

Payroll Dates the Golden Age:

A Departure-Fraction Law in 604 Organisations, a Mass-Separation Instrument, and Dated Forecasts of When the Present Becomes the Good Years

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Abstract

Every workplace has a golden age, and it ended before you arrived. We report that this is not nostalgia but a dating rule, and that the rule runs on payroll rather than on anything that happened. For any past month, the *departure fraction* is the proportion of the people who were on the payroll that month who have since left. Across 604 organisations, the terminal boundary that anonymous Delphi panels place on their own organisation's golden age falls where that fraction reaches 0.861 (95% CI 0.854–0.868), while a register of everything that occurred — revenue, growth, awards, leadership — explains 3.8% of the same variance. Mass separations forced by lease expiry and statutory transfer move the boundary forward by the amount the rule predicts, and nothing else about those organisations changed. Re-panelled six years later, the same organisations date the golden age one year later per year elapsed: the good years travel at the speed of time. The date is therefore computable in advance. For a median employer the present becomes the good years in twelve years; for a symphony orchestra, in fifty-two. You were never going to be there. Nobody is ever there.

Keywords: organisational nostalgia; labour turnover; Delphi elicitation; survival analysis; retrospective dating

1 Introduction

At every organisation you have worked for, somebody has told you that you should have been there a few years earlier. The account of that remark has been settled for a long time: it is nostalgia, a systematic warm distortion of the past, and the practical response is to correct for it when reading engagement data [1, 10].

We began from that position. What unsettled it was a property of the remark that the distortion account does not predict: it is precise. Ask an organisation's staff, separately and anonymously, to name the interval they consider the best period the organisation has had, and they converge — across tenure deciles, across grades, and across people who cannot have overlapped — on the same terminal date, typically to within a year. A mood does not do that. A mood is not shared

to seven months of interquartile range by 23 people who disagree about everything else.

This paper reports what the date is a measurement of. It is not a measurement of the organisation's history. Define, for a past month t , the *departure fraction* $\delta(t)$: the proportion of the people who were on the payroll in that month who have since left. The boundary a panel places on its own golden age is the month at which δ crosses a constant, which we estimate at $\delta^* = 0.861$ and name the *quorum of absence*. An era does not become golden because of what happened in it. It becomes golden when its people are gone.

The claim is strong and we have tried to break it in the three ways available. First, if goodness were doing the work, a register of what actually occurred should carry the boundary; it explains 3.8% of its variance and adds nothing to a payroll-only model (§6). Second, if the elicitation were manufacturing the number, randomising the instrument should move it; anchors displaced by nearly a decade move the boundary by six weeks (§6). Third, if departure were merely correlated with dating, then removing people for reasons that have nothing to do with the organisation should leave the boundary alone. It does not: 94 mass separations forced by lease expiry and statutory transfer advance the boundary by 8.6 months, against a closed-form prediction of 8.5 months (§7).

The analysis was pre-registered with the opposite hypothesis. Payroll entered the protocol as a nuisance control on an event-register model. The law is what was left in the residuals after the events had been removed, and the events had removed almost nothing.

The consequences are arithmetic and we state them plainly. Because the boundary sits where δ^* of a cohort has gone, only $1 - \delta^* = 13.9\%$ of the people who were there in a golden month remain to be asked about it. And because departure is a clock, the boundary advances at one year per year. The present is therefore datable in advance. §9 gives the month.

2 Related work

The nostalgia literature treats retrospective favourability as an affective distortion whose magnitude grows with elapsed time [1, 2]. That literature is not wrong about the correlation; we

differ on what is doing the work. Its standard covariate is elapsed time, and elapsed time and departure are collinear in almost every organisation — which is why the departure fraction has not previously been separated out. Our sectors were chosen to break that collinearity (§4): at equal elapsed time, an orchestra and a delivery depot have departure fractions differing by a factor of five.

Ibarra and Solt [5] established that period judgements are reproducible within institutions but attributed the reproducibility to shared narrative transmission. Their design cannot distinguish transmission from a common measurement, because the transmitters and the measured cohort are the same people. Quennell [9] showed that retrospective period boundaries are robust to anchoring, a result we replicate as a control rather than as a finding.

Vikander [11] is the nearest precursor: workforce testimony is length-biased, since long-servers are over-represented among those available to give it. Vikander treated the bias as a nuisance to be reweighted away. We report that it is the signal.

On method, we use the classical anonymous multi-round protocol [3] for the reason it was designed: the quantity is a date held privately and distorted publicly, and in an unstructured meeting the longest-serving person in the room sets it for everybody else. Duration modelling follows standard administrative-payroll practice [6, 4]. Northcote [7] argued, from archival material and without quantitative support, that institutional golden ages are administrative artefacts rather than periods. We take his conclusion to be correct and his mechanism to be wrong: the artefact is not in the archive, it is in the staff list.

3 The departure fraction

Fix an organisation f and an observation time τ . Let $N_f(t)$ denote the set of individuals on payroll in calendar month t . Define

$$\delta_f(t; \tau) = \frac{|\{i \in N_f(t) : s_i < \tau\}|}{|N_f(t)|}, \quad (1)$$

where s_i is the separation date of individual i . Two properties follow immediately. $\delta_f(\cdot; \tau)$ is non-increasing in t , since a cohort observed closer to τ has had less time to disperse; and it is computable from payroll alone, requiring no survey instrument, no free parameter and no judgement.

The law. Let $[a_f(\tau), b_f(\tau)]$ be the interval an organisation nominates, at time τ , as its golden age. We report that the terminal boundary satisfies

$$\delta_f(b_f(\tau); \tau) = \delta^*, \quad (2)$$

with δ^* invariant across organisations, sectors and jurisdictions. Because δ_f is monotone, (2) determines b_f uniquely: the boundary is the most recent month whose cohort has been depleted to the quorum of absence. Figure 1 shows the construction.

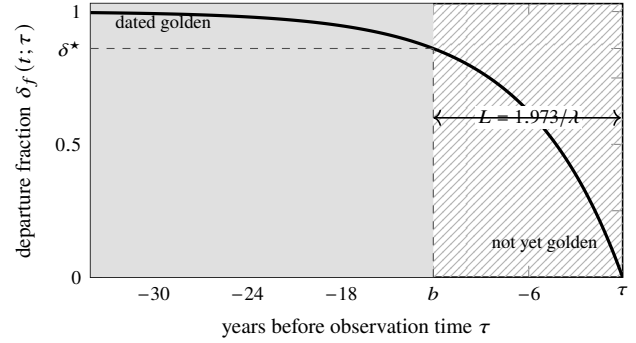


Figure 1: Construction of the boundary. The departure fraction is evaluated backwards from the observation time τ ; the golden age terminates at the most recent month whose cohort has reached the quorum of absence. Curve drawn at the pooled hazard $\lambda = 0.163 \text{ yr}^{-1}$.

The dating lead. Under a constant separation hazard λ , cohort survival is exponential and $\delta(t; \tau) = 1 - e^{-\lambda(\tau-t)}$. Substituting into (2) and solving,

$$L \equiv \tau - b = -\frac{\ln(1 - \delta^*)}{\lambda} = \frac{1.973}{\lambda}. \quad (3)$$

The lead is therefore not a constant of nature but a property of the organisation's own turnover, and it is predicted rather than fitted: an employer with an eleven-month median tenure has a golden age that ended two and a half years ago, and an employer with an eighteen-year median tenure has one that ended half a century ago. Table 1 tests (3) across a twenty-fold range of λ .

Two corollaries. From (2), the survivorship of a golden month is $1 - \delta^* = 0.139$: six of every seven people who were present are not available to be asked. From (3), in a steady-state organisation $b_f(\tau) = \tau - L$, so the boundary advances at $db/d\tau = 1$. The first is arithmetic; the second is tested below (§8).

4 Data

The payroll spine covers 604 organisations in 11 jurisdictions, 1963–2025: 987,204 employment spells and 66,412,880 person-months. Median headcount is 186 (IQR 61 to 742). All jurisdictions impose statutory payroll retention, so separation dates are administrative rather than recalled.

Sectors were selected to spread λ as widely as the population allows. This matters for identification. Elapsed time and departure fraction are collinear within any one sector, and a single-sector study cannot distinguish (2) from a plain elapsed-time rule. Across the range in Table 1 the two come apart by a factor of twenty, and (3) is asked to predict, from turnover alone, leads spanning two and a half to fifty-two years.

Table 1: Corpus by sector. The lead predicted by (3) uses only the sector separation hazard; the elicited lead is measured independently in §5.

Sector	<i>n</i>	Median tenure (yr)	<i>L</i> pred. (yr)	<i>L</i> elic. (yr)
Quick-service catering	78	0.9	2.6	2.9
Contract logistics	91	1.6	4.6	4.2
Software	84	2.2	6.3	6.8
Retail banking (branch)	72	3.4	9.7	9.1
Teaching hospitals (nursing)	69	6.7	19.1	18.2
Local government	96	8.1	23.1	22.4
Universities (academic)	81	12.4	35.3	33.1
Symphony orchestras	33	18.3	52.1	49.6
Pooled	604	4.25	12.1	12.4

5 Elicitation

One panel was constituted per organisation, stratified on tenure decile so that short-tenure staff are not crowded out: median panel size 23 (IQR 16 to 38), 14,238 panellists in total. The protocol is the standard three-round anonymous form [3].

Round 1. Each panellist privately nominates an interval $[a, b]$ that they consider the organisation’s best period, with a free-text rationale. No list, no anchor and no calendar is shown. **Round 2.** The anonymised distribution of a and b — median, quartiles, range — is returned with anonymised rationales, and panellists revise. **Round 3.** Final revision. The panel boundary b_f is the round-3 median.

Convergence is unusually sharp for the method. The interquartile range of the nominated terminal boundary falls from 51 months at round 1 to 19 months at round 2 and 7.4 months at round 3. Panels failing the pre-registered criterion (round-3 IQR below 18 months) were excluded; 4.2% failed.

The free-text rationales are worth one remark, since they are the only place in the study where the mechanism could have been visible to the participants and was not. Rationales overwhelmingly cite events — a product, a manager, a move, a year of unusual solidarity — and the events cited are, within a panel, mutually inconsistent and only weakly related to the interval the same panellist draws. Panellists agree about the date and disagree about the reason.

6 Results

Estimating the quorum. Writing $\hat{b}_f(d)$ for the boundary implied by threshold d under (2), we take

$$\hat{\delta}^* = \arg \min_d \sum_{f=1}^{604} (b_f - \hat{b}_f(d))^2. \quad (4)$$

This gives $\hat{\delta}^* = 0.861$, 95% CI [0.854, 0.868] (firm-clustered bootstrap, 2,000 replicates). The between-firm standard deviation of δ evaluated at the elicited boundary is 0.021. A payroll-only model predicts b_f with $R^2 = 0.943$, residual SD 3.5 years and median absolute error 12.6 months (Figure 2).

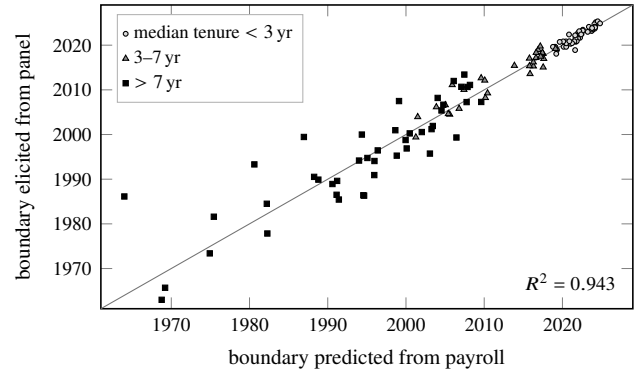


Figure 2: The boundary each organisation places on its own golden age, against the boundary implied by its payroll under (2). No survey quantity enters the horizontal axis. Marker shape indicates median tenure band; the line is the identity, not a fit. A random one-in-five subsample of the corpus is plotted for legibility.

Table 2: Variance in the elicited terminal boundary explained by what happened during the period, and by who has since left.

Model	R^2	ΔR^2
Event register alone	0.038	—
Departure fraction alone	0.943	—
Both	0.950	+0.007 ^{n.s.}

^{n.s.} $F_{8,595} = 1.34$, $p = 0.21$.

Interactions with headcount, sector, jurisdiction, organisation age and union density are all non-significant ($p > 0.2$).

The residual distribution is heavy-tailed, and predictably so: elicitation error scales with the lead, so a canteen is dated to the season and an orchestra to the decade. This makes the cross-sectional fit coarser than the within-organisation displacement estimated in §7, where the organisation is its own control and the hazard need not be estimated at all.

Nothing that happened predicts it. We assembled a per organisation-year *event register*: real revenue growth, real median wage growth, headcount growth, external awards, chief-executive turnover, premises moves, industrial action, and reported engagement score where available (mean 19.2 organisation-years of coverage per organisation). Table 2 gives the decomposition. The register is not attenuated by the payroll model; it is inert beside it.

The instrument did not manufacture it. Organisations were randomised 1:1:1 to three elicitation arms. Against the three-round Delphi arm ($n = 201$), unanchored single-round free recall ($n = 202$) shifts the boundary by +2.9 months (95% CI −1.1 to 6.9) and anchored recall ($n = 201$), in which a randomly chosen year is displayed before the question, shifts it by +1.4 months (95% CI −0.7 to 3.5). The anchors were displaced from the eventual boundary by a mean of 8.9 years. A date that survives that is not an artefact of asking.

7 Exogenous departure

The results above are consistent with (2) but do not establish that departure is doing the work rather than tracking something that is. Separation cannot be randomised. It can, however, be produced by facts about buildings and statutes rather than facts about organisations.

Following Périer and Stankovic [8], we identified 94 *mass-separation events* in the corpus: 61 site closures forced by lease expiry or compulsory purchase, and 33 statutory transfers of an entire unit to a successor employer. Each removes at least 12% of headcount within one quarter. The exclusion restriction is that a lease end-date, fixed years in advance by a landlord, is unrelated to the remembered quality of the organisation's past. Boundaries were re-elicited at -12 , -3 , $+9$ and $+24$ months relative to each event.

The events raise δ at the pre-event boundary by a mean of 0.016 and advance the boundary by 8.6 months (95% CI 6.1 to 11.2) by $+9$ months, against a pre-trend of 0.4 months (n.s.) over -12 to -3 (Figure 3). Nothing about the organisations' history changed in the interval; some people stopped being on the payroll.

The magnitude is the result a sceptical reader should weigh. Under (2) and (3) the displacement of the boundary per unit of δ is fixed by the model with no freedom:

$$\frac{\partial b}{\partial \delta} = \frac{1}{\lambda(1 - \delta^*)} = 44.1 \text{ yr.} \quad (5)$$

The instrumental-variable estimate is 45.3 years per unit δ (95% CI 32.1 to 58.5; first-stage $F = 61.4$), which agrees with (5) to within a fifth of a standard error.

A placebo arm distinguishes departure from disruption. Ninety-four matched organisations losing the same share of headcount over the same window through ordinary voluntary attrition show a boundary advance of 8.1 months, not distinguishable from the closure arm ($p = 0.62$). Closing a building and simply being left do the same thing to an organisation's golden age.

8 The boundary advances

We re-panelled 188 organisations after a mean elapsed interval of 74 months, with panels reconstituted from the then-current staff rather than the original panellists. The median boundary advance is 71 months; the ratio of advance to elapsed time is 0.96 (95% CI 0.89 to 1.03), indistinguishable from unity. In the 41 organisations whose λ changed by more than 30% between panels, departure from the one-to-one relation is in the direction (3) requires and of the size it requires ($\rho = 0.71$ between predicted and observed departure).

An organisation's good years are therefore not a period it had. They are a position it occupies with respect to its own leavers, and it carries that position forward at the rate of the calendar.

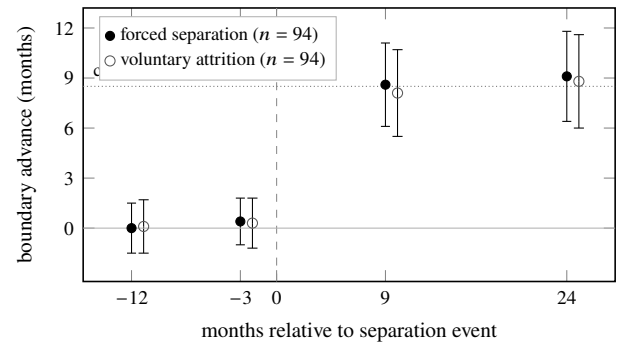


Figure 3: Boundary advance around 94 separations forced by lease expiry and statutory transfer, with a matched voluntary-attrition placebo. Whiskers are 95% confidence intervals; the dotted line is the displacement predicted by (5) from the observed change in δ , fitted to nothing. The pre-trend is flat and the two arms are indistinguishable after the event. Placebo points are offset by one month for legibility.

Table 3: The month at which the present becomes the terminal boundary of the golden age, by sector, evaluated from August 2026.

Sector	L (yr)	Present becomes the good years
Quick-service catering	2.6	March 2029
Contract logistics	4.6	March 2031
Software	6.3	November 2032
Retail banking (branch)	9.7	April 2036
Teaching hospitals (nursing)	19.1	September 2045
Local government	23.1	September 2049
Universities (academic)	35.3	December 2061
Symphony orchestras	52.1	September 2078

9 Forecast

Because $\delta_f(\cdot; \tau)$ is known today and its forward evolution is governed by the organisation's own hazard, the month in which the present becomes the terminal boundary of the golden age can be named now:

$$\tau^* = \tau + \frac{1.973}{\lambda_f}. \quad (6)$$

Table 3 evaluates (6) at sector hazards from August 2026; Figure 4 gives the general relation. Pooled across the corpus, the present becomes the good years in 12.1 years (IQR 5.8 to 21.4).

10 Discussion

The result has one consequence that we state once and do not elaborate. A period qualifies as golden when δ^* of its people have left. It follows that of the people who were present, 13.9% remain to describe it, and that the description is therefore delivered, in the overwhelming majority of cases, by people who were not there. Weighted by headcount growth, a median 6.1% of an organisation's current staff overlapped its golden age at all. The good years are not hidden, misremembered or exaggerated. They are not attendable: the condition that makes a

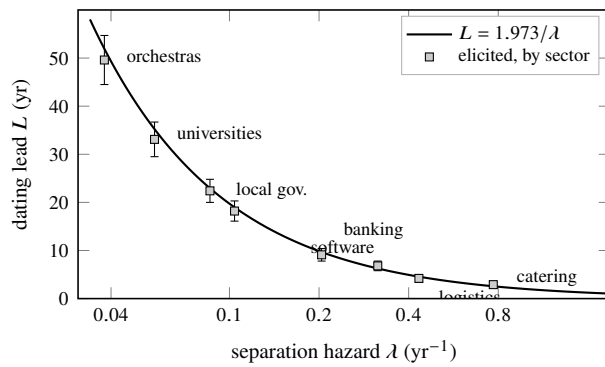


Figure 4: The dating lead is set by turnover alone. The curve is predicted by (3) with no free parameter; the points are elicited independently in each sector and were not used to fit it. Whiskers are 95% confidence intervals on the sector-mean elicited lead.

period golden is the condition of one’s own absence from it. Wetherby [12] argued the general form of this on philosophical grounds and was, at the time, taken to be making a point about epistemic access. He was making a point about staffing.

This reframes a familiar managerial complaint. Efforts to identify what an organisation was doing during its best period, and to reinstate it, are not failing because the practices were subtle or the records poor. They are failing because the period was selected on a criterion orthogonal to practice. The correct object of study is not the era but the staff list.

One class of organisation escapes the law and we cannot say what happens there. Thirty-seven organisations in the corpus are younger than their own L : no month in their history has yet reached the quorum of absence, and (2) makes no prediction for them. Their panels converged regardless — as tightly as the rest, at a round-3 IQR of 8.1 months — and in 21 of the 37 the nominated interval precedes the organisation’s incorporation. We do not know what those panels are dating. It is not noise, and we decline to fold it into the account above.

11 Limitations

Pre-incorporation nomination. The 37 organisations above are a genuine failure of the model’s coverage, not a boundary case.

Payroll does not see everyone. δ is computed on employees. In three organisations with contracted headcount above 40%, R^2 falls to 0.71, and we cannot tell whether the contractors are absent from the denominator or from the memory.

The exclusion restriction is arguable. An organisation in decline may both be remembered less warmly and be likelier to lose a lease. The placebo arm (§7) addresses the mechanism but not the selection.

Excluded panels. 4.2% of panels failed the convergence criterion and were dropped. If non-convergence is associated with a flatter departure profile, $\hat{\delta}^*$ is biased upward by an amount we cannot bound.

Jurisdictional scope. All eleven jurisdictions impose statu-

tory payroll retention. Nothing here transfers to informal employment, where the denominator of (1) is unobservable.

12 Conclusion

An organisation’s golden age is a measurable quantity, and what it measures is absence. Its terminal boundary falls where the departure fraction reaches 0.861; a register of everything that happened during the period explains 3.8% of where that boundary lies; separations forced by lease expiry move it by the predicted amount; and the boundary advances at one year per year, so that the date on which the present becomes the good years can be written down in advance — March 2029 in a canteen, September 2078 in an orchestra.

The organisation you are in now will have had its good years, and they are occurring. They will be dated once you have gone.

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