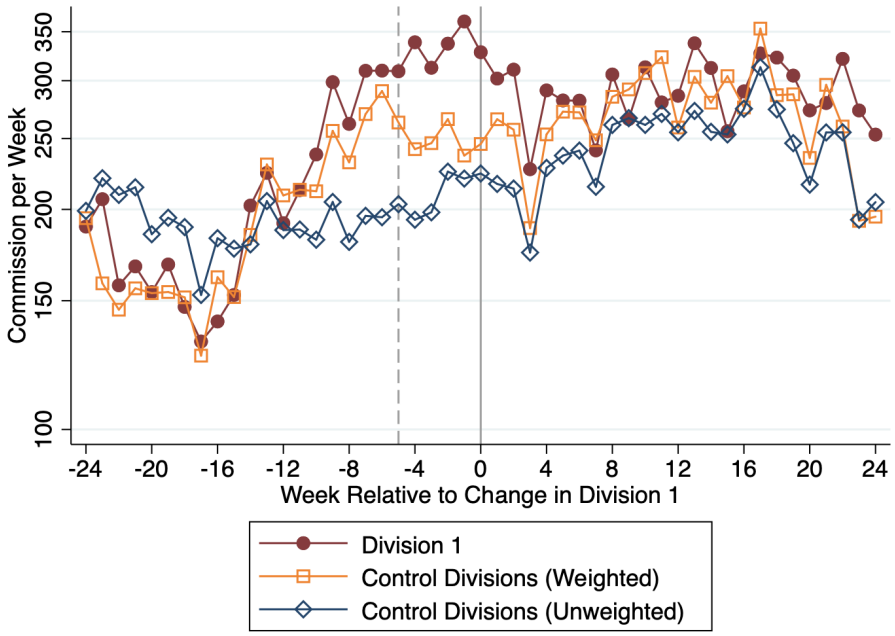
Notes: Figure (a) plots fifty placebo simulations (gray dots) for the turnover response estimation using randomized treatment groups and treatment dates. The black square shows the actual result from Column 2 of Table 2. For each placebo simulation, we randomly select 180 agents to constitute the treated division, with the other agents making up the control group. We then randomly choose an intervention week between September 1st, 2016 and January 31st, 2017. This process is similar to that used in Gubler et al. (2018). Figure (b) plots similar placebo simulations for the turnover response estimation using different divisions as the "treated" division, while the other divisions (including the actual treated division) make up the control group.

Figure A.3 Re-weighted Commissions and Commissions-per-Call for Division 1

(a) **Log Commissions per Call (log scale)**

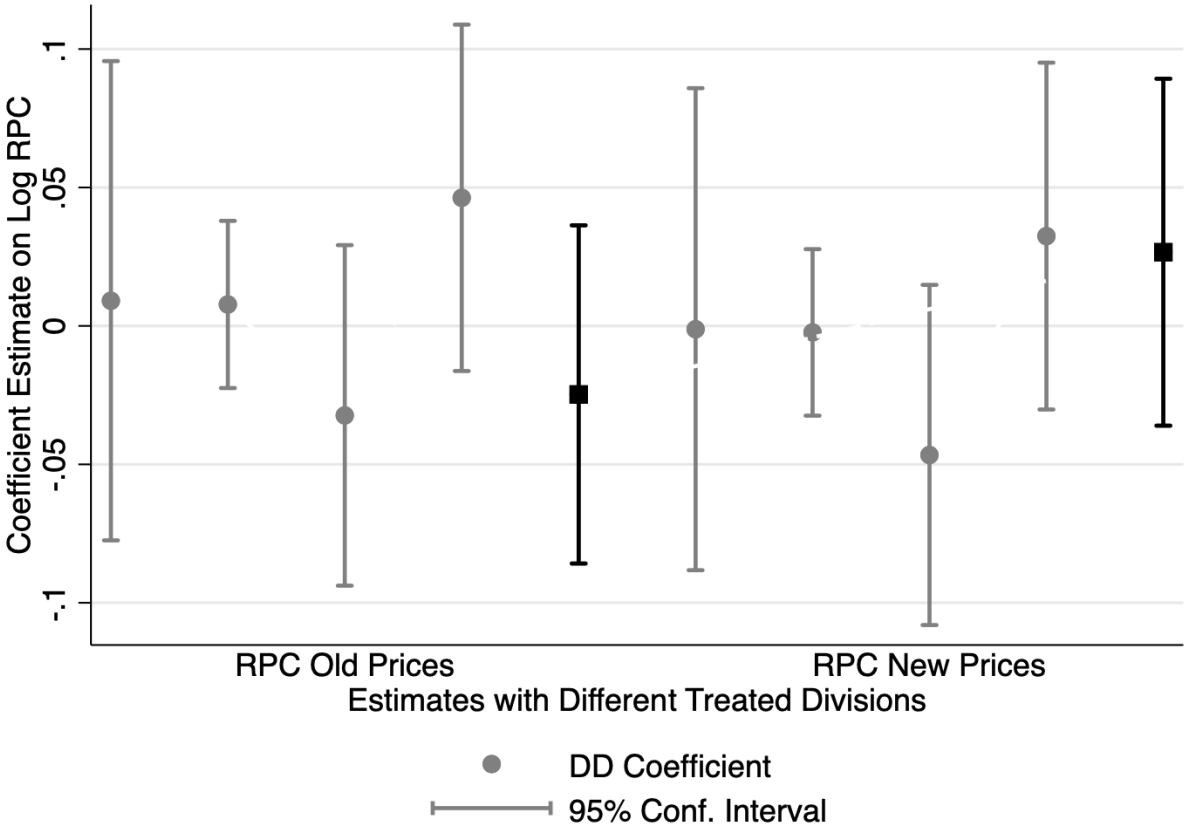


(b) **Commissions per Week (log scale)**



Notes: These figures display unweighted and propensity score weighted comparisons of agents in the control divisions and Division 1. The dashed line represents the end of the period used for estimating the propensity score weights. Output measures are displayed on a log scale.

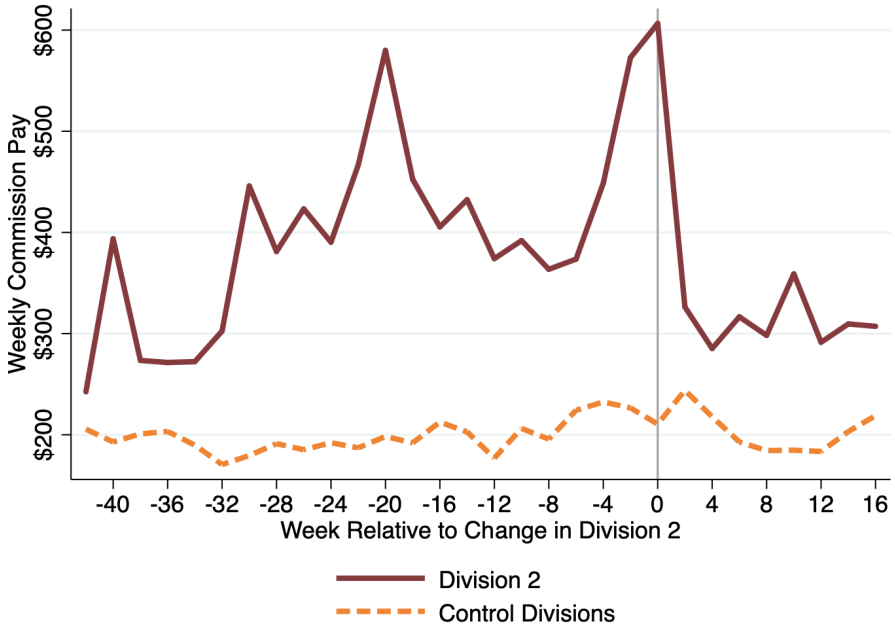
Figure A.4 Placebo Tests for Effort Estimations



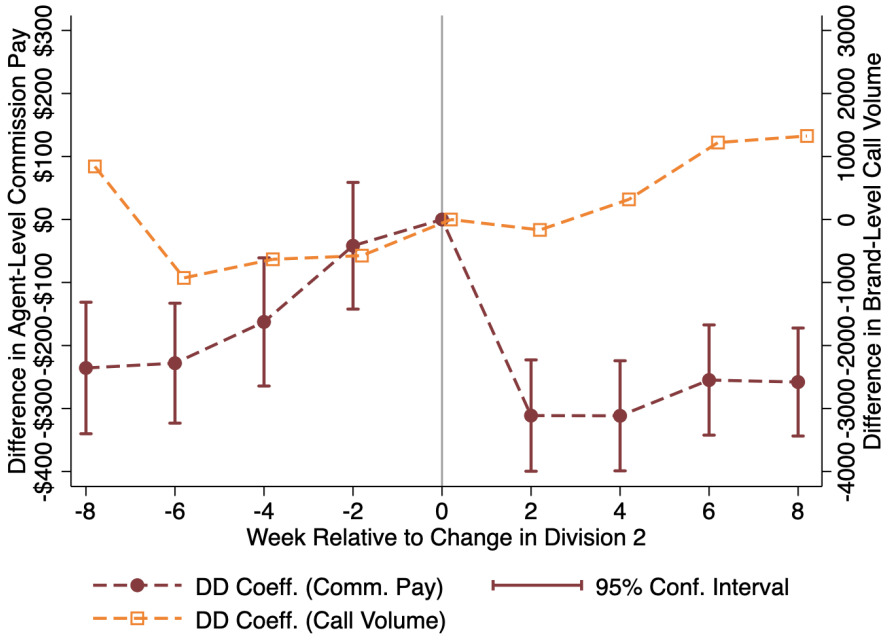
Notes: This figure plots placebo simulations for the effort response estimation using different divisions as the "treated" division, while the other divisions (including the actual treated division) make up the control group. These are marked by the gray dots. The actual results from Column 1 of Table 3 are depicted by the black squares. The left five estimations use log RPC based on the old prices as the dependent variable, whereas the right five estimations use log RPC based on the new prices as the dependent variable.

Figure A.5 Commission Trends in Division 2 and the Control Divisions

(a) **Trends in Commission Levels**



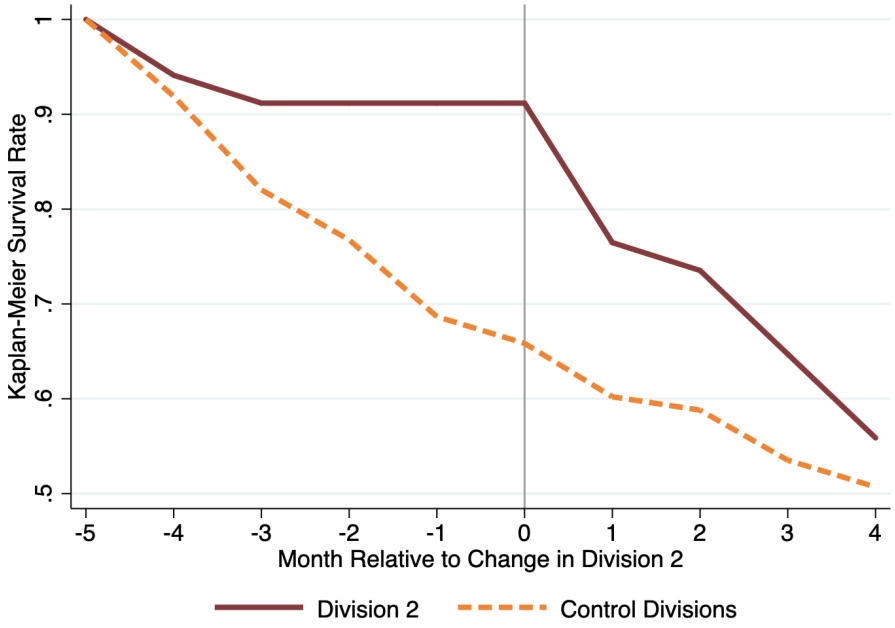
(b) **Differences in Commission Levels and Total Call Volume**



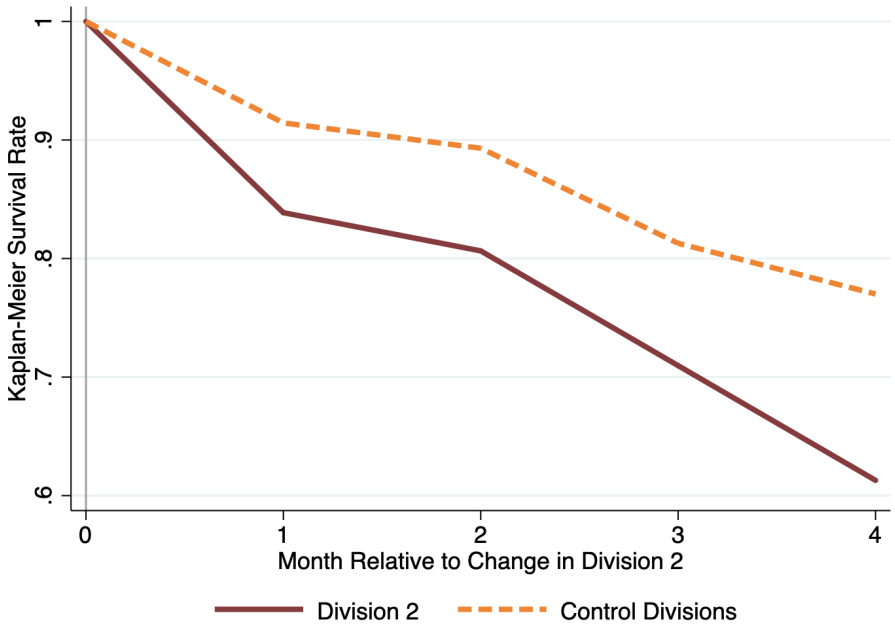
Notes: Figure (a) plots the average weekly commission pay levels for agents in Division 2 and the control divisions. The solid vertical line corresponds to the week immediately before the week of the commission schedule changes in Division 2. Figure (b) plots the difference-in-differences coefficients that capture differential trends in commission pay levels and total call volume between Division 2 and the control divisions.

Figure A.6 Survival Rates in Division 2 and the Control Divisions

(a) **Survival Rates Relative to Month -5**

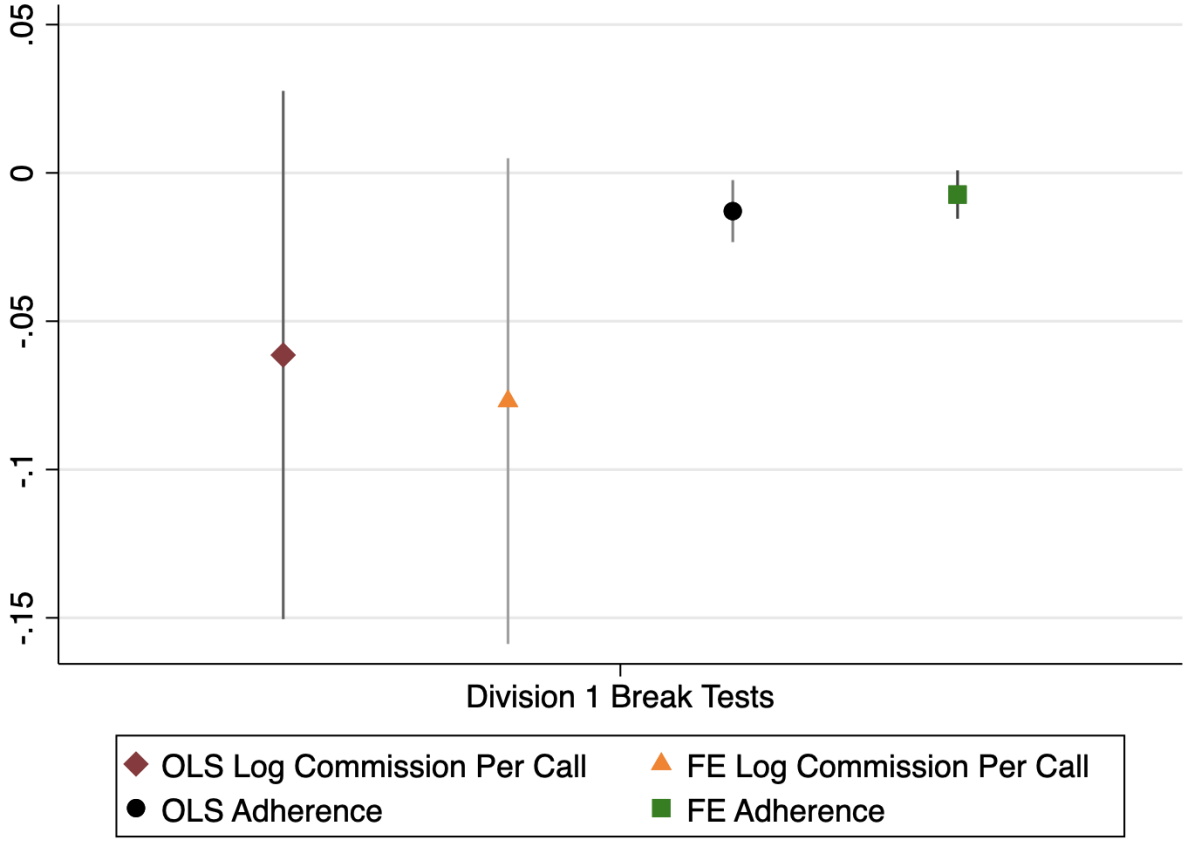


(b) **Survival Rates Relative to Month 0**



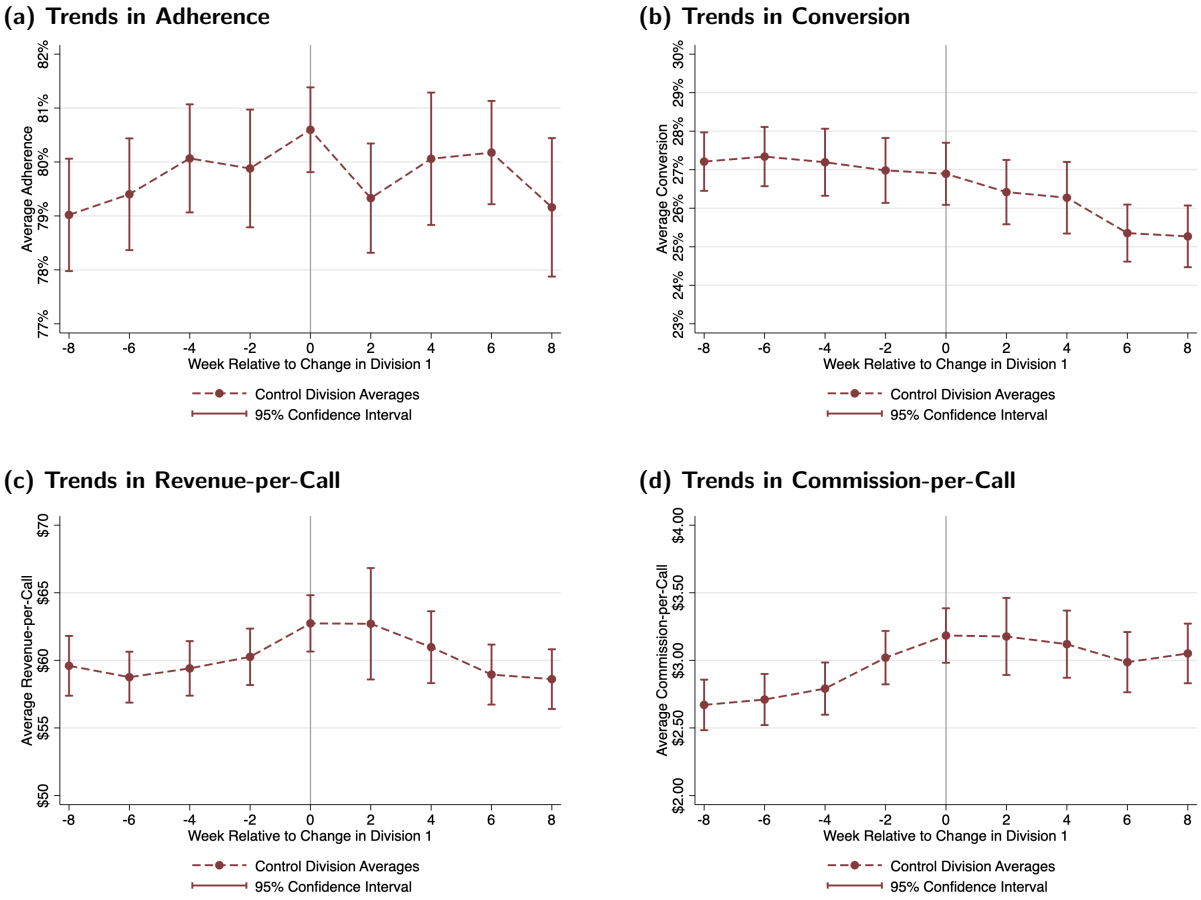
Notes: These figures plot Kaplan-Meier survival rates over time. The survival rate estimator considers a starting point and then, from that time, displays the fraction of agents that remain at the firm. The graphical properties of the cumulative survival rate allow an assessment of when retention diverges over time and what fraction of the total beginning workforce is affected. Because turnover can be lumpy, with multiple exits in some weeks and no exits in others, we aggregate survival rates to the monthly level.

Figure A.7 Structural Break Tests in the Control Divisions



Notes: These structural break tests come from regressions using the control sample. The figure reports the post-treatment indicator parameter estimates and the corresponding confidence intervals. The dependent variable is in the legend, and each regression includes a post-treatment indicator for Division 1, the matrix of agent characteristics X_{it}, division fixed effects, and trends for each division. Specifications with "FE" add individual fixed effects.

Figure A.8 Trends in Observable Outcomes for Control Divisions



Notes: These figures show raw averages in different outcome variables for the control divisions. Adherence and conversion are the two proxies for an agent's supply of effort. Revenue-per-call and commission-per-call are two additional measure of output. To improve the readability of these figures, we aggregate data into bi-weekly clusters. Confidence intervals are based on the standard errors of the means.

Table A.1 Summary Statistics for Division 1 By Productivity Level

	Tercile of Adjusted Worker Fixed Effects		
	Bottom Third	Middle Third	Top Third
	(1)	(2)	(3)
Commission	170.88	298.02	476.63
	(167.92)	(210.59)	(342.00)
Predicted Pct Δ Commission Post-Treatment	-0.18	-0.18	-0.17
	(0.04)	(0.03)	(0.03)
Adherence	0.81	0.84	0.84
	(0.15)	(0.10)	(0.09)
Conversion	0.29	0.34	0.37
	(0.09)	(0.08)	(0.09)
Log RPC_{Old}	3.93	4.24	4.37
	(0.59)	(0.41)	(0.41)
Log RPC_{New}	3.69	4.00	4.15
	(0.59)	(0.40)	(0.40)
Phone Hours	18.41	21.26	22.99
	(7.32)	(7.02)	(6.26)
Total Calls	64.95	72.42	77.55
	(25.86)	(25.75)	(25.00)
Tenure (days)	149.69	215.07	691.07
	(67.70)	(110.89)	(485.51)
Age	23.12	23.67	28.14
	(4.78)	(3.77)	(8.48)
Single	0.79	0.76	0.58
	(0.41)	(0.43)	(0.50)
White	0.73	0.70	0.73
	(0.44)	(0.46)	(0.44)
Male	0.68	0.78	0.73
	(0.47)	(0.41)	(0.45)
Survey Response to Firm Fairness	0.57	0.48	0.35
	(0.50)	(0.50)	(0.48)
Survey Response to Referral Likelihood	0.73	0.58	0.52
	(0.45)	(0.49)	(0.50)
Survey Response to Promotion Likelihood	0.55	0.83	0.59
	(0.50)	(0.38)	(0.49)
Agent-Weeks	249	292	297
Agents	40	40	40

Notes: This table presents summary statistics for Division 1 using data eight weeks prior to the commission schedule changes. Each column represents an approximate tercile of the distribution of adjusted worker fixed effects in the pre-treatment period. Adjusted worker fixed effects are calculated from a regression of log commissions on worker dummy variables, division-by-week dummy variables, and a cubic spline in tenure. We then correct for sampling variation using the method in Lazear et al. (2015). We are not able to estimate adjusted worker fixed effects for every agent, resulting in slightly smaller agent and agent-week counts compared to those in Table 1. The *Predicted Percentage Δ Commission Post-Treatment* is a calculation of how total commissions would decline for each agent due to the commission schedule changes as a function of the pre-treatment sales mix of products observed for that agent. For Division 2, see Table A.9 in the Appendix.

Table A.2 Linear Probability Model Estimates of Turnover Responses (Low-Ordered Polynomials)

	Last Week in Firm				
	(1)	(2)	(3)	(4)	(5)
Treated x Post x Prod	0.021**	0.015**	0.016*	0.012**	0.012*
	(0.007)	(0.005)	(0.006)	(0.005)	(0.005)
Treated x Post	-0.006	-0.006		-0.002	
	(0.004)	(0.007)		(0.010)	
Treated x Placebo x Prod	-0.006		-0.002		
	(0.004)		(0.004)		
Treated x Placebo	0.000				
	(0.004)				
Week Fixed Effects	✓	✓		✓	
Division x Week-of-Year Fixed Effects		✓			
Week x Division Fixed Effects			✓		✓
Post-Territory Shock Period				✓	✓
Observations	51,497	51,497	51,497	19,689	19,689
Mean Turnover Probability in Division 1			0.037		

Notes: The dependent variable is an indicator that equals one if it is the worker's last week at the firm. The sample includes all current employees in Division 1 and the control divisions with non-missing data. Estimates come from a linear probability model that captures changes in the turnover probability for the existing workforce. These models include only Age, Age^2, $Tenure$, and $Tenure^2$, removing the higher-ordered polynomial terms on Age and $Tenure$. *Prod* refers an agent's sales z-score, which is the standardized measure of an agent's pre-treatment productivity estimated as their adjusted worker fixed effect according to the procedure in Lazear et al. (2015). For additional details, see Section 3.5. The specification in Column 2 includes division by week-of-year fixed effects to account for seasonality. The specification in Column 3 includes week by division fixed effects. Columns 4 and 5 use a shortened pre-treatment period that only includes the weeks of data after the territory shock period. *Placebo* is an indicator for the date 52 weeks prior to the treatment date.

*$p < 0.1$; **$p < 0.05$; ***$p < 0.01$

Table A.3 Estimates of Effort Responses Using the Full Pre-Treatment Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel A: Adherence to Schedule							
Treated x Post	-0.002	0.001	0.007	0.014	0.005	0.008	
	(0.006)	(0.004)	(0.008)	(0.012)	(0.009)	(0.007)	
Treated x Post x Prod						-0.003	-0.003
						(0.004)	(0.004)
Observations	33,068	33,068	33,068	14,775	14,491	33,068	33,068
Panel B: Conversion Rate							
Treated x Post	0.005	0.001	0.006	0.001	0.005	0.011	
	(0.006)	(0.005)	(0.005)	(0.005)	(0.006)	(0.005)	
Treated x Post x Prod						-0.017***	-0.018***
						(0.004)	(0.003)
Observations	33,044	33,044	33,044	13,469	13,981	33,044	33,044
Panel C: Log RPC at Old Prices							
Treated x Post	0.076	0.053	-0.006	-0.006	-0.003	0.005	
	(0.046)	(0.033)	(0.033)	(0.034)	(0.041)	(0.034)	
Treated x Post x Prod						-0.054*	-0.044
						(0.027)	(0.023)
Observations	35,366	35,366	35,366	15,077	15,071	35,366	35,366
Panel D: Log RPC at New Prices							
Treated x Post	0.069	0.061*	0.063	0.037	0.062	0.077*	
	(0.043)	(0.030)	(0.032)	(0.032)	(0.041)	(0.033)	
Treated x Post x Prod						-0.061*	-0.049*
						(0.026)	(0.022)
Observations	35,366	35,366	35,366	15,077	15,071	35,366	35,366
Week Fixed Effects	✓	✓	✓	✓	✓	✓	
Agent Fixed Effects		✓	✓	✓	✓	✓	✓
Division Trend Controls			✓	✓	✓	✓	
Week x Division Fixed Effects							✓
Re-Weighted				✓			
Balanced Sample					✓		

Notes: This table is an analog of Table 3. The sample includes all current employees in Division 1 and the control divisions with non-missing data. The models in Columns 1–6 include fixed effects for week, division, and office location. All models include cubic splines for tenure and a cubic polynomial in age. The OLS regression in Column 1 includes dummies for ethnicity, gender, and marital status. The specifications in Columns 2–7 include individual fixed effects. Columns 3–6 include division-specific trend controls. The specification in Column 4 uses a re-weighting estimator based on the propensity score for being in Division 1 (see Appendix C.1). The balanced panel in Column 5 restricts to workers who are present prior to July, 2016 and after April, 2017. Columns 6 and 7 consider heterogeneous responses based on worker productivity, and Column 7 omits week fixed effects and division-specific trend controls and instead includes week by division fixed effects. Differing numbers of observations across panels reflect differences in data availability. The sample include all pre- and post-treatment period data in the immediate sample. Reported standard errors are clustered by manager.

*$p < 0.1$; **$p < 0.05$; ***$p < 0.01$

Table A.4 Estimates of Effort Responses (Log RPH and RPC Levels)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel A: Log RPH at Old Prices							
Treated x Post	0.051	0.041	0.035	0.007	0.053	0.036	
	(0.046)	(0.035)	(0.046)	(0.044)	(0.059)	(0.046)	
Treated x Post x Prod						-0.016	-0.017
						(0.032)	(0.032)
Observations	9,145	9,145	9,145	7,761	4,075	9,145	9,145
Panel B: Log RPH at New Prices							
Treated x Post	0.102*	0.086*	0.057	0.026	0.065	0.061	
	(0.047)	(0.035)	(0.045)	(0.044)	(0.062)	(0.045)	
Treated x Post x Prod						-0.024	-0.024
						(0.032)	(0.032)
Observations	9,145	9,145	9,145	7,761	4,075	9,145	9,145
Panel C: Level RPC at Old Prices							
Treated x Post	-5.012	-3.381	-1.155	-2.117	-1.108	0.885	
	(2.614)	(2.015)	(2.593)	(3.091)	(3.596)	(2.491)	
Treated x Post x Prod						-4.362**	-4.377**
						(1.554)	(1.599)
Observations	9,229	9,229	9,229	7,840	4,126	9,229	9,229
Panel D: Level RPC at New Prices							
Treated x Post	-1.426	0.057	-0.068	-1.407	-0.781	1.813	
	(2.179)	(1.775)	(2.258)	(2.907)	(3.544)	(2.211)	
Treated x Post x Prod						-4.199**	-4.181**
						(1.457)	(1.493)
Observations	9,229	9,229	9,229	7,840	4,126	9,229	9,229
Week Fixed Effects	✓	✓	✓	✓	✓	✓	
Agent Fixed Effects		✓	✓	✓	✓	✓	✓
Division Trend Controls			✓	✓	✓	✓	
Week x Division Fixed Effects							✓
Re-Weighted				✓			
Balanced Sample					✓		

Notes: The sample includes all current employees in Division 1 and the control divisions with non-missing data. The models in Columns 1–6 include fixed effects for week, division, and office location. All models include cubic splines for tenure and a cubic polynomial in age. The OLS regression in Column 1 includes dummies for ethnicity, gender, and marital status. The specifications in Columns 2–7 include individual fixed effects. Columns 3–6 include division-specific trend controls. The specification in Column 4 uses a re-weighting estimator based on the propensity score for being in Division 1 (see Appendix C.1). The balanced panel in Column 5 restricts to workers who are present prior to July, 2016 and after April, 2017. Columns 6 and 7 consider heterogeneous responses based on worker productivity, and Column 7 omits week fixed effects and division-specific trend controls and instead includes week by division fixed effects. The sample used restricts to eight weeks of pre-treatment data and eight weeks of post-treatment data. Reported standard errors are clustered by manager.

*$p < 0.1$; **$p < 0.05$; ***$p < 0.01$

Table A.5 Sentiment Descriptive Statistics

		Pre-Treatment Sentiment			
	All	0%–33%	33%–66%	66%–100%	Diff.
	(1)	(2)	(3)	(4)	(4)–(2)
ΔFairness Perceptions	-1.43	14.17**	-12.25**	-5.74**	-19.91***
	(2.74)	(5.14)	(4.51)	(2.37)	(5.66)
ΔReferral Likelihood	-12.51***	-9.09*	-11.14**	-16.36***	-7.27
	(2.90)	(4.87)	(4.44)	(5.38)	(7.40)
ΔPromotion Prospects	-0.17**	0.09	0.04	-0.57***	-0.66***
	(0.07)	(0.06)	(0.11)	(0.14)	(0.17)
Agents	70	23	24	23	

Notes: This table documents the changes in the self-reported sentiment levels of Division 1 agents from before to after the commission schedule changes. The data is split across terciles of pre-treatment sentiment where Column 2 contains agents with the lowest sentiment and Column 4 contains agents with the highest sentiment. The results of difference-in-means tests between Columns 4 and 2 are reported in the far right column. Standard errors of means are reported in parentheses.

*$p < 0.1$; **$p < 0.05$; ***$p < 0.01$

Table A.6 Heterogeneous Turnover Responses Based on Worker Sentiment

	Last Week in Firm				
	(1)	(2)	(3)	(4)	(5)
Treated x Post x Prod	0.012	0.014**	0.010	0.013*	0.013*
	(0.006)	(0.005)	(0.007)	(0.005)	(0.005)
Treated x Post x Firm Fair	0.009	0.009	0.009	0.013	0.012
	(0.009)	(0.009)	(0.009)	(0.008)	(0.008)
Treated x Post x High Refer	0.005	0.004	0.004	0.005	0.004
	(0.007)	(0.006)	(0.007)	(0.006)	(0.007)
Treated x Post x Promotion	-0.011	-0.011	-0.011	-0.011	-0.010
	(0.011)	(0.011)	(0.011)	(0.012)	(0.012)
Week Fixed Effects	✓	✓		✓	
Division x Week-of-Year Fixed Effects		✓			
Week x Division Fixed Effects			✓		✓
Shortened Pre-Period				✓	✓
Observations	51,497	51,497	51,497	19,689	19,689
Mean Turnover Probability in Division 1			0.037		
p-value on Treated x Post x Prod	0.039	0.040	0.164	0.050	0.060

Notes: The dependent variable is an indicator that equals one if it is the worker's last week at the firm. The sample includes all current employees in Division 1 and the control divisions with non-missing data. Estimates come from a linear probability model that captures changes in the turnover probability for the existing workforce. Each model includes a 5th order polynomial for workers' tenure to account for a potentially arbitrary baseline relationship between tenure and turnover. *Prod* refers an agent's sales z-score, which is the standardized measure of an agent's pre-treatment productivity estimated as their adjusted worker fixed effect according to the procedure in Lazear et al. (2015). For additional details, see Section 3.5. We separately interact the treatment indicator with indicators for high firm fairness perceptions, high referral likelihood, and a belief that promotion is likely. An agent's firm fairness perception is marked as high if it is above the median value. Referral likelihood is marked is high if it is above the median value. If an agent says they are likely to be promoted in the future, their promotion likelihood indicator equals one. The specification in Column 2 includes division by week-of-year fixed effects to account for seasonality. The specification in Column 3 includes week by division fixed effects. Columns 4 and 5 use a shortened pre-treatment period that only includes the weeks of data after the territory shock period. Two forms of inference are presented, one using standard errors clustered by manager (see parentheses) and the second using p-values with division-level clusters (see the final two lines) computed using the wild cluster bootstrap randomization inference procedure in MacKinnon and Webb (2018). We use the t-statistic version of the procedure that imposes the null hypothesis.

$^{*}p < 0.1$; $^{**}p < 0.05$; $^{***}p < 0.01$

Table A.7 Heterogeneous Effort Responses Based on Worker Sentiment

	Adherence to Schedule	Conversion Rate	Log RPC at Old Prices	Log RPC at New Prices
	(1)	(2)	(3)	(4)
Treated x Post x Prod	-0.004	-0.021***	-0.046*	-0.046*
	(0.006)	(0.005)	(0.019)	(0.018)
Treated x Post x Firm Fair	-0.007	0.004	-0.001	0.005
	(0.016)	(0.010)	(0.064)	(0.060)
Treated x Post x High Refer	-0.001	-0.013	-0.067	-0.062
	(0.013)	(0.008)	(0.049)	(0.044)
Treated x Post x Promotion	0.001	0.005	0.070	0.085
	(0.014)	(0.011)	(0.062)	(0.051)
Agent Fixed Effects	✓	✓	✓	✓
Week x Division Fixed Effects	✓	✓	✓	✓
Observations	8,647	8,283	9,229	9,229

Notes: The sample includes all current employees in Division 1 and the control divisions with non-missing data. All models include agent fixed effects and fixed effects for division and office location. To account for experience effects, all models include cubic splines for tenure with the firm and a cubic polynomials in age. Each specification also includes week by division fixed effects. We separately interact the treatment indicator with indicators for high firm fairness perceptions, high referral likelihood, and a belief that promotion is likely. An agent's firm fairness perception is marked as high if it is above the median value. Referral likelihood is marked is high if it is above the median value. If an agent says they are likely to be promoted in the future, their promotion likelihood indicator equals one. Differing numbers of observations across columns reflect differences in data availability. The sample used restricts to eight weeks of pre-treatment data and eight weeks of post-treatment data. The results are similar when all available pre- and post-treatment data is used. Reported standard errors are clustered by manager.

*$p < 0.1$; **$p < 0.05$; ***$p < 0.01$

Table A.8 Linear Probability Model Estimates of Turnover Responses in Division 2

	Last Week in Firm		
	(1)	(2)	(3)
Treated x Post x Prod	-0.011	0.002	-0.008
	(0.007)	(0.007)	(0.007)
Treated x Post	0.013**	0.023*	
	(0.004)	(0.010)	
Time Fixed Effects	✓	✓	
Division x Week-of-Year Fixed Effects		✓	
Time x Division Fixed Effects			✓
Observations	45,328	45,328	45,328
Mean Turnover Prob in Treated Division		0.008	
p-value on Treated x Post x Prod	0.236	0.682	0.436
p-value on Treated x Post	0.131	0.377	

Notes: The dependent variable is an indicator that equals one if it is the worker's last week at the firm. The sample includes all current employees in Division 2 and the control divisions with non-missing data. Estimates come from a linear probability model that captures changes in the turnover probability for the existing workforce. Each model includes a 5th order polynomial for workers' tenure to account for a potentially arbitrary baseline relationship between tenure and turnover. *Prod* refers to an agent's sales z-score, which is the standardized measure of an agent's pre-treatment productivity estimated as their adjusted worker fixed effect according to the procedure in Lazear et al. (2015). For additional details, see Section 3.5. The specification in Column 2 includes division by week-of-year fixed effects to account for seasonality. The specification in Column 3 includes week by division fixed effects. Two forms of inference are presented, one using standard errors clustered by manager (in parentheses) and the second using p-values with division-level clusters (see the final two lines) computed using the wild cluster bootstrap randomization inference procedure in MacKinnon and Webb (2018). We use the t-statistic version of the procedure that imposes the null hypothesis.

*$p < 0.1$; **$p < 0.05$; ***$p < 0.01$

Table A.9 Summary Statistics for Division 2 By Productivity Level

	Adjusted Worker Fixed Effects		
	Bottom Third	Middle Third	Top Third
	(1)	(2)	(3)
Commission	306.13	496.85	717.00
	(206.50)	(316.55)	(345.83)
RPC	73.85	101.41	129.99
	(36.80)	(44.14)	(46.00)
Adherence	0.75	0.78	0.81
	(0.21)	(0.15)	(0.10)
Conversion	0.23	0.29	0.34
	(0.11)	(0.11)	(0.12)
Phone Hours	16.96	17.70	17.45
	(6.68)	(6.61)	(5.39)
Total Calls	52.46	45.53	47.69
	(22.64)	(17.86)	(14.23)
Tenure (days)	324.13	679.67	1386.26
	(93.80)	(356.30)	(414.86)
Age	26.16	31.14	32.51
	(4.00)	(8.52)	(9.94)
Single	0.77	0.51	0.30
	(0.42)	(0.50)	(0.46)
White	0.92	0.25	0.74
	(0.28)	(0.43)	(0.44)
Male	0.75	0.75	0.61
	(0.44)	(0.43)	(0.49)
Survey Response to Firm Fairness	0.22	0.45	0.10
	(0.42)	(0.50)	(0.30)
Survey Response to Referral Likelihood	0.63	0.63	0.54
	(0.49)	(0.49)	(0.50)
Survey Response to Promotion Likelihood	0.66	0.57	0.46
	(0.48)	(0.50)	(0.50)
Agent-Weeks	95	97	90
Agents	13	13	12

Notes: This table presents cross-sectional summary statistics for Division 2 using data eight weeks prior to the Division 2 commission schedule changes. Each column represents an approximate tercile of the distribution of adjusted worker fixed effects in the pre-treatment period. Adjusted worker fixed effects are calculated from a regression of log commissions on worker dummy variables, division-by-week dummy variables, and a cubic spline in tenure. We then correct for sampling variation using the method in Lazear et al. (2015).

Table A.10 Illustration of Commission Changes

	Pre-Change	Post-Change	Difference (2)−(1)	Commissions (3) × 10%
	(1)	(2)	(3)	(4)
One of Three Products				
Transfer Price per Sale	\$15	\$10	-\$5	
Avg. Sales per Agent-Week	39.9	38.5	-1.40	
Avg. Revenue per Agent-Week	\$598.50	\$385.00	-\$213.50	-\$21.35
Bundle of Two Products				
Transfer Price per Sale	\$50	\$25	-\$25	
Avg. Sales per Agent-Week	7.56	4.97	-2.59	
Avg. Revenue per Agent-Week	\$378.00	\$124.25	-\$253.75	-\$25.38
Bundle of Three Products				
Transfer Price per Sale	\$100	\$125	\$25	
Avg. Sales per Agent-Week	5.33	5.99	0.66	
Avg. Revenue per Agent-Week	\$533.00	\$748.75	\$215.75	\$21.58
Total per Agent-Week	\$1,509.50	\$1,258.00	-\$251.50	-\$25.15

Notes: The purpose of this table is to better highlight some of the details of the commission schedule changes. We display agent-week level sales averages and transfer prices for different bundles of three separate products. While we have a partial record of the products sold, we do not have any way of knowing what products customers initially sought out when they called. As a result, we are unable to measure product-level conversion rates. Columns (1) and (2) show revenue transfer prices, average sales per agent-week, and average revenue per agent-week for different product bundles in the pre- and post-treatment periods, respectively. Column (3) displays the differences in transfer prices, average sales per agent-week, and average revenue per agent-week between between these two periods. Column (4) multiplies this difference by a hypothetical commission rate of 10% (which is at the top end of the commission rate distribution). As mentioned in Section A.3, agents' commission rates were not mechanically changed, so an agent with a commission rate of 10% in the pre-treatment period likely maintained this commission rate in the post-treatment period.