Executive Summary

In Guilford County, North Carolina, property tax revenues represent about 60% of the county's total revenue base.[i] Given that property taxes are Guilford's largest single source of revenue, and a relatively stable funding base, the efficient and thorough collection of property taxes is a critical component of governmental operations.

Around the third week of November, the Guilford Tax Office distributes a "reminder letter" to residents and businesses who did not pay their taxes on time the previous year and have yet to pay them in the current year. This year, the office sent the letter to 14,019 individual recipients. These recipients will hereafter be referred to as "high-risk" payers. The purpose of this experiment was to test the efficacy of small-scale "nudges" in increasing the rate of on-time payment among this group of high-risk taxpayers.

The sample of roughly 14,019 reminder letters was split into two treatment groups and a control group. Both treatment groups received an altered letter in which the text of two banners was changed to increase the recipient's sense of obligation and urgency toward their payment. A large banner reading "Friendly Reminder" was changed to read: "PAY NOW," and a similar, smaller banner reading "This is a Friendly Reminder" was changed to read: "7 out of 10 Guilford County Taxpayers Have Already Paid."

In addition to the altered letter, the third group received envelopes with a short, personalized, handwritten note on the exterior of the envelope. The notes read *"(Name) you really need to open this."* The table below summarizes the interventions that each of the three groups received:

Control Group	Intervention Group One	Intervention Group Two
No intervention – received same letter and envelope as in previous years	Received an altered letter delivered in an unchanged envelope	Received an altered letter, **and** a handwritten note on the front the billing envelope.

This experiment features the purposeful integration of behavioral economic nudges into governmental communications and processes. It holds promise as a low-cost and highly efficient means of improving outcomes, increasing efficiency, and fostering a more positive relationship with the public.

Governments that design their policies with human psychology in mind will be the governments that thrive in the coming decades.

This experiment involved two primary outcome variables.

- First, the real increase in on-time payment rates of the treatment groups compared to the control group.

- Second, the effect of the intervention of the likelihood of payment in the treatment groups, as measured by the odds ratio.[1]

Our top-line findings show that both the nudges embedded in the letter, and the note written on the outside of the envelope had a significant positive impact on both real payment rates and likelihood to pay. Below is an overview of our most compelling findings.

On-time payment rates of single property owners who *made a full payment*		
Control Group: 33.4%	Intervention Group One: 34.8%	Intervention Group Two: 39.7%

In this category, *taxpayers in intervention group two were 30.7% more likely to pay on time* (OR=1.307, P=O)

On-time payment rates of single property owners who *made a full or partial payment*		
Control Group: 42.2%	Intervention Group One: 45.2%	Intervention Group Two: 49.8%

In this category, *taxpayers in the first intervention group were 12.4% more likely to make a payment* (OR=1.124, P=.029). *Those in the second intervention group were 35.6% more likely to make a payment* (OR=1.356, P=0).

Arriving at an accurate and precise estimate of the cost savings that resulted from these interventions is difficult for reasons that are elaborated upon later in this paper. But some metrics allow for meaningful, if rough, estimates. For example, using Guilford's assumption that the average collection costs for a single unpaid bill is around $150, we can estimate that the first intervention saved the county around $21,000 and that the second intervention saved around $53,000.

---

[i] Michael Halford, Guilford County Tax Office

---

[1] An *Odds Ratio* is a measure of association between a treatment and an outcome. The OR represents the *odds* that an outcome will occur given a particular exposure, compared to the *odds* of the outcome occurring in the absence of the exposure. For example, if the expected outcome of the treatment is the same in both the treatment and control groups, the odds ratio would be 1. On the other hand, an OR of 1.3 would mean that odds of the outcome in question are 30% higher in the treatment group than the control.