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PROVIDING VOUCHERS AND VALUE INFORMATION FOR ALREADY FREE EYE EXAMS INCREASES UPTAKE AMONG A LOW-INCOME MINORITY POPULATION: A RANDOMIZED TRIAL

Seema Kacker
Mario Macis
Prateek Gajwani
David S. Friedman

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Providing Vouchers and Value Information for Already Free Eye Exams Increases Uptake Among a Low-Income Minority Population: A Randomized Trial

Seema Kacker, Mario Macis, Prateek Gajwani, and David S. Friedman

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ABSTRACT

We study whether vouchers with and without value information encourage completion of already free follow-up appointments in a low-income minority population in Baltimore City referred for possible eye disease. Between May 2017 and September 2018, 821 individuals referred for free follow-up from 114 screening events received 1) standard referral, 2) a voucher redeemable for free follow-up and prescription glasses, or 3) a voucher including a statement of monetary value ($250). All referred individuals received patient education, counseling, and appointment reminders. We find that vouchers without and with value information increase follow-up appointments by 12.5 and 20.3 percentage points, respectively, corresponding to a 36%-58% increase compared to the standard referral with no voucher. We conclude that reframing free targeted health service offers by providing vouchers with value information is a promising, low-cost tool to increase uptake.

Seema Kacker
Johns Hopkins University
1830 East Monument Street
Suite 2-300
Baltimore, MD 21205
skacker1@jhmi.edu

Mario Macis
Johns Hopkins University
Carey Business School
100 International Drive, Office 1333
Baltimore, MD 21202
and IZA
and also NBER
mmacis@jhu.edu

Prateek Gajwani
Johns Hopkins University
1800 E Monument St
Baltimore, MD 21205
pgajwan1@jhmi.edu

David S. Friedman
Harvard Medical School
243 Charles St.
Boston, MA 02114
david_friedman@meei.harvard.edu

1. Introduction

Poor eye health is exceedingly common; 90 of 142 million adults living in the United States (US) in 2010 suffered from some form of eye or visual impairment. These totals are expected to increase as the population ages (Prevent Blindness America, 2012; National Academies of Sciences *et al.*, 2016a). Ophthalmologic disorders are associated with reduced quality of life and productivity, increased mortality, and significant financial consequences (National Academies of Sciences *et al.*, 2016b).

Most visual impairment is either preventable or reversible, suggesting that earlier diagnosis and treatment could substantially impact public health (National Academies of Sciences *et al.*, 2016b). Cost is frequently cited as a barrier to seeking care, particularly among low-income and minority individuals, who bear a disproportionately high burden of disease (Zambelli-Weiner, Crews and Friedman, 2012; Zhang *et al.*, 2012; Wagner and Rein, 2013; Zhang *et al.*, 2013). Several community-based vision screening programs have been launched in response, including some which provide free glasses or link beneficiaries to additional discounted or free services (National Academies of Sciences et al., 2016b). Unfortunately, follow-up after these screenings, even when offered for *free*, has been limited (Castanes, 2003; Hartmann et al., 2006; Kemper et al., 2012; Hered and Wood, 2013; National Academies of Sciences et al., 2016a).

Low take-up of free health services and other publicly accessible benefit programs is a widespread phenomenon in the US and internationally, particularly among low socio-economic status populations (Currie 2004, Hernanz et al. 2004, Finkelstein and Notowidigdo, 2019). The main explanations discussed in the literature are a lack of information, different types of transactions costs (Currie 2004, Finkelstein and Notowidigdo, 2019), inattention, competing priorities and limited mental bandwidth (Bertrand *et al.*, 2004; Mullainathan and Shafir, 2013). In

this study, we present the results of a cluster-randomized controlled trial conducted with a Baltimore-based glaucoma screening program, Screening to Prevent (SToP) Glaucoma. We test whether patients' willingness to use follow-up eye services, to which they are already entitled for free, is affected by information about the *retail dollar value* of those services.

The SToP program offers free community-based screenings across the Baltimore region in an effort to promote earlier detection of ophthalmic disease. Any individual identified during screening as potentially having glaucoma or another eye condition is offered a free appointment for definitive evaluation. Despite being provided with educational materials, dedicated counseling, and reminder phone calls, only 43% of those who were referred for evaluation in the first year of the program completed follow-up (Zhao *et al.*, 2017, 2018).

In our study, we compare follow-up between individuals who were offered free appointments using a standard referral process and individuals who, in addition, were provided with a voucher described as “redeemable for free follow-up," which indicated the estimated retail value of the appointment ($250). This simple, low-cost intervention could help to address a specific type of misinformation, i.e., that individuals may underestimate the value of the free health service they are being offered. In our specific context of eye health, the immediate benefits of seeking evaluation may not be apparent, as glaucoma often presents without acute symptoms and progresses slowly. In addition, if price serves as a signal of quality or desirability, the value of low-cost or free services may be discounted (Raghubir, 2004; Raghubir and Celly, 2011). Retail value information could increase take-up by providing new information (i.e., learning the value of the service), by making the offer more salient (i.e., price information makes the service’s value more present in the patients’ mind), or by a combination of the two. To account for the possibility that the voucher itself might impact on the decision to follow up (e.g., by acting as a tangible

reminder), we also include a condition where referred individuals received a voucher without retail value information.

Our study contributes to a growing empirical literature on the effect of various behaviorally-informed interventions on take-up of free health services.[1] Previous work has examined the effects of providing information about eligibility and health benefits (Altmann and Traxler, 2014; Finkelstein and Notowidigdo, 2019), reducing transaction costs (Cuesta et al., 2021), and addressing inattention with reminders (e.g., Milkman et al. 2012; Altmann and Traxler, 2014; Schwebel and Larimer, 2018). We are unaware of previous attempts to study our specific intervention, although other studies have examined similar behavioral insights in non-health contexts. Dynarski et. al (2019), for example, suggest that disadvantaged students and their families may overestimate the net cost of college, and show that a low-cost, targeted intervention was effective at encouraging students eligible for free college education to apply and enroll. Similarly, our intervention addresses the possibility that referred individuals may underestimate the net benefit of the free health service they are entitled to. Our study is also related to evidence that behavior is affected by information about precisely how much money an individual could save by taking certain actions. For example, Bertrand and Morse (2011) show that disclosing information about the cost of payday borrowing lowers the use of high-cost debt among customers of a payday lender.

In the next section, we provide more details about the context and describe our experimental design. In section 3, we present the results, and in section 4 we discuss our findings.

[1] Monetary and non-monetary incentives have also been studied in various health-related contexts including HIV testing and medication (e.g., Chamie et al. 2018, Thirumurthy et al. 2019; Macis et al. 2021), tuberculosis testing (Goldberg et al. 2018), flu vaccination and cancer screening services (e.g., Stone et al. 2002).

2. **Context and Experimental Design**

Our study consisted of a clustered randomized controlled trial implemented in partnership with SToP, a program intended to optimize the detection of eye diseases, primarily among black and Hispanic individuals aged 50 or older. This population has disproportionately high rates of glaucoma, a condition for which early detection and linkage to treatment is necessary to delay irreversible disease progression (Zhao *et al.*, 2017). SToP offers free eye health screenings at community sites (senior housing complexes, churches, nonprofit clinics, and health centers) within the East Baltimore region, and free follow-up appointments with an ophthalmologist at the Wilmer Eye Institute (Johns Hopkins Hospital) to any individual found to have potentially concerning findings. All referred individuals are provided with educational materials, dedicated counseling, and reminder phone calls.

In our study, these screening events were randomized to one of three arms: "No Voucher" (control group), "Voucher Without Value Information", and "Voucher With Value Information" (see Figure 1 for study sampling and recruitment details). Individuals referred from "No Voucher" screenings received standard counseling using information packets detailing the reason for referral and importance of follow-up, and an appointment reminder sheet including date, time, location, and cost (free).[2] During screening events assigned to either voucher type, referred individuals received the same counseling and materials as those in the "No Voucher" group, along with the

[2] Screened individuals underwent visual acuity (VA) testing, fundus photography, and measurement of intraocular pressure (IOP). SToP participants were referred for poor VA, signs of retinal abnormalities on fundus photography, uninterpretable fundus photography, concerning cup-to-disc ratios, or an elevated IOP. Fundus imaging was reviewed by an ophthalmologist after the screening, and participants were contacted for referral if abnormalities were identified. Testing and one-on-one referral counseling were conducted by trained non-medical personnel and included an educational video designed for specific eye conditions. The full protocol used during SToP screening events has been previously described (Zhao *et al.*, 2017, 2018).

appropriate voucher (Figure 2). Both voucher types included participant name, date of issue, and an expiration date (90 days from issue). The "Voucher With Value Information" included the statement: "Estimated Value: $250 (includes full eye exam and one pair of prescription glasses)." No explicit value information was provided on the other voucher type.

Our study population includes 730 SToP participants screened for glaucoma at 100 screening events and referred for follow-up between May 2017 through September 2018. Of these 730, 10 individuals were found to be inappropriately referred (i.e., did not require follow-up). These individuals were contacted and their appointments were cancelled. Between May 23, 2018 and June 24, 2018, 14 screenings were not randomized due to changes in SToP program staff, with a total of 91 individuals referred across these events. By default, these individuals were provided with a free appointment offer (i.e. the "No Voucher" treatment). Our study population thus included a total of 821 individuals, 12 of whom were erroneously referred. Below, we perform our analyses on both the sample of individuals from randomized screening events (720) and the full sample (809).

Simple randomization of screening events was conducted by study investigators. This study was not double blinded; assignments were revealed to study staff prior to the screening, and not revealed to participants until referral during the screening itself. A structured referral script was used during counseling.

Follow-up appointments were scheduled at the screening event, generally within a 2-week period from the screening. All referred individuals received reminder calls and text messages 1 day prior to their appointment. Individuals who cancelled or did not show for the appointment were contacted via phone or text message to reschedule. We tracked follow-up of all referred

participants through January 2019. After three cancellations/missed appointments, the individual was recorded as not completing follow-up.

3. Data and Estimation method

Participant characteristics and balance tests:

Table 1 shows baseline characteristics of study participants (sex, age, and race) overall and separately for the "No Voucher", "Voucher Without Value Information", and "Voucher With Value Information" groups. Referred individuals had a mean age of nearly 70, were 37% male, and 82% Black. Referrals were primarily for an eye exam only (43%) or an eye exam with refraction (32%). Table 1 indicates that the samples are reasonably well-balanced on observable characteristics, both including and excluding participants from the non-randomized screening events. Even when (marginally) statistically significant, the differences between the treated groups and the "No Voucher" group are relatively small in magnitude. Nonetheless, we perform our econometric analyses both without and with controls for baseline individual characteristics, and show that the results are very similar.

Estimation method:

Our primary outcome was whether participants attended a follow-up appointment. We also assessed the impact of the intervention on completion of *the originally* scheduled appointment or a *rescheduled* appointment.[3] In our primary analysis, we use OLS to estimate linear models of the form:

$$Y_{ij} = \beta_0 + \beta_1 Voucher\_NoValue_{ij} + \beta_2 Voucher\_Value_{ij} + \gamma \boldsymbol{X}_{ij} + \epsilon_{ij}$$

[3] Patient screening event data (identifying information, background characteristics, screening test results, referral information) were collected during screening and entered electronically in RedCap™. Information about previous eye care was not collected. Follow-up data were extracted though EPIC™ and input into RedCap.

where Y_{ij} is a binary indicator of whether or not individual i in screening event j attended follow-up, $Voucher\_NoValue_{ij}$ and $Voucher\_Value_{ij}$ are indicators denoting the randomization assignment, and $\boldsymbol{X}_{i,j}$ is a vector of individual-specific characteristics (sex, age, and race). β_1 represents the average treatment effect for the voucher without value information intervention, relative to offering a free appointment without a voucher, and β_2 represents the average treatment effect for the voucher with the value information. Because treatment was assigned to each screening, standard errors are clustered at the screening event level.

Multinomial logit models were estimated for the outcomes of attending an originally scheduled appointment or attending a rescheduled appointment. The dependent variable could take three values: 0 if the study participants did not attend their follow-up appointment, 1 if they attended their initially scheduled appointment, and 2 if they attended a rescheduled appointment.

4. **Results**

Table 2 reports our main results. In Panel A, the sample includes individuals from the 100 randomized screening events. in Panel B, the sample includes referred individuals from the 14 screening events that were not randomized but received the "No Voucher" condition by default.

Column (1) of Panel A shows that receiving either voucher increased the likelihood of patients presenting for follow-up by 11 percentage points ($p<0.05$), and the estimated effect is unchanged when we control for patient background characteristics in column (2). This corresponds to a 29% increase over the control group (reported in the bottom row of the panel). In columns (3) and (4), we estimate the effect of the voucher with and without value information separately. Vouchers without value information increase follow-up by 8.7 percentage points in the specification without controls (column 3) and by 7.7 percentage points in the specification with

controls (column 4); however, neither estimated coefficient is statistically significant. In contrast, the likelihood of attending a follow-up appointment among individuals receiving vouchers with value information was 15.0 percentage points higher ($p<0.01$) than among individuals offered a free appointment without a voucher in the specification without controls (column 3), and 15.7 percentage points higher ($p<0.01$) with controls (column 4). This estimated effect corresponds to a 41.3% increase in follow-up appointments over the "No Voucher" group. The magnitude of the coefficient on "Voucher With Value Information" is about twice as large as that on "Voucher Without Value Information." Specifically, based on the results from column (4), adding value information to the voucher increased follow-up by 9 percentage points, although this difference is not statistically significant at conventional levels ($p = 0.160$).

In Panel B, we replicate the regressions using the total sample, including data from the additional "No voucher" 14 screenings. The results are qualitatively similar to those in Panel A, but appear to be estimated with greater statistical precision. Focusing on the results from regressions including control variables (columns 2 and 4), we find that receiving either voucher increased the likelihood of presenting for follow-up by 15.8 percentage points ($p<0.01$). Vouchers without value information increased completion of follow-up appointments by 12.5 percentage points, and this effect is statistically significant ($p<0.05$), whereas vouchers with value information increased follow-up appointments by 20.3 percentage points ($p<0.01$). The latter estimated effect corresponds to a 58% increase in follow-up appointments over the control group. The estimated effect of the voucher with value information is 7.8 percentage points higher than that of the voucher without value information. Again, this difference is economically meaningful but not statistically significant at conventional levels ($p = 0.173$).

In Table 3, we report multinomial logit regression results on the effect of our intervention on attending an original or rescheduled appointment. Note that although we have information on whether each study participant completed follow-up or not, we know whether that was their first scheduled appointment only for 659 of the 809 individuals for whom we have valid data. Overall, among this subset of patients, 35.1% attended their first scheduled appointment and 17.8 a rescheduled appointment. It is important to note that the enumerators did not make any reference to the vouchers (or the dollar value of the service) during the reminder phone calls.

In Table 3, Panels A and B show the results from the randomized screening events and the full sample, respectively. For each regression, the first column displays the estimated coefficients (in relative-risk-ratio transformations) for attending the first scheduled appointment, and the second the estimates for attending a rescheduled appointment. The results indicate that the voucher with value information increased the likelihood of patients attending their first scheduled appointment as well as the likelihood of attending a rescheduled appointment, compared to standard referral. The voucher without value information appeared to have smaller effects, and in three out of four cases the estimated coefficients were not statistically significant. Additionally, relative to the voucher without value information, the voucher with value information appeared to have had a stronger effect on attending a rescheduled appointment (the p-value of the estimated difference between vouchers is 0.075 in Panel A and 0.089 in Panel B).

5. Discussion

We tested the effects of providing vouchers without and with value information to community screening participants who were already entitled to free eye appointments. Although both voucher types increased the likelihood of follow-up, our results indicate that providing value information on the voucher had a substantially stronger effect. The results from our preferred specification

(full study sample, including control variables) suggest that from a baseline attendance of 35% among individuals in the control group, vouchers alone increased appointment attendance by 12.5 percentage points and vouchers with value information by 20.3 percentage points. Individuals receiving a voucher with value information were thus 58 percent more likely to attend their follow-up appointment as those offered a free appointment with no voucher. Additionally, although this difference was not statistically significant, adding value information to the voucher increased the effect size by more than 60 percent. Moreover, vouchers with value information increased both the likelihood of completing an initially scheduled appointment and the likelihood of completing follow-up after rescheduling. Patients who miss their initially scheduled appointment are often lost to follow-up, suggesting that increasing rescheduling rates could have long-term benefit. In addition, missed appointments are a major source of cost for health care practices (McLean et al. 2016).

Our estimated effect sizes are similar to or larger than those reported from other behaviorally informed interventions intended to increase the take-up of free health services. For instance, Milkman et al. (2012) found that providing patients with mailings including a "sticky note" where they could write down the doctor's name and the appointment date increased attendance rates of free colon cancer screening appointments from 6.2 percent to 7.2 percent; Altmann and Traxler (2014) find that reminder postcards increase free dental check-up visits from 7.3 percent to 17.6 percent; and Huf et al. (2020) find that text message reminders increased cervical screening rates from 26.4 percent to 31.4 percent.

Consistent with prior results, vouchers likely served as tangible reminders, possibly enhancing the effect of the education, counseling, reminder phone calls and text messages that all study participants already received as part of the standard StoP referral process. Providing

information about the dollar value of the appointment could have enhanced this salience effect. However, our data are also consistent with an information effect; qualitative data from focus groups suggest that SToP participants in our study are unlikely to have had accurate information about the retail value of the ophthalmic services they were offered prior to the screening. The dollar value provided on vouchers was likely new information for many patients, and may have resulted in revised perceptions of the appointment's benefits. Additionally, if individuals had underestimated the value of the free health services they were offered (i.e., value discounting due to a price of zero), information about retail price could have increased follow-up. Finally, individuals receiving vouchers might have felt an enhanced sense of ownership ("endowment") over these offers, translating into perceived loss and possible regret if they did not redeem the voucher. Including a dollar value equivalent could have provided a more precise reference for what the voucher recipients would be losing if they did not attend their appointment. The data at our disposal do not allow us to distinguish between these possible channels. Although further research is needed, a combination of information and salience is likely to explain our results.

This study has some limitations. Treatment status was assigned at the screening event level and some neighborhoods were visited more than once, allowing for possible information spillover. Individuals not receiving vouchers may therefore have protested a perceived inequality, or individuals not receiving a voucher with value information may have learned the offer's retail value. Moreover, a drawback of the cluster-randomized nature of our experiment is that it reduced our statistical power. Another limitation of this study is that we did not evaluate providing value information *without* a voucher. Our results indicate that value information enhanced the effect of vouchers, but further research is needed to establish if this information exerts an independent effect on take-up.

Overall, vouchers, and especially those with value information, had large effects on patients attending follow-up ophthalmic services that were already available for free. Providing vouchers has negligible incremental costs for programs such as SToP, and therefore wider use in promoting health behaviors should be considered. Future research combining randomized controlled trials with surveys to study the effects of providing value information on take-up of free health and other public services could help to better elucidate the precise mechanisms behind the effects.

Tables and Figures

Figure 1. CONSORT Diagram of Study Sampling and Recruitment.

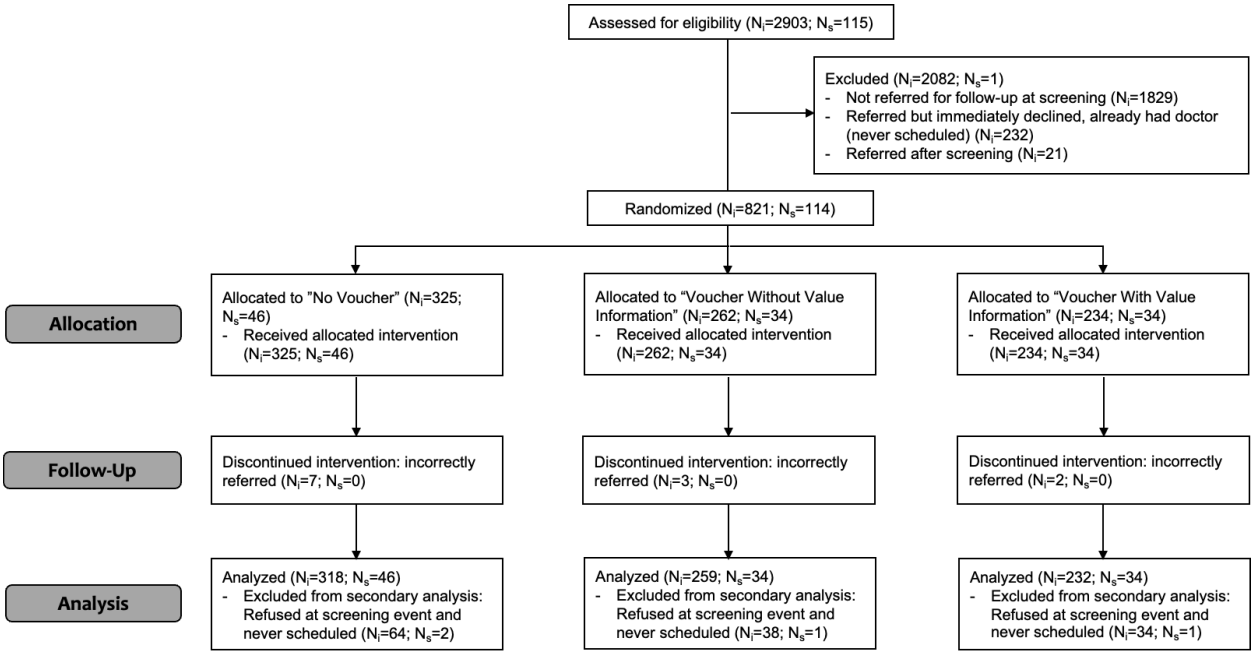
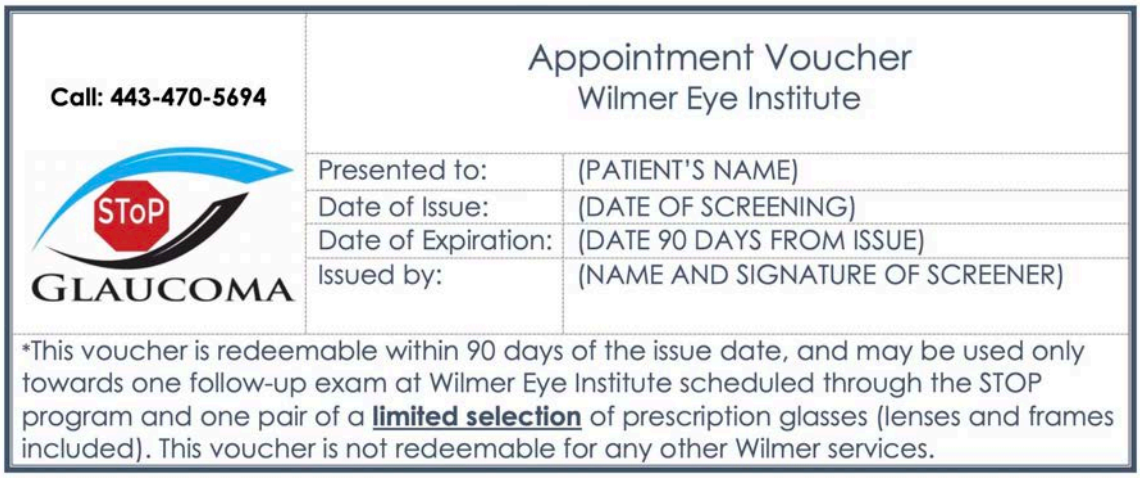


Figure 2 Parts A-B. Voucher Templates.

2A. Voucher Without Value Information (Template)



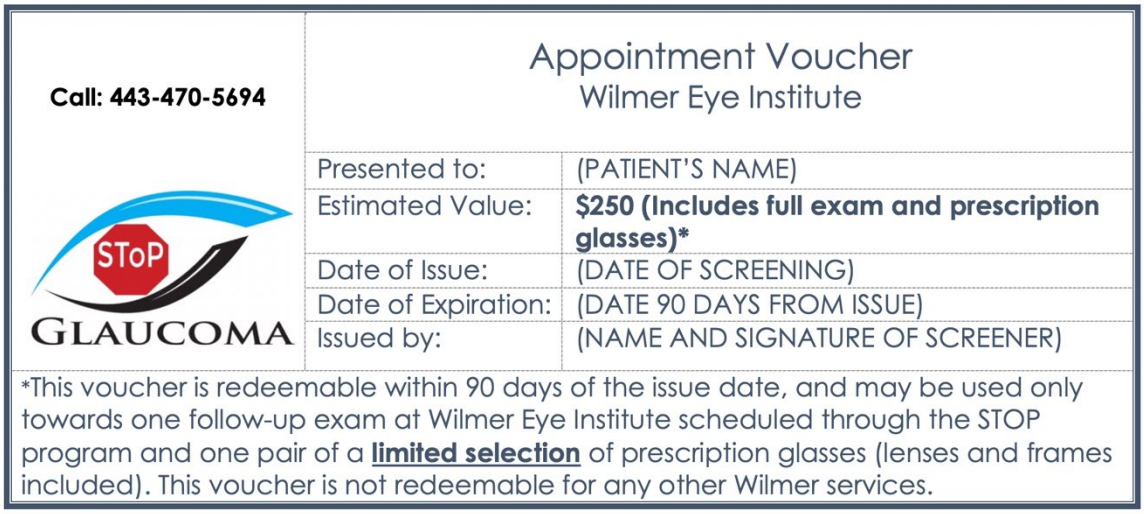
Call: 443-470-5694

STOP GLAUCOMA

Appointment Voucher
Wilmer Eye Institute

Presented to:	(PATIENT'S NAME)
Date of Issue:	(DATE OF SCREENING)
Date of Expiration:	(DATE 90 DAYS FROM ISSUE)
Issued by:	(NAME AND SIGNATURE OF SCREENER)

*This voucher is redeemable within 90 days of the issue date, and may be used only towards one follow-up exam at Wilmer Eye Institute scheduled through the STOP program and one pair of a **limited selection** of prescription glasses (lenses and frames included). This voucher is not redeemable for any other Wilmer services.



Call: 443-470-5694

STOP GLAUCOMA

Appointment Voucher
Wilmer Eye Institute

Presented to:	(PATIENT'S NAME)
Estimated Value:	**$250 (Includes full exam and prescription glasses)***
Date of Issue:	(DATE OF SCREENING)
Date of Expiration:	(DATE 90 DAYS FROM ISSUE)
Issued by:	(NAME AND SIGNATURE OF SCREENER)

*This voucher is redeemable within 90 days of the issue date, and may be used only towards one follow-up exam at Wilmer Eye Institute scheduled through the STOP program and one pair of a **limited selection** of prescription glasses (lenses and frames included). This voucher is not redeemable for any other Wilmer services.

Notes: *These images show generic versions of each voucher type offered to study participants. The only difference in the information provided is the estimated value statement on the second voucher type.*

Table 1. Summary Statistics and Balance Tests.

	All Screenings (Ni=809, Ns=114)	Randomized Screenings (Ni=720, Ns=100)	No Voucher		Voucher	
			All Screenings (N_i=318, N_s=46)	Randomized Screenings (N_i=229, N_s=32)	Without Value Information (N_i=259, N_s=34)	With Value Information (N_i=232, N_s=34)
Age	69.72 (0.71)	69.92 (0.78)	69.76 (1.03)	70.42 (1.28)	68.74 (1.4) [0.556; 0.375]	70.76 (1.27) [0.539; 0.852]
Male	0.37 (0.03)	0.35 (0.03)	0.43 (0.04)	0.41 (0.05)	0.33 (0.04) [0.097*; 0.226]	0.33 (0.04) [0.078*; 0.208]
Race						
Black	0.82 (0.03)	0.82 (0.03)	0.8 (0.05)	0.78 (0.06)	0.86 (0.03) [0.318; 0.263]	0.82 (0.05) [0.765; 0.603]
White	0.13 (0.03)	0.14 (0.03)	0.16 (0.05)	0.19 (0.06)	0.11 (0.04) [0.335; 0.217]	0.13 (0.05) [0.598; 0.395]
Missing	0.02 (0.01)	0.02 (0.01)	0.02 (0.01)	0.02 (0.01)	0.02 (0.01) [0.801; 0.867]	0.01 (0.01) [0.462; 0.717]
Appointment Referral						
Eye Exam Only	0.43 (0.02)	0.45 (0.02)	0.39 (0.03)	0.42 (0.04)	0.45 (0.03) [0.152; 0.51]	0.48 (0.03) [0.035**; 0.205]
Refraction Only	0.08 (0.01)	0.08 (0.01)	0.1 (0.02)	0.09 (0.02)	0.06 (0.01) [0.126; 0.191]	0.07 (0.02) [0.224; 0.308]
Both Eye Exam and Refraction	0.32 (0.02)	0.32 (0.02)	0.32 (0.04)	0.31 (0.05)	0.34 (0.03) [0.719; 0.623]	0.3 (0.03) [0.72; 0.883]
Not interested	0.17 (0.02)	0.16 (0.02)	0.2 (0.03)	0.18 (0.03)	0.15 (0.03) [0.229; 0.478]	0.15 (0.02) [0.191; 0.427]

Notes: Means and cluster-adjusted standard errors in parentheses are shown for each characteristic across all patients in the sample. P-values from t-tests comparing characteristics of individuals in each treatment group and the control are reported in square brackets (the first number uses the full No voucher sample and the second the No voucher sample from randomized screening events). N_i refers to the total count of individuals, while N_s refers to the total count of clusters (screening events). Referral type was not recorded for individuals who declined follow-up during counseling. Notation: *** p<0.01, ** p<0.05, * p<0.1

Table 2. Effects of voucher without and with value information on completing follow-up appointment

	(1)	(2)	(3)	(4)
Panel A: Sample including only randomized screening events				
Any Voucher	0.110**	0.110**		
	(0.0487)	(0.0470)		
Voucher Without Value Information			0.0868	0.0768
			(0.0581)	(0.0540)
Voucher With Value Information			0.150***	0.157***
			(0.0558)	(0.0541)
Control variables	No	Yes	No	Yes
R-squared	0.010	0.038	0.015	0.044
N. observations	720	708	720	708
N. clusters (screening events)	100	100	100	100
Mean of the dep. var. in No Voucher group	0.38	0.38	0.38	0.38
Difference between voucher treatments:			0.063	0.0802
			(0.300)	(0.160)
Panel B: Sample including all screening events				
Any Voucher	0.150***	0.158***		
	(0.0448)	(0.0442)		
Voucher Without Value Information			0.125**	0.125**
			(0.0550)	(0.0520)
Voucher With Value Information			0.189***	0.203***
			(0.0525)	(0.0518)
Control variables	No	Yes	No	Yes
R-squared	0.022	0.045	0.026	0.050
N. observations	809	794	809	794
N. clusters (screening events)	114	114	114	114
Mean of the dep. var. in No Voucher group	0.35	0.35	0.35	0.35
Difference between voucher treatments:			0.063	0.0782
			(0.300)	(0.173)

Notes: Linear models estimated by OLS. The dependent variable is equal to 1 if the patient attended their follow-up appointment, and 0 otherwise. In Panel A, the sample includes only patients from screening events that were randomized. In Panel B, the sample also includes patients from 14 screening events that were not randomized; these all received the No voucher condition (see section 2 for details). The omitted category (control group) consists of patients in the No voucher condition. Differences between voucher treatments are defined by the difference in treatment effects between the voucher with value information group and the voucher without value information group. Standard errors are clustered at the screening event level and reported in parentheses. Control variables include sex, age and race. Notation: *** p<0.01, ** p<0.05, * p<0.1

Table 3. Effects of voucher without and with value information on completing first scheduled and rescheduled appointment, multinomial logit estimates.

Panel A: Sample including only randomized screening events

	(1) Original Appointment	(2) Rescheduled Appointment
Voucher Without Value Information	1.510	1.134
	(0.432)	(0.359)
Voucher With Value Information	1.941**	2.021**
	(0.588)	(0.668)
P-value of difference between vouchers	0.374	0.075*
Control variables	Yes	
Pseudo R-squared	0.021	
N. observations	596	
N. clusters (screening events)	97	

Panel B: Sample including all screening events

	(3) Original Appointment	(4) Rescheduled Appointment
Voucher Without Value Information	1.822**	1.341
	(0.503)	(0.406)
Voucher With Value Information	2.321***	2.335***
	(0.679)	(0.746)
P-value of difference between vouchers	0.391	0.089*
Control variables	Yes	
Pseudo R-squared	0.023	
N. observations	659	
N. clusters (screening events)	110	

Notes: The table reports results from multinomial logit regressions, expressed as relative risk ratios. The dependent variable can take three values: 0 if the study participants did not attend their follow-up appointment, 1 if they attended their initially scheduled appointment, and 2 if they did not attend their first appointment but did attend after rescheduling. In Panel A, the sample includes only patients from screening events that were randomized. In Panel B, the sample also includes patients from 14 screening events that were not randomized; these all received the No voucher condition (see section 2 for details). In each of the two regressions, the baseline option is "Did not attend appointment", and the omitted category is "No voucher". Control variables include sex, age and race. Standard errors clustered by screening event are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

References

2020 Valassis Coupon Intelligence Report (2020). Available at: https://www.valassis.com/consumer-intel-report/ (Accessed: 9 March 2020).

Altmann, S. and Traxler, C., 2014. Nudges at the dentist. *European Economic Review*, *72*, pp.19-38.

Bertrand, M., Mullainathan, S. and Shafir, E., 2004. A behavioral-economics view of poverty. *American Economic Review*, *94*(2), pp.419-423.

Castanes, M. S. (2003) 'Major review: The underutilization of vision screening (for amblyopia, optical anomalies and strabismus) among preschool age children', *Binocular Vision & Strabismus Quarterly*, 18(4), pp. 217–232.

Chamie, G., Schaffer, E.M., Ndyabakira, A., Emperador, D.M., Kwarisiima, D., Camlin, C.S., Havlir, D.V., Kahn, J.G., Kamya, M.R. and Thirumurthy, H., 2018. Comparative effectiveness of novel non-monetary incentives to promote HIV testing: a randomized trial. *AIDS (London, England)*, *32*(11), p.1443.

Cuesta, A., Delgado, L., Gallegos, S., Roseth, B. and Sánchez, M.A., 2021. *Increasing the take-up of public health services: An experiment on nudges and digital tools in Uruguay* (No. IDB-WP-1180). IDB Working Paper Series.

Currie, J., 2004. The take up of social benefits. National Bureau of Economic Research w10488.

Fadlon, I. and Nielsen, T.H., 2019. Family health behaviors. *American Economic Review*, *109*(9), pp.3162-91.

Finkelstein, A. and Notowidigdo, M.J., 2019. Take-up and targeting: Experimental evidence from SNAP. *The Quarterly Journal of Economics*, *134*(3), pp.1505-1556.

Goldberg, J., Macis, M. and Chintagunta, P., 2018. *Incentivized peer referrals for tuberculosis screening: Evidence from India* (No. w25279). National Bureau of Economic Research.

Hartmann, E. E. *et al.* (2006) 'Project Universal Preschool Vision Screening: a demonstration project', *Pediatrics*, 117(2), pp. e226-237. doi: 10.1542/peds.2004-2809.

Hered, R. W. and Wood, D. L. (2013) 'Preschool Vision Screening in Primary Care Pediatric Practice', *Public Health Reports*, 128(3), pp. 189–197.

Hernanz, V., Malherbet, F. and Pellizzari, M., 2004. Take-up of welfare benefits in OECD countries: a review of the evidence.

Huf, S., Kerrison, R.S., King, D., Chadborn, T., Richmond, A., Cunningham, D., Friedman, E., Shukla, H., Tseng, F.M., Judah, G. and Darzi, A., 2020. Behavioral economics informed

message content in text message reminders to improve cervical screening participation: Two pragmatic randomized controlled trials. *Preventive medicine*, *139*, p.106170.

Kemper, A. R. *et al.* (2012) 'Outcomes of an elementary school-based vision screening program in North Carolina', *The Journal of School Nursing: The Official Publication of the National Association of School Nurses*, 28(1), pp. 24–30. doi: 10.1177/1059840511424413.

Li, Y.-J. *et al.* (2013) 'Vision insurance, eye care visits, and vision impairment among working-age adults in the United States', *JAMA ophthalmology*, 131(4), pp. 499–506.

Macis, M., Grunauer, M., Gutierrez, E., Izurieta, R., Phan, P., Ortiz, M.R., Rosas, C. and Teran, E., 2021. Using Incentives and Nudging to Improve Non-Targeted HIV Testing in Ecuador: A Randomized Trial. *AIDS and Behavior*, pp.1-9.

Mao, W. (2016) 'Sometimes "Fee" Is Better Than "Free": Token Promotional Pricing and Consumer Reactions to Price Promotion Offering Product Upgrades', *Journal of Retailing*, 92(2), pp. 173–184. doi: 10.1016/j.jretai.2015.09.001.

McKechnie, S. *et al.* (2012) 'Effects of discount framing in comparative price advertising', *European Journal of Marketing; Bradford*, 46(11/12), pp. 1501–1522. doi: http://dx.doi.org.proxy1.library.jhu.edu/10.1108/03090561211259952.

McLean, S.M., Booth, A., Gee, M., Salway, S., Cobb, M., Bhanbhro, S. and Nancarrow, S.A., 2016. Appointment reminder systems are effective but not optimal: results of a systematic review and evidence synthesis employing realist principles. *Patient preference and adherence*, *10*, p.479.

Milkman, K.L., Beshears, J., Choi, J.J., Laibson, D. and Madrian, B.C., 2012. *Following through on good intentions: The power of planning prompts* (No. w17995). National Bureau of Economic Research.

Mullainathan, S. and Shafir, E., 2013. Scarcity. *Social Policy*, *46*(2), pp.231-249.

National Academies of Sciences, E. *et al.* (2016a) *Summary*. National Academies Press (US). Available at: https://www.ncbi.nlm.nih.gov/books/NBK402361/ (Accessed: 28 April 2019).

National Academies of Sciences, E. *et al.* (2016b) *Making Eye Health a Population Health Imperative: Vision for Tomorrow*. National Academies Press (US). Available at: https://www.ncbi.nlm.nih.gov/books/NBK402367/ (Accessed: 29 April 2019).

Nielsen, C. S., Sebald, A. C. and Sørensen, P. N. (2021) 'Testing for salience effects in choices under risk', *Working Paper*. Available at: https://web2.econ.ku.dk/sorensen/papers/TestingForSalienceEffects.pdf.

Prevent Blinbdnes America (2012) 'Vision Problems in the U.S. - Prevalence of Adult Vision Impairment and Age-Related Eye Disease in America'. Available at: http://www.visionproblemsus.org/ (Accessed: 24 September 2021).

Raghubir, P. (2004) ‘Free Gift with Purchase: Promoting or Discounting the Brand?’, *Journal of Consumer Psychology*, 14(1–2), pp. 181–186. doi: 10.1207/s15327663jcp1401&2_20.

Raghubir, P. and Celly, K. S. (2011) ‘Promoting promotions: Does showcasing free gifts backfire?’, *Journal of Business Research*, 64(1), pp. 55–58. doi: 10.1016/j.jbusres.2009.09.022.

Schwebel, F.J. and Larimer, M.E., 2018. Using text message reminders in health care services: a narrative literature review. *Internet interventions*, *13*, pp.82-104.

Sen, S. and Johnson, E. J. (1997) ‘Mere-Possession Effects without Possession in Consumer Choice’, *Journal of Consumer Research*, 24(1), pp. 105–117. doi: 10.1086/209497.

Stone, E.G., Morton, S.C., Hulscher, M.E., Maglione, M.A., Roth, E.A., Grimshaw, J.M., Mittman, B.S., Rubenstein, L.V., Rubenstein, L.Z. and Shekelle, P.G., 2002. Interventions that increase use of adult immunization and cancer screening services: a meta-analysis. *Annals of internal medicine*, *136*(9), pp.641-651.

Thirumurthy, H., Asch, D.A. and Volpp, K.G., 2019. The uncertain effect of financial incentives to improve health behaviors. *Jama*, *321*(15), pp.1451-1452.

Vision Problems in the US - Prevalence of Age-Related Eye Disease in America (no date). Available at: http://www.visionproblemsus.org/ (Accessed: 28 April 2019).

Wagner, L. D. and Rein, D. B. (2013) ‘Attributes associated with eye care use in the United States: a meta-analysis’, *Ophthalmology*, 120(7), pp. 1497–1501. doi: 10.1016/j.ophtha.2012.12.030.

Zambelli-Weiner, A., Crews, J. E. and Friedman, D. S. (2012) ‘Disparities in adult vision health in the United States’, *American Journal of Ophthalmology*, 154(6 Suppl), pp. S23-30.e1. doi: 10.1016/j.ajo.2012.03.018.

Zhang, X. *et al.* (2012) ‘Vision health disparities in the United States by race/ethnicity, education, and economic status: findings from two nationally representative surveys’, *American Journal of Ophthalmology*, 154(6 Suppl), pp. S53-62.e1. doi: 10.1016/j.ajo.2011.08.045.

Zhang, X. *et al.* (2013) ‘Socioeconomic disparity in use of eye care services among US adults with age-related eye diseases: National Health Interview Survey, 2002 and 2008’, *JAMA ophthalmology*, 131(9), pp. 1198–1206. doi: 10.1001/jamaophthalmol.2013.4694.

Zhao, D. *et al.* (2017) ‘Optimizing Glaucoma Screening in High-Risk Population: Design and 1-Year Findings of the Screening to Prevent (SToP) Glaucoma Study’, *American Journal of Ophthalmology*, 180, pp. 18–28. doi: 10.1016/j.ajo.2017.05.017.

Zhao, D. *et al.* (2018) ‘Improving Follow-up and Reducing Barriers for Eye Screenings in Communities: The SToP Glaucoma Study’, *American Journal of Ophthalmology*, 188, pp. 19–28. doi: 10.1016/j.ajo.2018.01.00