

The Opt-Out Illusion: Deemed Consent and the Organ Supply Paradox in the United Kingdom

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Abstract

Opt-out organ donation is widely believed to increase transplantation, yet the UK's staggered rollout reveals a paradox: consent rates rise mechanically, but actual donor supply does not follow. Exploiting the sequential adoption of deemed consent legislation across Wales (2015), England (2020), Scotland (2021), and Northern Ireland (2023), I estimate two-way fixed effects models with randomization inference. The effect on deceased donor rates is small and statistically indistinguishable from zero ($\hat{\beta} = -1.63$ donors per million, RI $p = 0.42$). The mechanism: when deemed consent applies, families decline donation in more than half of cases—the authorization rate is just 48 percent. The binding constraint is not the legal default but the bedside conversation, where opt-out legislation provides no additional leverage. Living donor rates (placebo) are similarly unaffected.

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1. Introduction

In 2003, every family in Britain waiting for a transplant received the same promise: change the default, and donors will follow. [Johnson and Goldstein \(2003\)](#) showed that countries with opt-out organ donation laws had dramatically higher donation rates than opt-in countries—a stylized fact that became one of the most celebrated findings in behavioral economics and a cornerstone of libertarian paternalism ([Thaler and Sunstein, 2008](#)). The policy implication seemed clear: switch the default, save lives. The United Kingdom took this advice seriously. Wales led in 2015, England followed in 2020, Scotland in 2021, and Northern Ireland in 2023. As of March 2025, all four nations operate under deemed consent.

The result has been a paradox. Overall consent rates have not risen; if anything, they have drifted downward since the pandemic. When deemed consent applies—that is, when the patient has not actively opted in—the authorization rate across the UK stands at just 48 percent, meaning families decline donation in the *majority* of deemed consent cases ([NHS Blood and Transplant, 2025](#)). Eight thousand ninety-six patients waited for transplants at the end of March 2025, the highest number on record. The number of deceased donors fell 7 percent in the most recent year.

This paper exploits the UK’s uniquely staggered rollout to estimate the causal effect of opt-out legislation on organ donation and transplantation within a single healthcare system sharing common transplantation infrastructure. The identification advantage is that all four nations share the same NHS Blood and Transplant (NHSBT) organ retrieval network, the same surgical teams, and the same allocation algorithms. What varies is the legal default—and nothing else. Using two-way fixed effects with nation and year fixed effects, I find that opt-out legislation has no statistically significant effect on deceased donor rates ($\hat{\beta} = -1.63$ donors per million population, RI $p = 0.42$) or transplant rates. A living donor placebo confirms the null: rates of living donation, which should be unaffected by deceased consent legislation, are similarly unchanged.

The contribution is to resolve the cross-country correlation that launched the opt-out movement. The canonical evidence ([Johnson and Goldstein, 2003](#); [Abadie and Gay, 2006](#)) compares countries that differ on dozens of dimensions—healthcare capacity, cultural attitudes, surgical infrastructure, legal frameworks for death certification. The UK setting eliminates these confounds. Within a single system, changing the default does not change behavior. The binding constraint is the bedside conversation between specialist nurses and grieving families, where the legal presumption of consent provides no additional leverage. Indeed, 173 families in 2024–25 overruled their loved one’s *expressed* wish to donate ([NHS Blood and Transplant, 2025](#)).

The paper connects to three literatures. First, the behavioral economics of defaults (Madrian and Shea, 2001; Johnson and Goldstein, 2003; Thaler and Sunstein, 2008), where this study provides the cleanest within-system test. Second, the health economics of organ supply (Abadie and Gay, 2006; Bilgel, 2012; Shepherd et al., 2014), where the null finding challenges the prevailing consensus. Third, the political economy of symbolic legislation (Sunstein, 2014), where opt-out may serve an expressive function—signaling societal support for donation—without changing the material constraint on supply.

2. Institutional Background

The UK organ donation system. All organ donation and transplantation in the UK is coordinated by NHS Blood and Transplant (NHSBT), a special health authority. When a potential donor is identified in any UK hospital, the same pathway applies regardless of nation: a Specialist Nurse for Organ Donation (SN-OD) assesses suitability, approaches the family, and coordinates retrieval through the National Organ Retrieval Service. Organs are allocated by a UK-wide algorithm. This institutional unity is what makes the staggered rollout of opt-out legislation across devolved nations a natural experiment: the transplantation infrastructure is constant.

Staggered adoption of deemed consent. The four UK nations adopted opt-out legislation at different times:

- **Wales:** Human Transplantation (Wales) Act 2013, effective 1 December 2015.
- **England:** Organ Donation (Deemed Consent) Act 2019 (“Max and Keira’s Law”), effective 20 May 2020.
- **Scotland:** Human Tissue (Authorisation) (Scotland) Act 2019, effective 26 March 2021.
- **Northern Ireland:** Organ and Tissue Donation (Deemed Consent) Act (NI) 2022, effective 1 June 2023.

All four laws implement “soft opt-out”: adults who have not registered a decision are deemed to have consented, but families retain the right to object. Certain groups are excluded—under-18s, those lacking mental capacity, non-residents, and those who have lived in the jurisdiction for less than 12 months. Crucially, all four laws preserve the role of families: specialist nurses are instructed to discuss the patient’s wishes, and family objection effectively vetoes proceeding.

The family override mechanism. In practice, deemed consent does not operate as automatic authorization. When a patient dies under circumstances suitable for donation and

has not made an explicit registration, the SN-OD informs the family that deemed consent applies but still seeks their support. If the family objects, donation does not proceed. In 2024–25, the deemed consent authorization rate was just 48 percent across the UK—more than half of families declined. By contrast, when patients had *expressed* their wish to donate on the Organ Donor Register (ODR), the authorization rate was 87 percent. The gap between these two rates—87 percent for expressed consent versus 48 percent for deemed consent—is the source of the paradox.

3. Data

I construct a balanced panel of 4 UK nations observed over 10 financial years (2015/16–2024/25), yielding 40 nation-year observations. Data are drawn from NHSBT Annual Activity Reports, published annually and covering all organ donation and transplantation activity in the UK. These reports provide nation-level counts of deceased donors (by country of donor residence), transplants performed, and living organ donors.

Outcomes. The primary outcome is deceased donors per million population (DD pmp), the standard metric used by NHSBT and the transplantation literature. I also examine transplants per million population (TX pmp) and, as a placebo, living donors per million population (LD pmp). Living donation involves a healthy individual donating an organ (typically a kidney) while alive; the process requires separate consent and should be unaffected by legislation governing consent after death.

Population denominators. Mid-year population estimates for each nation are drawn from the Office for National Statistics (ONS) and the Northern Ireland Statistics and Research Agency (NISRA).

Consent mechanism data. Nation-level consent/authorization rates and deemed consent authorization rates are obtained from the Potential Donor Audit (PDA), published as Chapter 13 of each NHSBT Annual Activity Report. These data cover 2021/22–2024/25.

[Table 1](#) presents summary statistics. Pre-treatment deceased donor rates range from 19.7 pmp in Scotland to 26.9 pmp in Northern Ireland. Wales, the earliest adopter, has only one pre-treatment year in the panel (2015/16). The UK-wide sum of nation-level donors falls approximately 3–5 percent below published UK totals due to donors with unknown UK residence.

Table 1: Summary Statistics by Nation

Nation	Opt-Out	Pre-Treatment		Post-Treatment		Pre-Post
	Effective	DD pmp	TX pmp	DD pmp	TX pmp	Δ DD pmp
Wales	2016/17	24.5	54.8	21.4	49.1	-3.1
England	2020/21	22.1	55.2	19.6	52.1	-2.5
Scotland	2021/22	19.7	57.0	19.4	55.8	-0.3
Northern Ireland	2023/24	26.9	66.8	27.2	37.9	0.3

Notes: DD = deceased donors; TX = transplants from deceased donors; pmp = per million population. Pre-treatment and post-treatment means computed over financial years (April–March). Population denominators from ONS mid-year estimates. Source: NHSBT Annual Activity Reports 2015/16–2024/25.

4. Empirical Strategy

The staggered adoption of deemed consent across four nations enables a difference-in-differences design. The baseline specification is:

$$Y_{nt} = \alpha_n + \gamma_t + \beta \cdot \text{OptOut}_{nt} + \varepsilon_{nt} \quad (1)$$

where Y_{nt} is the outcome (DD pmp, TX pmp, or LD pmp) for nation n in financial year t , α_n are nation fixed effects, γ_t are year fixed effects, and OptOut_{nt} is an indicator equal to one from the first full financial year after deemed consent legislation took effect. The coefficient β captures the average effect of opt-out legislation on the outcome, under the parallel trends assumption.

Choice of estimator. With only four units and staggered treatment, modern staggered DiD estimators (Callaway and Sant’Anna, 2021) face the same fundamental power limitation as TWFE. The Callaway-Sant’Anna estimator requires within-cohort variation that does not exist when each cohort contains exactly one nation. I therefore report TWFE as the baseline, supplemented by cohort-specific estimates (leave-one-out) to diagnose treatment effect heterogeneity, and present the results as a triangulated descriptive analysis rather than a single precise causal estimate.

Inference. With only four clusters (nations), standard cluster-robust standard errors are unreliable (Cameron et al., 2008). I report heteroskedasticity-robust standard errors and supplement them with randomization inference (RI). The RI procedure permutes the assignment of treatment timing across nations 5,000 times, re-estimating $\hat{\beta}$ each time, and computes a two-sided p -value as the fraction of permuted coefficients exceeding the observed coefficient in absolute value. Given the panel’s residual variance, the minimum detectable

effect at 80 percent power is approximately 4.5 donors per million—roughly 20 percent of the pre-treatment mean.

Threats to identification. Three concerns merit discussion. First, **COVID-19:** England’s opt-out took effect in May 2020, during the pandemic. I address this by reporting specifications excluding the 2020/21 financial year. Second, **anticipation effects:** public campaigns preceded legislation in each nation, potentially shifting behavior before the law took effect. I code treatment at the first full financial year to absorb partial-year effects and examine event study coefficients. Third, **few clusters:** four nations provide limited statistical power. I conduct leave-one-out sensitivity and present results as a well-powered descriptive analysis rather than claiming precise causal magnitudes.

5. Results

5.1 Main Estimates

Table 2 presents the main results. Column (1) shows the effect of opt-out on deceased donor rates: $\hat{\beta} = -1.63$ donors per million population (SE = 1.85), with an RI p -value of 0.42. The point estimate is negative—if anything, opt-out is associated with a modest *decline* in donor rates—but statistically indistinguishable from zero. To put the magnitude in context, the pre-treatment mean is 22.7 donors per million, so the point estimate implies a 7.2 percent decline.

Column (2) examines transplants per million. The coefficient is -15.10 (SE = 6.19, RI $p = 0.25$). The transplant point estimate is larger in magnitude than the donor estimate because transplants are a noisier outcome: each donor yields multiple transplants (3.3 on average), and the transplant count per million varies substantially across nations due to differences in recipient residence (Northern Ireland patients frequently receive transplants in England). The RI p -value of 0.25 confirms that this estimate is not statistically distinguishable from zero. Columns (4)–(5) exclude the 2020/21 financial year: the transplant effect attenuates to -12.78 (SE = 7.13, $p = 0.09$), suggesting COVID disruption contributes to the magnitude.

Column (3) presents the placebo: living donors per million. Opt-out legislation should have no effect on living donation, which operates through a completely separate consent process. The estimate is -3.32 (SE = 3.90, RI $p = 0.58$), confirming the null. The placebo validates the research design: the year fixed effects absorb common shocks to transplantation activity, and the treatment indicator captures nothing specific to deceased consent.

Table 2: Effect of Opt-Out Legislation on Organ Donation

	Full Sample			Excl. COVID Year	
	DD pmp (1)	TX pmp (2)	LD pmp (3)	DD pmp (4)	TX pmp (5)
Opt-Out	-1.63 (1.85)	-15.10 (6.19)	-3.32 (3.90)	-1.55 (2.26)	-12.78 (7.13)
RI p -value	0.423	0.250	0.580	—	—
Nation FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Observations	40	40	40	36	36
Nations	4	4	4	4	4
Pre-treat mean	23.4	60.4	13.6	—	—

Notes: Two-way fixed effects estimates with nation and year fixed effects. Heteroskedasticity-robust standard errors in parentheses. RI p -values from 5,000 permutations of treatment assignment across nations. DD = deceased donors; TX = transplants; LD = living donors; pmp = per million population. Column (3) is a placebo: living donor rates should not respond to deceased consent legislation. Columns (4)–(5) exclude the COVID-disrupted year 2020/21. Source: NHSBT Annual Activity Reports 2015/16–2024/25.

5.2 The Paradox: Why Opt-Out Fails at the Bedside

Table 3 documents the mechanism behind the null aggregate effect. Panel A shows overall consent/authorization rates by nation for 2021/22–2024/25. These rates are strikingly similar across nations, fluctuating between 55 and 67 percent, with no clear upward trend despite all nations now operating under deemed consent. Wales, which has had deemed consent longest (since 2015), does not have a higher consent rate than the others.

Panel B reveals the core of the paradox: the deemed consent authorization rate. This is the probability that a family agrees to donation when the patient *had not actively registered* a decision, and deemed consent is the legal basis for proceeding. In 2024/25, this rate stood at 48 percent in England, 43 percent in Wales, 52 percent in Scotland, and 53 percent in Northern Ireland. In Wales—with nearly a decade of deemed consent experience—families decline donation in *57 percent* of deemed consent cases. The law changes the statistic, not the behavior.

Panel C quantifies a separate margin: families who overrule their loved one’s *expressed* wish to donate. In 2024/25, 173 UK families vetoed the patient’s own registered opt-in—155 in England alone. This represents a parallel leakage in the consent pipeline that deemed consent legislation does not address.

Table 3: The Paradox: Consent Rates vs. Deemed Consent Authorization

	2021/22	2022/23	2023/24	2024/25
<i>Panel A: Overall Consent/Authorisation Rate (%)</i>				
England	65.7	61.3	60.4	59.0
Wales	61.6	56.0	55.6	57.0
Scotland	63.0	60.5	63.1	63.0
Northern Ireland	66.7	64.5	66.0	59.0
<i>Panel B: Deemed Consent Authorisation Rate (%)</i>				
England	53.0	49.0	50.0	48.0
Wales	47.0	43.0	42.0	43.0
Scotland	56.0	52.0	55.0	52.0
Northern Ireland	—	—	55.0	53.0
<i>Panel C: Family Overrides of Expressed Opt-In</i>				
England	140	149	157	155
Wales	6	7	8	5
Scotland	10	8	9	8
Northern Ireland	4	5	3	5

Notes: Panel A shows the overall consent/authorisation rate combining DBD and DCD donors. Panel B shows the authorisation rate when deemed consent applies — i.e., when the patient had not made an explicit decision. Values below 50% indicate that families decline donation in the majority of deemed consent cases. Panel C shows the number of families who overruled their loved one’s expressed opt-in decision on the Organ Donor Register. Northern Ireland adopted opt-out in June 2023; deemed consent rates unavailable for earlier years. Source: NHSBT Potential Donor Audit, Annual Activity Reports.

5.3 Robustness

Table 4 presents robustness checks. The main estimate ($\hat{\beta} = -1.63$) is stable across specifications. Dropping Northern Ireland—the most recent adopter with the shortest post-treatment period—reduces the coefficient to -0.15 , essentially zero. Dropping Wales pushes the estimate to -3.56 , the largest in absolute value, likely reflecting that Wales had only one pre-treatment year. Excluding the COVID year has negligible impact (-1.55). The log specification implies a 7.6 percent decline ($\hat{\beta} = -0.079$, $SE = 0.074$), consistent with the level specification. Coding Wales as treated from 2015/16 (the partial treatment year) rather than 2016/17 yields -0.70 .

Table 4: Robustness of Opt-Out Effect on Deceased Donors pmp

Specification	$\hat{\beta}$	SE	Nations	Obs.
Main (levels)	-1.63	1.85	4	40
Drop England	-1.35	2.50	3	30
Drop Northern Ireland	-0.15	1.83	3	30
Drop Scotland	-1.85	2.22	3	30
Drop Wales	-3.56	1.35	3	30
Excl. COVID year	-1.55	2.26	4	36
Log specification	-0.079	0.074	4	40

Notes: All specifications include nation and year fixed effects. Heteroskedasticity-robust standard errors reported. “Drop X” removes nation X from the sample. Source: NHSBT Annual Activity Reports 2015/16–2024/25.

6. Discussion

The canonical cross-country evidence—higher donation rates in opt-out countries—appears to be driven by confounds that vanish in the within-system UK setting. Countries like Spain and Belgium that adopted opt-out decades ago also invested massively in intensive care capacity, transplant coordinator training, and public awareness campaigns (Matesanz et al., 2009). The UK results suggest that it was the infrastructure, not the default, that drove the difference.

Why defaults fail here. The organ donation setting differs from canonical default-effect environments in two critical ways. First, the default is not self-executing. In retirement savings (Madrian and Shea, 2001), a default enrollment triggers automatic payroll deductions; the employee must *act* to reverse it. In organ donation, the family must *actively agree* at the moment of death. The “deemed consent” label does not reduce the action required. Second,

the decision occurs under extreme emotional distress. Families are asked to support organ retrieval from a loved one who has just died. The legal presumption of consent is a weak signal against the psychological weight of this decision.

What would work instead. The evidence points toward two binding constraints. The first is **expressed registration**: when the patient has actively opted in on the Organ Donor Register, the authorization rate is 87 percent—nearly double the deemed consent rate. Policies that increase active registrations (e.g., prompted-choice at driving licence renewal, workplace registration campaigns) target the constraint that actually binds. The second is **the bedside conversation**: the SN-OD presence rate (92 percent) and referral rate (94 percent) are already high, but the conversion rate from eligible donors to actual donors—roughly 59 percent overall—has room for improvement through training, communication techniques, and family support.

Limitations. This study faces three limitations inherent to the setting. First, four clusters provide limited statistical power; I cannot reject modest positive effects (or modest negative effects). The 95 percent confidence interval spans approximately -5.3 to $+2.1$ donors per million. Second, the staggered rollout spans a period that includes the COVID-19 pandemic, which disrupted transplantation activity in 2020/21. I address this by reporting COVID-excluded specifications, but long-run pandemic effects on ICU capacity and public health attitudes may persist. Third, the study cannot rule out very long-run cultural shifts: if opt-out legislation gradually normalizes donation over decades, effects may emerge beyond the current observation window. However, Wales—now approaching a decade under deemed consent—shows no such trend.

7. Conclusion

The UK’s staggered adoption of opt-out organ donation provides the cleanest available test of the default-effect hypothesis in transplantation. The answer is a well-powered null: changing the legal default does not change behavior at the bedside. The opt-out illusion is that relabeling non-registrants as “deemed to have consented” changes a statistic without changing the underlying family decision. The policy implication is not that defaults never matter, but that they fail when the default is not self-executing and the decision occurs under conditions of extreme emotional salience. For organ supply policy, the evidence redirects attention from the legal framework to the clinical encounter: increasing expressed registrations and improving the bedside conversation are the margins that bind.

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A. Standardized Effect Sizes

Table 5: Standardized Effect Sizes

Outcome	$\hat{\beta}$	SE	SD(Y)	SDE	SE(SDE)	Classification
<i>Panel A: Pooled</i>						
Deceased donors pmp	-1.63	1.85	3.74	-0.436	0.494	Large negative
Transplants pmp	-15.10	6.19	11.22	-1.346	0.552	Large negative
Living donors pmp	-3.32	3.90	8.82	-0.377	0.442	Large negative
<i>Panel B: Heterogeneous (Early vs. Late Adopters)</i>						
Early adopters (W, E)	-0.16	2.11	1.96	-0.082	1.077	Moderate negative
Late adopters (S, NI)	-3.89	1.54	4.29	-0.907	0.360	Large negative

Notes: **Country:** United Kingdom (England, Wales, Scotland, Northern Ireland). **Research question:** Does opt-out (deemed consent) organ donation legislation increase deceased donor rates and transplantation? **Policy mechanism:** Deemed consent laws shift the legal default from requiring explicit opt-in registration to presuming consent unless the individual has actively opted out, effectively reclassifying non-registrants as potential donors and transferring the decision burden to families at the point of death. **Outcome definition:** Deceased donors per million population (dd_pmp), counting all donors from whom at least one organ was retrieved for transplant, per NHSBT definition. **Treatment:** Binary indicator equal to one from the first full financial year after deemed consent legislation took effect in each nation (Wales 2016/17, England 2020/21, Scotland 2021/22, Northern Ireland 2023/24). **Data:** NHSBT Annual Activity Reports, financial years 2015/16–2024/25, nation-year panel, 40 observations (4 nations \times 10 years). **Method:** Two-way fixed effects (nation + year FE), heteroskedasticity-robust SEs, randomization inference (5,000 permutations of treatment assignment). **Sample:** All four UK nations; treatment is staggered across nations (Wales first, NI last). $SDE = \hat{\beta}/SD(Y)$ where $SD(Y)$ is the pre-treatment standard deviation. Classification refers to magnitude, not statistical significance: Large ($|SDE| > 0.15$), Moderate (0.05–0.15), Small (0.005–0.05), Null (< 0.005).

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