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Incentives and ethnic Minorities: Results of a controlled randomized Experiment in the Netherlands

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In this article we examine the effect of prepaid incentives on ethnic minority cooperation rates in the Netherlands. We find that the incentives do have a substantial positive effect on the cooperation rates of native Dutch sampled units and Western foreigners. This effect is only modest among non-Western foreigners. We also match ethnic minorities with native Dutch sampled units using propensity score matching to compare the effect of incentives on the cooperation rates of ethnic minorities and comparable native Dutch sampled units. We find that the increase in cooperation rates is larger on the part of the native Dutch than ethnic minorities.
Keywords: Nonresponse, ethnic minorities, incentives, propensity score matching.

Introduction

Nonresponse rates in survey research threaten the validity of survey research and have increased in recent years in almost all Western countries (De Heer and De Leeuw 2002).[1] Biased estimates are more likely to occur if specific groups exhibit below-average response rates. This makes it more likely that nonrespondents differ systematically from respondents with respect to the survey objectives. Ethnic minorities are one group internationally known for below-average response rates (Eisner and Ribeaud 2007; Feskens et al. 2006). Almost one in five residents of the Netherlands are members of ethnic minorities (`http://statline.cbs.nl`). The ethnic minority or immigrant population is defined in the Netherlands as "everyone residing in the Netherlands with either one or two parents born abroad" (Reep 2003). A further distinction is usually drawn between people with either one or two parents born in Europe, North America, Australia, Japan or Indonesia and people with either one or two parents born in non- Western countries (mainly Turkey, Morocco, Surinam and the Netherlands Antilles).[2] The Western and non-Western groups are of approximately the same size. Ethnic minorities also exhibit lower response rates than the native Dutch (Schmeets 2005; Feskens 2006). Consequently, the response is selective and survey estimates may be biased. One way to reduce nonresponse rates and more specifically refusal rates in survey research is to use incentives. However, the effect of incentives on ethnic minority response rates is still unclear.

In the literature, references are often made to experiments demonstrating the positive effect of incentives on response rates (see e.g. Berk et al. 1987; Dodd 1998; Groves and Couper 1998; Singer 2002; Simmons and Wilmot 2004; Berger 2006; Teisl et al. 2006). Several studies point out that in particular, prepaid incentives have a significant and positive effect on response rates, whereas the effect of promised incentives is less clear or even non-existent (Church 1993). As regards ethnic minorities, however, there is no such clear evidence. There is some evidence that incentives, particularly monetary ones, can be especially effective in increasing ethnic minority response rates in survey research. Mack et al. (1998) note that offering a $20.00 incentive in the first wave of a SIPP panel is much more effective in increasing the response rates of African-American and poor households than of other households (see also Singer 2002). Beebe et al. (2005) also find a positive effect of incentives among most ethnic groups in a survey of Medicaid enrolees in the United States. They find higher response rates among all ethnic groups to a $2.00 incentive, although the difference on the part of Latino enrolees is not significant. Studies of the effectiveness of prepaid incentives on the ethnic minority response rates in Europe are however limited. Some studies note that the effects of promised incentives on ethnic minority response rates are less clear or altogether non-existent. To persuade respondents in the 2004 Statistics Netherlands experiment *A Tailored Approach Strategy for Young Moroccans and Turks for the Dutch Family and Fertility Survey*, a gift voucher of €10.00 is promised in an advance letter and by the interviewers. However, the incentive does not produce any major effect on response rates (Van den Brakel et al. 2006). Unlike earlier ALLBUS surveys, the ALLBUS 2002 survey includes a €10.00 coin as incentive. The cooperation rate of German nationals increases from 53.7% in 2000 to

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[1] The views expressed in this paper are those of the authors and do not necessarily reflect the policies of Statistics Netherlands.

[2] For reasons of simplicity we use 'Western foreigners' and 'non-Western foreigners' in this article.

60.1% in 2002, but the cooperation rate of non-Germans decreases in the same period from 70.0% to 64.2%[3] (Feskens et al. 2006).

The effects of incentives can be studied from various theoretical perspectives. Groves et al. (2000) introduce the *leverage-salience theory*. According to this theory, the ultimate effect of incentives on survey participation not only depends on the incentives themselves, but is also related to many other survey features such as the topic and sponsor (see also Groves et al. 2004; Stoop 2005). Another approach is the *social exchange theory*, which views human behavior as an exchange of rewards between actors (Zafirovski 2005). From this perspective, incentives can be viewed as a reward for survey participation. This theory also implies that the marginal utility of an incentive should be larger among sampled units with a lower socio-economic status. Ethnic minorities have a belowaverage socio-economic status, so from this theoretical perspective they should be more positively disposed to receiving an incentive, reflecting the higher marginal utility gained by an incentive. It has however been implied that ethnic minorities have higher cooperation rates than native sampled units (Schnell 1997; Feskens et al. 2006). The above-average ethnic minority cooperation rates make it less feasible to increase response rates with incentives, although there is sometimes the impression that ethnic minorities use language problems as a friendly way to refuse to participate in a survey. The so called *soft refusals* are following this argument reflected in the higher ethnic minority *unable to participate* rates.

In sum, various theoretical perspectives generate different expectations about the effect of incentives on ethnic minority response rates. Economic exchange theory predicts that a higher marginal utility of incentives in groups with a lower socio-economic status like ethnic minorities can lead to a larger positive effect on ethnic minority response rates. Sociological theory on nonresponse recognizes the already above-average ethnic minority cooperation rates (Schnell 1997), possibly reducing the potential effect of strategies to increase survey participation. Several experiments show the positive effect on response rates in survey research of incentives. However, the effect of incentives on the ethnic minority response rates in Europe is less clear. We know though that simply increasing response rates can actually increase the bias introduced by nonresponse rates (Merkle and Edelman 2002; Stoop 2005). To end with a balanced sample that can be used to draw inferences about the target population with as little nonresponse bias as possible, it is important to study the effect of incentives on currently under-represented groups in survey research (see also Singer et al. 2000:187).

For this purpose, a controlled randomized experiment among 13,000 households at Statistics Netherlands is conducted in the autumn of 2005. In this experiment, standard stamps enclosed in the introduction letter are offered to sampled units. In addition to a control group where no incentive was given, three other variants are introduced: booklets of five, ten or twenty stamps are sent with the introduction letter, representing a monetary value of approximately two, four or eight euros. We explicitly focus on the effect of the incentives on the ethnic minority response and cooperation rates. We evaluate the absolute effect on the ethnic minority survey attrition as well as the relative effect of the incentive on ethnic minorities compared with native Dutch sampled units selected by propensity score matching.

This results in two research questions addressed in this study:

1. What is the effect of incentives on ethnic minority cooperation rates?
2. Are there differences between the cooperation rates of ethnic minorities and comparable native Dutch sampled units?

For a more general study of the results of this controlled experiment, we refer to the study by Wetzels et al. (forthcoming). The following two sections describe the data used and the research design. The fourth section presents the results and the final section gives the conclusions.

Data

The experiment is conducted within the Dutch Labor Force Survey (EBB) in November and December 2005. We briefly describe this survey and the obtained data for the experiment below.

The Labor Force Survey is a rotating panel study conducted by Statistics Netherlands. After receiving an introduction letter, sampled units are visited at their homes by interviewers for a CAPI (Computer-Assisted Personal Interviewing) administrated interview. Respondents are reapproached for a CATI (Computer-Assisted Telephone Interviewing) for four more short interviews. The Labor Force Survey is conducted among private households in the Netherlands. The Labor Force Survey is a stratified two-stage sample. The sampling frame is a list of all the addresses constructed from the Population Register. These registered addresses are the sampling units. Addresses with multiple households registered are excluded, because in such cases it is not known which household receives the incentive.[4] Response figures are based on households. Communities are drawn in the first stage and households are selected in the second stage using systematic sampling. The cases are allocated to an experimental condition in a random way. The size of the experimental conditions is however determined beforehand; 6,000 addresses do not receive an incentive, 3,000 addresses receive an incentive of five stamps (value two euros), 3,000 addresses receive an incentive of ten stamps

[3] In 2002, all the interviews conducted in the previous four weeks are rejected due to doubts about whether all the rules have been followed (Blohm et al. 2003). This results in far more non-analyzed interviews than in *Allgemeine Bevölkerungsumfrage der Sozialwissenschaften* (German General Social Survey) 2000. If the non-analyzed interviews are interpreted as refusals, there is an increase in the cooperation rate from 51.5% to 52.8% among the German sampled units and a reduction from 65.3% to 49.5% among the non-German sampled units.

[4] If we include such cases in the analyses, the figures are very similar.

(value four euros) and 500 addresses receive an incentive of twenty stamps (value eight euros).

To answer our first research question, we include all the ethnic minority households (1,861) and native Dutch households (9,089), see also Table 1. To answer the second research question, we include all the ethnic minority households with complete background information (see also next section); 1,777 ethnic minority households remain for this second analysis. We match a native Dutch sampled unit with comparable background characteristics and the same experimental condition to each ethnic minority household. So to answer the second research question, we also include 1,777 native Dutch households. The propensity score matching method as proposed by Rosenbaum and Rubin (1983) is explained in greater detail in the following section.

As is noted in the Introduction, ethnic minorities are defined in the Netherlands as everyone residing in the Netherlands with either one or two parents born abroad. Table 2 shows the ethnicity distribution in the Netherlands in 2005, the year the experiment is conducted.

Methods

As is noted above, this article concentrates on the effect of prepaid incentives on ethnic minority response and more specifically cooperation rates. To evaluate the effect of incentives on ethnic minority cooperation rates, we include all the sampled units (10,950). To study possible differences between ethnic minority and native Dutch households as regards the effect of incentives, we select for each ethnic minority unit a comparable native Dutch sampled unit. We do so in such a way that we are able to evaluate the relative effect of incentives on the ethnic minorities as compared to the native Dutch as well as the absolute effect of incentives on ethnic minority cooperation rates.

We know from previous studies (Schmeets and Michiels 2003; Eisner and Ribeaud 2007; Feskens et al. 2007) that ethnic minorities differ from the native population as regards their living conditions and socio-economic status. Ethnic minorities mainly live in urban areas, are more often unemployed and have lower education levels than the native population. These characteristics correlate negatively with response rates (Goyder et al. 1992; Lavrakas 1993; Groves and Couper 1998; Stoop 2004; Van Goor et al. 2005). To compare the relative effect of incentives on the ethnic minority survey attrition with that of the native Dutch, we select native Dutch sampled units with background characteristics comparable to those of ethnic minorities. In other words, to attain a more fair comparison we select more or less similar sampled units. We do so by utilizing the available background information and using propensity score matching (Rosenbaum and Rubin 1983).

The Labor Force Survey is supplemented by administrative data from the Population Register and information about employment and social benefits (Schmeets and Michiels 2003; Schouten 2003). Linking the administrative records makes socio-demographic and socio-economic information available on the nonrespondents at the individual and postal code level. This information has been gathered at Statistics Netherlands in the *Social Statistical Database*, in which several registers are linked to each other as well as to data from sample surveys (Houbiers 2004). The additional information provided by the link to administrative data makes it possible to study the nonrespondents and match all the ethnic minority units to comparable native Dutch sampled units in terms of important background characteristics. However, no extra information is available on 84 of the ethnic minority sampled units (4.5% of the ethnic minority sampled units). Since no systematic missing data pattern is observed as regards relevant background variables for these 84 cases, they are viewed as missing completely at random and deleted from the data file. These numbers are quite small and can be dropped from the sample without a significant loss of information.

We calculate the propensity score with the variables *household income* and *postal code urbanization*. We select these variables because they are felt to effectively measure the relevant concepts of urbanization and socio-economic status. We also want to include the education level of the sampled units in the calculation of the propensity scores, but this information is unfortunately not available on the nonrespondents. The propensity scores are calculated using logistic regression with the variables *household income* and *urbanization* as independent variables and *ethnicity* as dependent variable. The predicted values are saved and used as propensity scores. We then match native Dutch sampled units with the same propensity score *and* in the same experimental condition as the ethnic minorities and select these sampled units.

Results

What is the effect of incentives on ethnic minority cooperation rates?

To examine the effect of the prepaid incentive we use the cooperation rate. By using cooperation instead of response rates, we assure that sampled units who did not have a chance to participate, for example because they are not contacted, are excluded from the analysis. We use cooperation number four as defined by AAPOR in all the further analyses. This ratio is defined as completed interviews and partial interviews divided by completed interviews, partial interviews and refusals (AAPOR 2006).

Tables 3, 4 and 5 show the response outcomes for the three main groups in the Netherlands, the native Dutch, Western foreigners and non-Western foreigners, for all four experimental conditions. In each table the cooperation rate for each specific condition is given, enabling us to examine the effect of the incentives. We calculate exact p values to test for statistically significant differences using Fisher's exact test. First, we make a 2 x 2 matrix representing all possible outcomes (i.e. incentive, no incentive, cooperation and noncooperation) and weight this matrix with the absolute number of sampled units in each cell. We test the null hypothesis that the cooperation rate in the null condition is equal to the cooperation rate in the experimental condition (p values

Table 1: Experimental Conditions and Ethnicity

	Native Dutch population	%	Western foreigners	%	Non-Western foreigners	%
0 stamps	4,334	47.7	462	47.3	412	46.6
5 stamps	2,204	24.2	221	22.6	206	23.3
10 stamps	2,196	24.2	255	26.1	225	25.5
20 stamps	355	3.9	39	4.0	41	4.6
Total	9,089	100	977	100	884	100

Table 2: Ethnic Distribution in the Netherlands in 2005 (`http://statline.cbs.nl`)

	Population	Percentage of total population
Total population	16,305,526	
Native Dutch	13,182,809	80.8
Ethnic minorities	3,122,717	19.2
Western foreigners	1,423,675	8.7
Non-Western foreigners	1,699,042	10.4
Surinam	329,430	2.0
Turkey	358,846	2.2
Morocco	315,821	1.9
Netherlands Antilles & Aruba	130,538	0.8
Other non-Western foreigners	564,407	3.5

< 0.05 denoted by *). Then we test the hypothesis that the cooperation rate in an experimental condition is equal to the cooperation rate in the previous experimental condition, e.g. H0: cooperation rate with five stamps = cooperation rate with ten stamps (p values < 0.05 denoted by #).

As is clear from Table 3, the native Dutch cooperation rate is 73.8% in the control condition where no stamps are given and increases to 79.9% (five stamps), 82.0% (ten stamps) and 83.8% (twenty stamps). All these increases are statistically significant. Offering ten instead of five stamps also results in a statistically significant increase of the cooperation rate, but offering twenty instead of ten stamps does not. The sample size in the latter condition is however much smaller than in the first three experimental conditions.

Table 4 shows that the cooperation rate among Western foreigners increases from 70.4% (0 stamps), to 77.4% (5 stamps), 82.0% (10 stamps) and 85.2% (20 stamps). The effect of incentives on Western foreigners is thus very similar to the effect on the native Dutch population.

Table 5 shows the response outcomes of non-Western foreigners in the four experimental conditions. The cooperation rate of non-Western foreigners increases from 79.0% in the control condition to 79.9% (five stamps), 82.0% (ten stamps) and 92.6% (twenty stamps). This last cooperation rate for non-Western foreigners who receive an incentive of twenty stamps should however be interpreted with care. Since there are only 41 sampled units in this specific experimental condition, small changes in the refusal rate can cause large changes in the cooperation rate. This is also reflected in the results of Fisher's exact test: none of the results are statistically significant. Additional doubt arises about this increase in the cooperation rate caused by the incentive when the response rate is examined. This rate only increases modestly in the last condition compared with the first three conditions. Furthermore, the cooperation rate of non-Western foreigners hardly increases with a five or ten-stamp incentive. It does however start at a higher level in the null condition. This supports the findings of earlier studies where nonresponse problems on the part of non-Western foreigners are attributed to in particular contact and language problems (Feskens et al. 2006). Both are response outcomes that do not impact the cooperation rate. In summarizing, incentives increase the cooperation rates of the native Dutch and Western foreigners, but not of non-Western foreigners.

Are there differences between the cooperation rates of ethnic minorities and comparable native Dutch sampled units?

To examine the differences between non-Western foreigners and comparable native Dutch sampled units, we match ethnic minorities with selected native Dutch sampled units using propensity score matching. To do so, we select all 1,777 ethnic minority units and match one native Dutch sampled unit to each of them, as is described above. We also want to study the effect of incentives on various groups of non-Western foreigners in greater detail. The non-Western foreigners in the Netherlands are mainly from Surinam, Turkey, Morocco, the Netherlands Antilles and Aruba. Table 6 shows the cooperation rates of these ethnic groups and the comparable native Dutch sampled units. For completeness, the cooperation rates of all the ethnic minority and native Dutch sampled units are also presented in Table 6. Table 6 compares the cooperation rates of the null condition to those of an incentive (five, ten or twenty stamps). To remain with a sufficient sample size for all the ethnic groups, we combine all the incentive conditions.

The first important result presented in Table 6 is that native Dutch sampled units selected with propensity score matching are no more similar to ethnic minorities than the whole native Dutch population sample. The selected native Dutch sampled units have a cooperation rate of 70.8% in the control condition, which increases to 80.8% when an

Table 3: Response Outcomes for the Native Dutch in Four Experimental Conditions

	0 stamps	%	5 stamps	%	10 stamps	%	20 stamps	%
Refusals	1,032	23.8	404	18.3	366	16.7	52	14.6
No opportunity	198	4.6	100	4.5	97	4.4	19	5.4
Language problems	10	0.2	3	0.1	3	0.1	0	0.0
No contact	190	4.4	93	4.2	65	3.0	15	4.2
Response	2,879	66.4	1,593	72.3	1,656	75.4	268	75.5
Partial response	20	0.5	9	0.4	7	0.3	1	0.3
Broken off interview	5	0.1	2	0.1	2	0.1	0	0.0
Total	4,334	100	2,204	99.9	2,196	100	355	100
Cooperation rate 4	73.8%		79.9%**		82.0%**,#		83.8%**,ns	

**p value < 0.01, H0: cooperation rate experimental condition = cooperation rate null condition
# p value < 0.05, H0: cooperation rate experimental condition = cooperation rate previous experimental condition
ns = not significant.

Table 4: Response Outcomes for Western Foreigners in Four Experimental Conditions

	0 stamps	%	5 stamps	%	10 stamps	%	20 stamps	%
Refusals	116	25.1	44	19.9	38	14.9	4	10.3
No opportunity	26	5.6	10	4.5	14	5.5	4	10.3
Language problems	13	2.8	4	1.8	12	4.7	2	5.1
No contact	31	6.7	12	5.4	18	7.1	6	15.4
Response	273	59.1	147	66.5	169	66.3	23	59.0
Partial response	2	0.4	3	1.4	3	1.2	0	0.0
Broken off interview	1	0.2	1	0.5	1	0.4	0	0.0
Total	462	99.9	221	100	255	100.1	39	100.1
Cooperation rate 4	70.4%		77.4%*		82.0%**,ns		85.2%ns,ns	

*p value < 0.05, H0: cooperation rate experimental condition = cooperation rate null condition
** p value < 0.01, H0: cooperation rate experimental condition = cooperation rate null condition
ns = not significant.

incentive is given. So because of the lower cooperation rate in the control condition, the effect of the incentive is somewhat larger in this group with a lower average household income and a higher urbanization level than in the whole native Dutch sample. None of the effects of the incentives are significant in the groups of non-Western foreigners.

In summarizing, the cooperation rates of non-Western foreigners are still different than those of selected native Dutch sampled units.

Conclusions

In this study we examine the effects of prepaid incentives on ethnic minority cooperation rates in the Netherlands. To do so, a controlled randomized experiment is conducted at Statistics Netherlands, where sampled units receive either no incentive or a prepaid incentive of five, ten or twenty stamps representing a monetary value of approximately two, four or eight euros.

In general, the ethnic minority results are based on relatively small sample sizes and should thus be interpreted with great care. Future research can focus on this aspect.

We note that the native Dutch cooperation rate increases with the increasing value of the incentive. The same holds true for Western foreigners. The cooperation rate of non-Western foreigners does not however increase with a prepaid incentive of five, ten or twenty stamps. The sample size of this latter condition is very small (41 non-Western foreigners receive this twenty-stamp incentive), so this result should be interpreted with great care.

We also examine the effect of incentives on ethnic minority cooperation rates compared with those of comparable native Dutch sampled units. To do so, we match each ethnic minority sampled unit to a native Dutch sampled unit with similar background characteristics. After first creating propensity scores with available background information on household income and urbanization at the postal code level, we use propensity score matching. This information is available for respondents as well as for nonrespondents. The second step is to match a native Dutch sampled unit to an ethnic minority sampled unit with the same propensity score and in the same experimental condition. It should be noted however that with only limited information for respondents and nonrespondents alike, this propensity model might not account for all the differences between the two matched groups.

To maintain a sufficient sample size, we only compare the control condition with the incentive condition (five, ten and twenty stamps together) for this purpose. Compared to these matched native Dutch sampled units, the cooperation rates of non-Western foreigners differ substantially. The difference in the cooperation rates is even greater between the matched native Dutch sampled units and non-Western foreigners (10.1% vs. 2.9%) on the one hand and all the native Dutch sampled units and non-Western foreign-

Table 5: Response Outcomes for Non-Western Foreigners in Four Experimental Conditions

	0 stamps	%	5 stamps	%	10 stamps	%	20 stamps	%
Refusals	61	15.2	28	13.6	27	12.3	2	4.9
No opportunity	16	4.0	15	7.3	10	4.6	3	7.3
Language problems	55	13.7	30	14.6	36	16.4	3	7.3
No contact	40	10.0	22	10.7	23	10.5	8	19.5
Response	216	53.7	108	52.4	121	55.3	24	58.5
Partial response	11	2.7	2	1.0	0	0.0	1	2.4
Broken off interview	3	0.7	1	0.5	2	0.9	0	0.0
Total	402	100	206	100.1	219	100	41	99.9
Cooperation rate 4	79.0%		79.9%^{ns}		82.0%^{ns,ns}		92.6%^{ns,ns}	

ns = not significant

Table 6: Cooperation Rates of Various Ethnic Groups Without and With Incentives

	Without incentive		With incentive		
	Cooperation rate	n	Cooperation rate	n	Difference
All sampled units	73.9%	5,208	81.1%	5,742	7.3%**
Native Dutch population	73.8%	4,334	81.1%	4,755	7.4%**
Selected native Dutch population	70.8%	835	80.8%	942	10.1%**
Western foreigners	70.4%	462	80.1%	515	9.7%**
Non-Western foreigners	79.0%	402	82.0%	466	2.9%^{ns}
Surinamese	73.7%	98	74.4%	105	0.7%^{ns}
Netherlands Antilles & Aruba	92.6%	32	89.3%	38	-3.3%^{ns}
Turkey	78.0%	80	83.3%	102	5.3%^{ns}
Morocco	72.7%	66	78.8%	89	6.1%^{ns}
Other non-Western foreigners	83.0%	126	87.5%	132	4.5%^{ns}

**p value < 0.01, H0: cooperation rate without incentive = cooperation rate with incentive
ns = not significant

ers (7.4% vs. 2.9%) on the other. A further examination of the non-Western foreigners reveals that none of the cooperation rates of non-Western groups increase statistically significantly with the prepaid incentives.

Noticeable is that although the cooperation rate of non-Western foreigners does not increase with prepaid incentives, it is already high (79%) without any incentive. It is almost as high as the cooperation rate of the native Dutch sampled units who receive an incentive (81.1%). Implementing small incentives to increase the response rates of non-Western foreigners does not have an effect that is statistically significant. It does however seem to be effective with the native Dutch population and Western foreigners. Perhaps more importantly for nonresponse bias reduction, it also has a large effect on the cooperation rate of the selected native Dutch sampled units. These sampled units with a lower average household income and mostly living in more urbanized areas, characteristics often attributed to below-average response rates, exhibit a substantial increase in the cooperation rate (70.8% vs. 80.8%).

Linking these results back to the theoretical considerations reveals that social exchange theory rightly hypothesizes a larger marginal utility of incentives for native Dutch sampled units with a below-average socio-economic position. This does not however hold true of ethnic minorities. Higher initial cooperation by ethnic minorities partially eliminates the potentially positive effect of incentives on this group. Incentives do not affect the number of sampled units that cannot participate in survey research due to language problems, sometimes viewed as a category also containing soft refusals.

The higher cooperation rate in the null condition and the non-existent effect with incentives suggest that the response problem of non-Western foreigners is largely caused by lower contact rates and nonresponse due to survey language problems. Increasing the response rates of non-Western foreigners should focus on these two aspects rather than on using incentives.

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