Limited and Varying Attention: Evidence from Shocks to the Salience of Bank Overdraft Fees

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What we do

- Estimate role and dynamics of limited attention in payment of bank overdraft penalty fees
  - Limited attention === people only imperfectly integrate information on choice sets into decision making
- Using subtle variation in *survey content* as shocks to attention
  - Panel of transaction data on consumers
  - Panel members frequently offered surveys, some of which mention overdrafts

What we find

- Limited attention matters
  - large reduction in fee payments following subtle attention “shocks”
- Dynamics matter
  - *attention accumulates*: repeated shocks lead to bigger changes in behavior
  - *attention depreciates*
    - Immediate effect vs. other months
    - Some evidence that this stock depreciates as well
- Effects largest for some key groups (policy-wise)
  - low education, low financial literacy/sophistication
  - no difference for low vs. high income

What we don’t do

- Nothing to say on welfare implications
- Is limited attention sub-optimal?
  - Maybe.
  - Or maybe rational (time costs)
  - Or maybe constrained second-best (decision/attention costs)

Motivation: Overdraft fees and consumers

- "Overdraft" === (trying to) incur negative balance on checking account
  - Most fees >$20 *per transaction*
- Major expense for U.S. consumers. Spending more on overdrafts than on:
  - Fresh fruit or vegetables
  - Large appliances
- Seems plausible that limited attention could play role
  - Shrouding by banks: "Free Checking!"
  - Many fees easily avoidable (Stango-Zinman 2009 AER P&P)
  - Limited attention to balances: some survey evidence on this

Motivation: Overdraft Fees and Banks

- Major profit center for banks
  - 74% of deposit account service charge revenue
  - 6% of *total* net operating revenue
  - "If it weren't for overdraft fees, 45% of banks and credit unions wouldn't have made money in 2008" (Moebs Services in USA Today, July 9, 2009)
- Some evidence of inadequate upfront disclosure
- Lots of recent regulatory action
  - Banks eliminating some fees in response

Motivation: Related Literatures

- Nonlinear, state-contingent contracting: empirical determinants of supply and demand
  - Not much in household finance
  - Very little on overdrafts
  - Need evidence that speaks to theory models
    - E.g., Gabaix and Laibson
    - E.g., importance of consumer heterogeneity (or lack) in Grubb
- Limited attention/memory
  - Many theory models
  - Some empirical evidence. Our comparative advantages:
    - Dynamics
    - Household finance domain
    - Mechanisms re: high-frequency (re-)optimization: how do people implement fee reductions?

Motivation: Related Literatures

- “Priming” (marketing, psychology, education)
  - Little field evidence
  - Little on anything but very short-term effects
- Surveys can change behavior
  - Existing literature focuses on “intent” questions

Data Architecture

- 36 months of panel data from checking and credit account statements: 2006-2008
  - Compiled by market research firm
  - 7,430 panelists with active checking accounts
  - 102,290 panelist-months of data used in this paper
- Panelists complete an online "registration survey" when entering the panel
  - Baseline characteristics we use for estimating heterogeneous treatment effects
- Then invited to take "periodic" online surveys
  - Dozens/hundreds of questions
  - Offered at somewhat unpredictable intervals (roughly quarterly)
  - We observe survey-taking history *2004*-2008
- Survey topics not preannounced
  - Small financial incentive to take survey
  - Email invite, click through and take online…

Sample: External Validity?

Data compiled by Lightspeed Market Research

- Pays participants in other consumer panels $20 on average to sign over online access to accounts
- Panelists must register >=2 accounts

Panelist characteristics compared to rest of U.S.:

- Younger, more-educated, higher-income, more female, less homeowners
- More creditworthy (conditional on age), more electronic payments and online financial management
- In short, probably relatively financially sophisticated in many respects
- But no clear prediction on heterogeneous treatment effects; i.e., *sophistication*attention shock* <> 0

Empirical Approach: Surveys as Attention Shocks

- 6 of 21 periodic surveys are “overdraft-related”
- Use these surveys as shocks to attention/salience of overdraft fees
  - Within-panelist, conditional on selection into surveys
- Survey-taking is prevalent
  - 70% of panelists take a least one periodic survey
  - 27% of panelists take at least one overdraft survey

Surveys as Attention Shocks? "Related" Survey Content

- 5 of 6 surveys merely "mention" overdrafts
  - Relevant questions ask about usage/satisfaction
    - Aug 2006: "Do you have overdraft protection?"
    - Nov 2006: "What, if anything, frustrates you about your primary bank? (Select all that apply)"
  - No mention of prices or description of outside options
  - Relevant questions small fraction of survey content
  - Questions probably do *not* provide information *per se*
- 1 of 6 surveys is "overdraft-focused"
  - Large fraction of survey content
  - Some questions *do* plausibly provide information

Empirical Model

$$ODFee_{it} = \beta_1 TookODSurvey_{it} + \beta_2 TookAnySurvey_{it} + \beta_3 ODSurveys_{it} + \beta_4 AnySurveys_{it} + \beta_5 TookODSurvey_{i,t-1} + \beta_6 TookAnySurvey_{i,t-1} + Panelist_i + Moyr_t + \varepsilon_{it}$$

- OLS with unit of observation at panelist-month
  - Typically only know month, not day, or survey completion
  - Standard errors clustered on panelist
- *ODFee*: 1/0; =1 in 15% of panelist-months
- **Took* variables: 1/0 survey in month t
- **Surveys* variables increment one month after *took
- Overdraft, “any survey” variables increment together
- “Any survey” variables: control for selection…
  - (and for any generic causal effect of survey-taking)

Identifying Assumption

- Using *within*-panelist variation in *overdraft-related* survey-taking
- No differential unobserved secular dynamics in the dependent variable, across those who take relevant surveys and any other survey
  - Would have to be high-frequency dynamics, given timing of surveys, and nature of our findings
- Assumption seems reasonable
  - survey topics not preannounced
  - relevant surveys occur at unpredictable intervals
- Additional controls: lagged LHS, survey leads/lags
- Placebo tests “pass” (results on next slide)…

What we find

- Immediate effect: 2 percentage point (13%) reduction
  - Within-panelist, relative to (controlling for) other survey-taking
  - Larger point estimate for least-educated (vs. most-educated)
  - Significantly larger reductions for low/average self-assessed financial literacy
- Stock effect: 1 percentage point reduction per overdraft-related survey taken in last two years
  - Remember: these effects are within-panelist, over-time
  - Significantly larger reductions for least-educated, low/average financial literacy
- Placebo tests: no significant effects
  - No changes in overdraft fee payment following surveys on contactless cards, gift cards, auto loans
- Related content: some evidence of an effect from taking survey that mention *other* bank fees
  - 7 such surveys don't have any overdraft content

What drives these survey effects? Possible cognitive mechanics

1. Attention shock: survey serves as a *reminder*
- You “know” the elements in your choice set (prices, outside options), but forget or neglect that information in the absence of an external trigger like the survey question(s)
2. Information shock: survey provides *information*
- (“My bank never told me that!”)
- Relevant because upfront disclosure has been limited in this market
3. Both reminder and information

Results re: Cognitive mechanics

- Some evidence that overdraft-focused survey has incremental effect
  - Adding information?
  - More powerful attention treatment?
- Effects weaker if measure stock as overdraft-related surveys you've taken *ever*
  - stock effects depreciate over time?
- Effects on extensive margin of fee payment only
  - attention is discrete?
- Questions on other bank fees reduce overdrafts (& v.v.)
  - attention by association? (salience)

How do people implement fee reductions? Preliminary results re: behavior mechanics

- Spending out of checking account falls…
  - Including among guys who –never- overdraft
  - When balances low (<$100, <$20) for never- and frequent-overdrafters
  - When balances higher ($>100) for everyone
    - Maybe marginal overdraft is not $20 debit transaction?
    - Maybe it's a batch of those transactions? Or bill pay?
  - Does spending out of credit card account rise? (reallocation vs. level)?
- No effect on checking account balances

Summary Interpretation of Results

- Consumer attention (to state-contingent pricing) is:
  - limited
  - discrete
  - dynamic
  - malleable
    - more malleable for certain groups. Low literacy, low education.
  - associative

Implications for Disclosure Policy re: State-Contingent Fees?

All speculative:

- Upfront disclosure may not be necessary or sufficient to facilitate informed decisions
- New Fed default rule (affirmative consumer opt-in)
  - Firm's incentive is to *undo* the default: "Just initial here"
  - But hard to do so for existing customers
  - Intensify wasteful business-stealing competition?
- Real-time disclosure, repeated prods more likely to affect behavior?
  - Reminders about account terms?
  - (Low-) balance alerts?
- Or are sub/semi-conscious appeals more effective
  - At (which) times?
- Who should provide ongoing attention shocks? Who will?

End

If Identifying Assumption Holds

$$ODFee_{it} = \beta_1 TookODSurvey_{it} + \beta_2 TookAnySurvey_{it} + \beta_3 ODSurveys_{it} + \beta_4 AnySurveys_{it} + \beta_5 TookODSurvey_{i,t-1} + \beta_6 TookAnySurvey_{i,t-1} + Panelist_i + Moyr_t + \varepsilon_{it}$$

β_1 === "immediate" effect

β_3 === "stock" effect

- measure these over one-year, two-year, "ever" (four-year) horizons
- two-year in most specifications
- linear in most specifications
  - can't reject linearity if estimate non-parametrically

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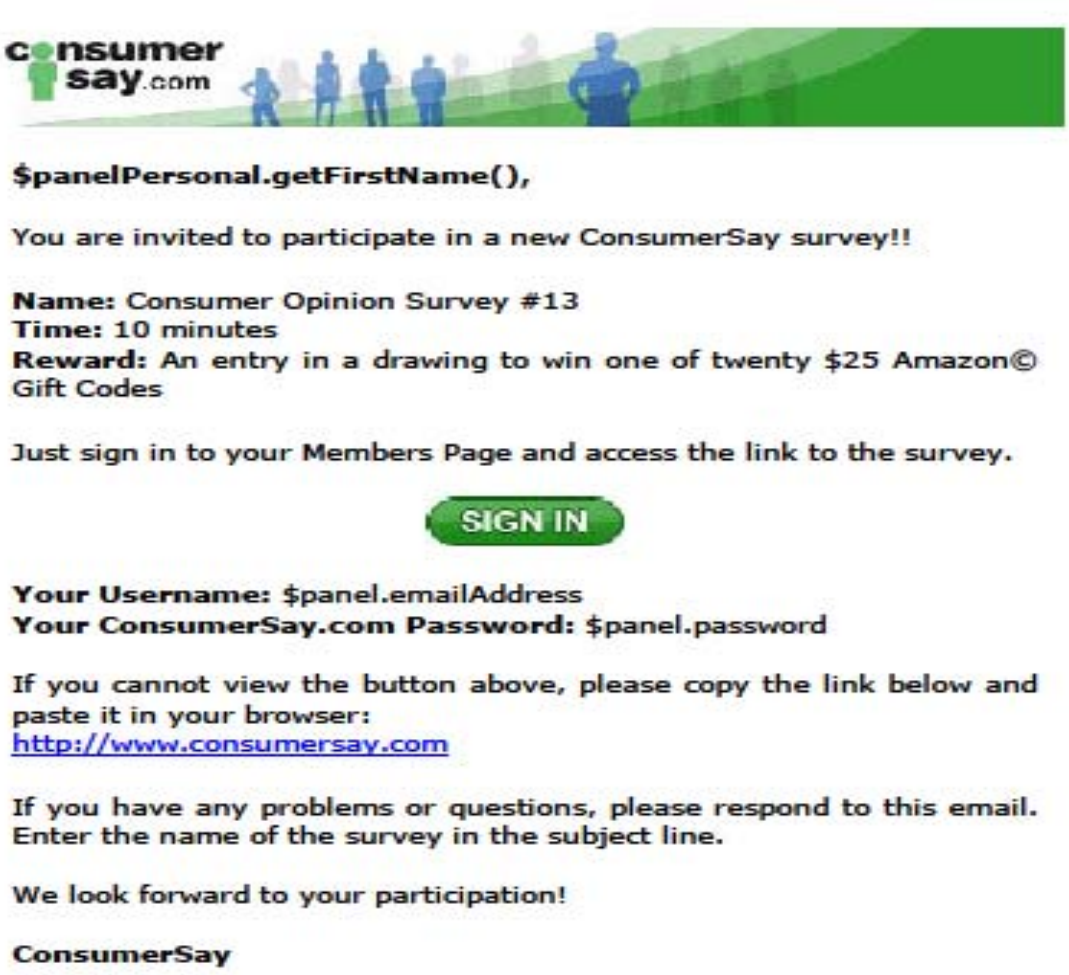

consumer say.com
$panelPersonal.getFirstName(),
You are invited to participate in a new ConsumerSay survey!!
Name: Consumer Opinion Survey #13
Time: 10 minutes
Reward: An entry in a drawing to win one of twenty $25 Amazon© Gift Codes
Just sign in to your Members Page and access the link to the survey.
SIGN IN
Your Username: $panel.emailAddress
Your ConsumerSay.com Password: $panel.password
If you cannot view the button above, please copy the link below and paste it in your browser:
http://www.consumersay.com
If you have any problems or questions, please respond to this email. Enter the name of the survey in the subject line.
We look forward to your participation!
ConsumerSay

Table 2. Survey timing and content.

Survey month/year	Overdraft fees or protection	Contactless cards	Gift cards	Auto loans	Other bank fees	Responses in sample
Aug04						379
Oct04				yes	yes	571
Jan05				yes	yes	591
Mar05	yes	yes		yes	yes	631
Jun05 (OD)	yes					926
Jun05 (non-OD)						935
Sep05			yes	yes	yes	1317
Dec05	yes	yes		yes	yes	1184
Mar06			yes		yes	1455
Jul06		yes	yes			781
Aug06 (OD)	yes	yes		yes		843
Aug06 (non-OD)		yes				505
Oct06	yes					828
Nov06	yes			yes	yes	686
q12007*		yes				2008
Apr07				yes		1406
Aug07		yes			yes	1502
Feb08					yes	1010
Jul08			yes		yes	1399
Oct08		yes		yes		961
Dec08						1113

Notes: Line below Dec-05 marks beginning of sample period in which we observe transaction and OD fee data. For each survey we observe month of administration. 1Q2007 survey was administered on rolling basis over six months.

Table 3. Panelist Counts by Surveys Taken

	Overdraft surveys							
Total surveys	0	1	2	3	4	5	6	row total
0	2,200	0	0	0	0	0	0	2,200
1	1,406	225	0	0	0	0	0	1,631
2	820	207	57	0	0	0	0	1,084
3	491	210	69	11	0	0	0	781
4	193	87	97	25	3	0	0	405
5	141	38	102	69	5	0	0	355
6	116	14	42	76	27	2	0	277
7	51	7	29	54	42	10	0	193
8	0	3	17	45	50	18	2	135
9	1	1	3	21	48	21	5	100
10	0	0	3	8	30	33	5	79
11	0	0	0	4	7	29	11	51
12	0	0	0	3	10	12	20	45
13	0	0	0	1	9	17	15	42
14	0	0	0	0	4	7	14	25
15	0	0	0	0	1	6	5	12
16	0	0	0	0	2	2	2	6
17	0	0	0	0	1	3	5	9
column total	5,419	792	419	317	239	160	84	7,430

Selection into Surveys

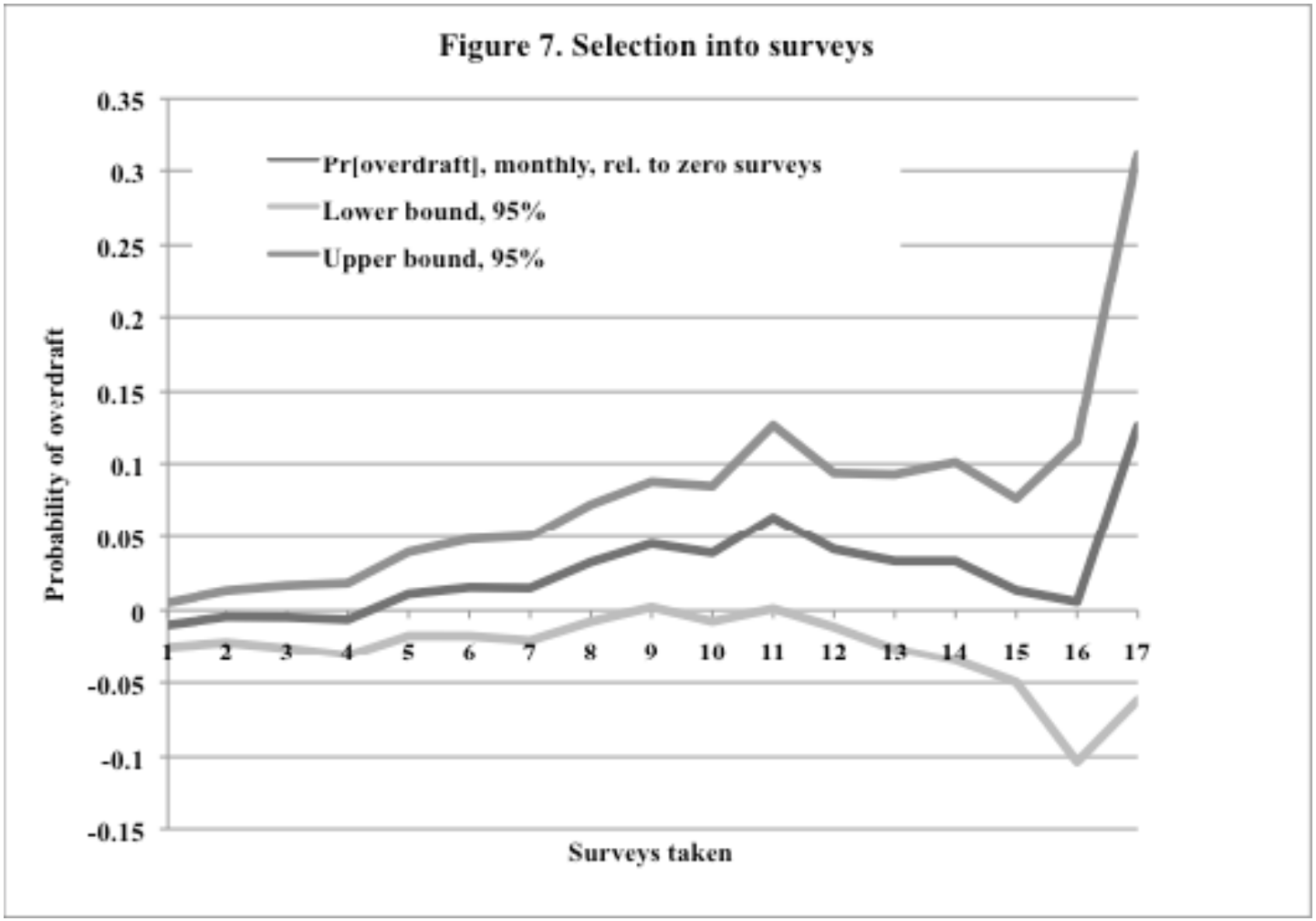
- 

Table 4. Immediate and stock effects of taking overdraft surveys.

sample:	Active bank accounts			Accounts with >0 overdraft
mean of LHS		0.15		0.27
	(1)	(2)	(3)	(4)
Took overdraft survey this month	-0.019*	-0.022**	-0.021**	-0.031*
	(0.010)	(0.010)	(0.010)	(0.017)
OD surveys taken last two years	-0.009**	-0.009**	-0.009***	-0.015***
	(0.004)	(0.004)	(0.003)	(0.006)
Took any survey this month	0.005	0.006	0.006	0.007
	(0.004)	(0.004)	(0.004)	(0.008)
Took OD survey last month		0.013	0.015	0.025
		(0.010)	(0.010)	(0.017)
Took any survey last month		0.004	0.003	0.005
		(0.004)	(0.004)	(0.008)
Incurred overdraft fee last month			0.069***	0.069***
			(0.006)	(0.006)
Incurred >5 overdraft fees last month			0.148***	0.148***
			(0.010)	(0.010)
N	102290	102290	102290	59601

* p<0.10 ** p<0.05 *** p<0.01

Table 5. Effects of Taking Overdraft Surveys by Education/Financial Literacy/Income

	Education		Literacy		Income	
Sample:	No college	College+	Low/Medium	High	<=$45,000	>$45,000
Mean of LHS:	0.19	0.12	0.18	0.11	0.16	0.15
	(1)	(2)	(3)	(4)	(5)	(6)
Took overdraft survey this month	-0.038**	-0.016	-0.078***	-0.028	-0.026	-0.029**
	(0.016)	(0.013)	(0.021)	(0.027)	(0.018)	(0.013)
OD surveys taken last two years	-0.014***	-0.004	-0.016**	0.007	-0.014**	-0.007*
	(0.005)	(0.004)	(0.007)	(0.010)	(0.006)	(0.004)
Took any survey this month	0.008	0.003	0.017**	0.003	0.002	0.008
	(0.007)	(0.005)	(0.007)	(0.008)	(0.007)	(0.005)
Took OD survey last month	0.026	0.008	0.016	0.059*	0.023	0.013
	(0.016)	(0.013)	(0.022)	(0.032)	(0.019)	(0.012)
Took any survey last month	-0.002	0.005	0.006	0.001	-0.004	0.007
	(0.006)	(0.006)	(0.007)	(0.008)	(0.007)	(0.005)
Incurred overdraft fee last month	0.068***	0.070***	0.061***	0.054***	0.067***	0.071***
	(0.008)	(0.009)	(0.009)	(0.016)	(0.009)	(0.008)
Incurred >5 overdraft fees last month	0.156***	0.127***	0.148***	0.157***	0.147***	0.146***
	(0.013)	(0.019)	(0.016)	(0.037)	(0.017)	(0.014)
N	52151	47034	35406	15366	39522	58365
Immediate OD effects diff. at 5%?	no		yes		no	
Stock OD survey effects diff. at 5%?	yes		yes		no	

Placebo Surveys

Table 6. Non-overdraft survey content and overdraft fees.

Relevant survey	Contactless card		Gift card	Auto loan		Other bank fee	
Use overlap with OD surveys?	All	Non-overlap	All (non-overlap)	All	Non-overlap	All	Non-overlap
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Took relevant survey this month	-0.002	-0.000	-0.008	-0.007	0.006	-0.014**	-0.010
	(0.007)	(0.007)	(0.009)	(0.008)	(0.010)	(0.007)	(0.008)
Relevant surveys taken last two years	-0.007	-0.006	-0.006	-0.004	0.002	-0.007**	-0.007*
	(0.004)	(0.006)	(0.004)	(0.003)	(0.005)	(0.003)	(0.004)
Took any survey this month	0.003	0.002	0.006	0.006	0.004	0.008*	0.007
	(0.005)	(0.005)	(0.004)	(0.004)	(0.004)	(0.005)	(0.005)
Took relevant survey last month	0.009	0.005	-0.007	-0.003	-0.010	0.004	0.007
	(0.007)	(0.007)	(0.008)	(0.008)	(0.010)	(0.007)	(0.008)
Took any survey last month	0.000	0.005	0.008*	0.007	0.007*	0.004	0.004
	(0.006)	(0.005)	(0.004)	(0.004)	(0.004)	(0.005)	(0.005)
Incurred overdraft fee last month	0.069***	0.069***	0.069***	0.069***	0.069***	0.069***	0.069***
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Incurred >5 overdraft fees last month	0.148***	0.148***	0.148***	0.148***	0.148***	0.148***	0.148***
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)
N	102290	102290	102290	102290	102290	102290	102290
Relevant surveys	8	5	4	9	5	10	7

Table 7. Attention or Information?

LHS:	Any OD fee	Any OD fee	Any non-OD fee	Any non-OD fee	Any OD fee
survey measure	Any fee	Fee, non-OD	Any fee	Fee, non-OD	Any OD
mean of LHS:					
	(1)	(2)	(3)	(4)	(5)
Took overdraft/fee survey this month	-0.014**	-0.010	-0.026***	-0.016*	-0.030**
	(0.007)	(0.008)	(0.009)	(0.009)	(0.012)
OD/fee surveys taken last two years	-0.007*	-0.007*	-0.001	0.007	-0.006*
	(0.004)	(0.004)	(0.004)	(0.005)	(0.004)
Took any survey this month	0.008*	0.007	0.008	0.006	0.005
	(0.005)	(0.005)	(0.006)	(0.006)	(0.004)
Took OD/fee survey last month	0.004	0.007	-0.007	-0.010	0.007
	(0.007)	(0.008)	(0.009)	(0.009)	(0.011)
Took any survey last month	0.004	0.003	0.002	0.002	0.003
	(0.005)	(0.005)	(0.006)	(0.006)	(0.004)
Took overdraft-focused survey this month					0.002
					(0.016)
Took overdraft-focused survey last month					0.008
					(0.020)
Took overdraft-focused survey last two years					-0.023**
					(0.011)

Table 1. Sample and overdraft fee frequency

	All Active	Ever paid OD fee
Panelists	7430	3827
Panelist-months	102290	59601
Median months per panelist	16	19
Any overdraft fee ever?	0.51	1.00
Share months with OD fee	0.15	0.30
Any month with 5+ OD fees?	0.14	0.28
Share months with 5+ OD fees	0.03	0.06
Prob. of OD fee given 1+ OD fee last month	0.53	
Prob. of OD fee given 5+ OD fees last month	0.80	
Prob. of 5+ OD fees given 5+ OD fees last month	0.45	

Figure 1. Overdrafting, active panelists

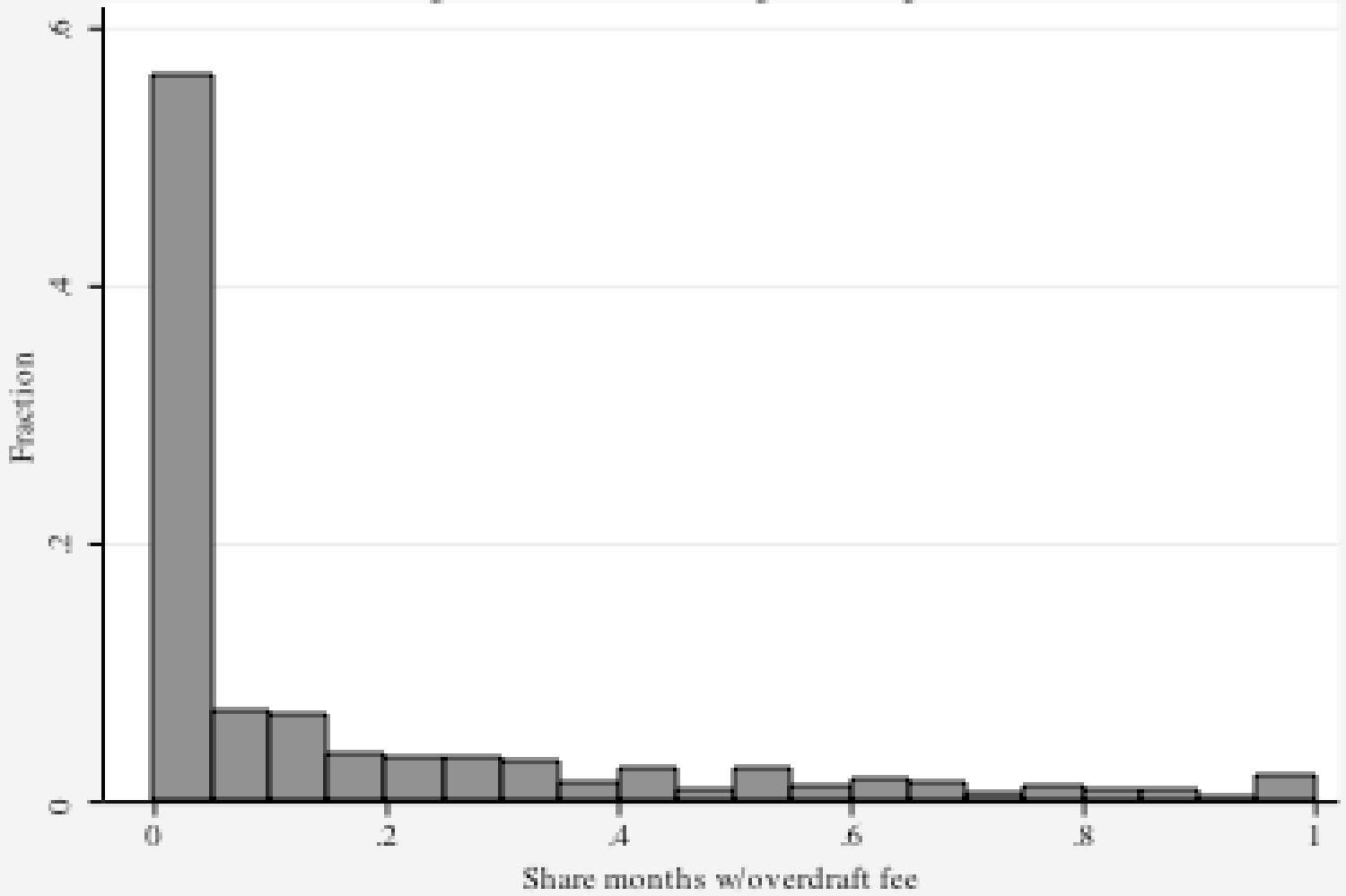
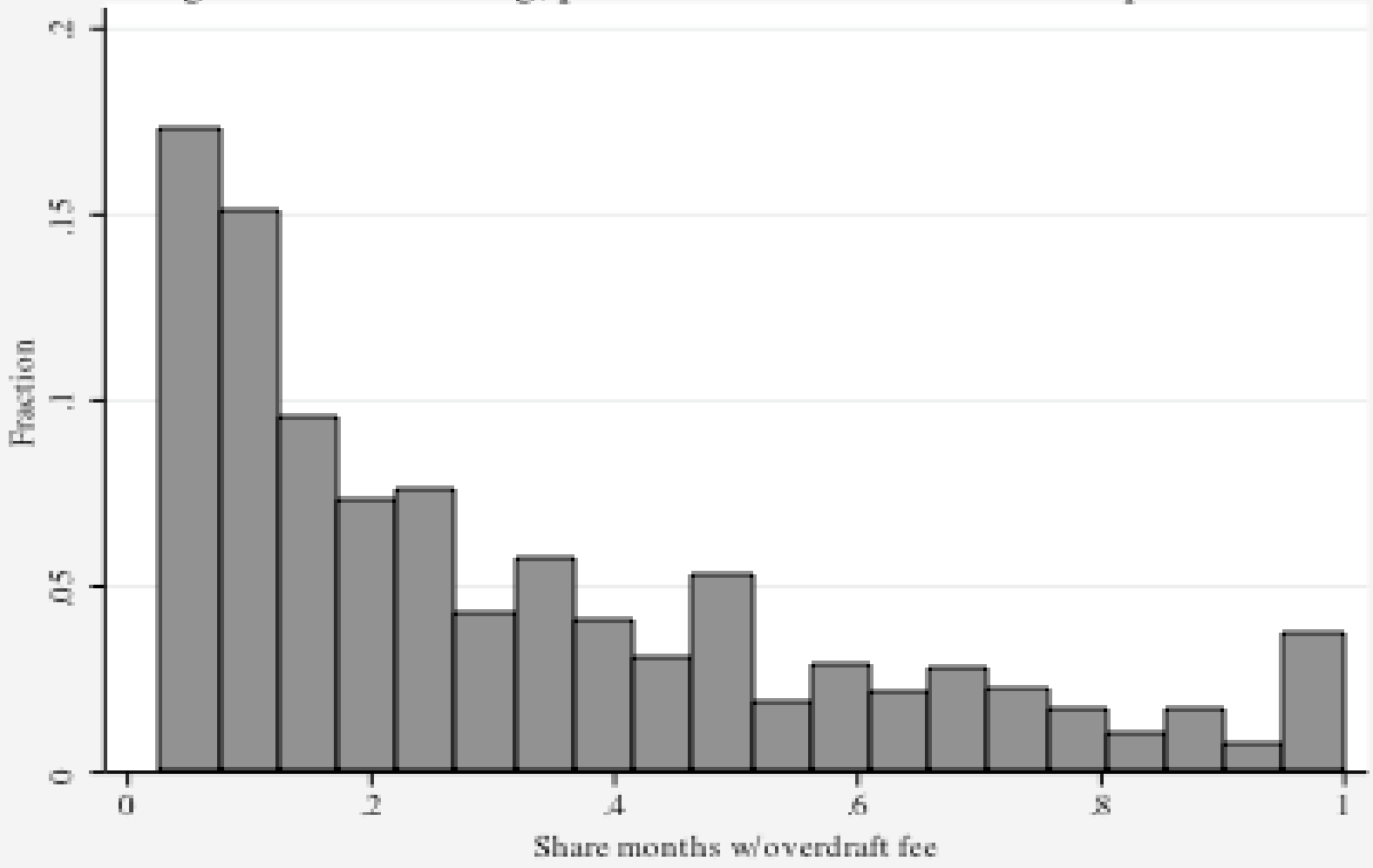


Figure 2. Overdrafting, panelists with at least one in-sample OD fee.



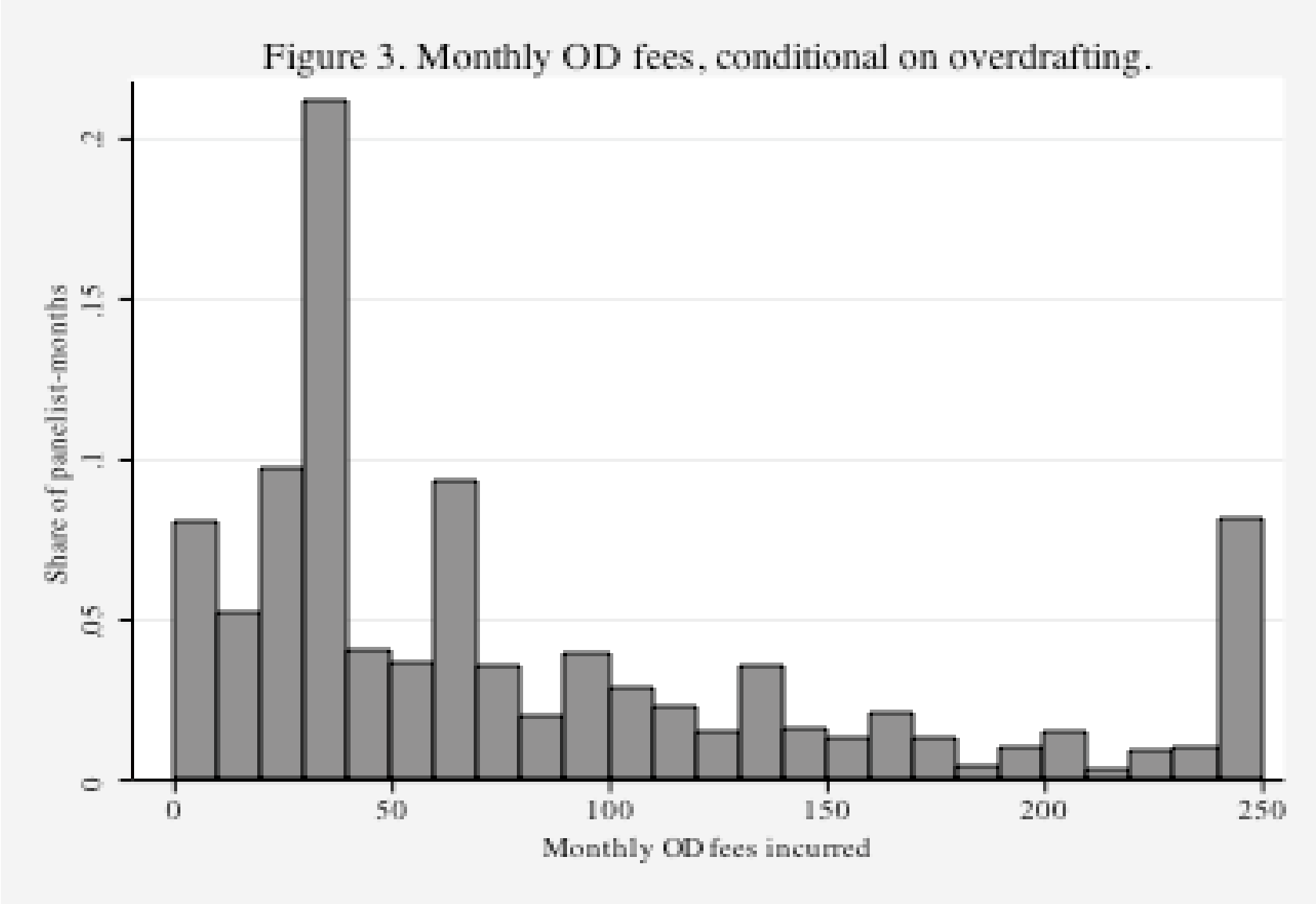
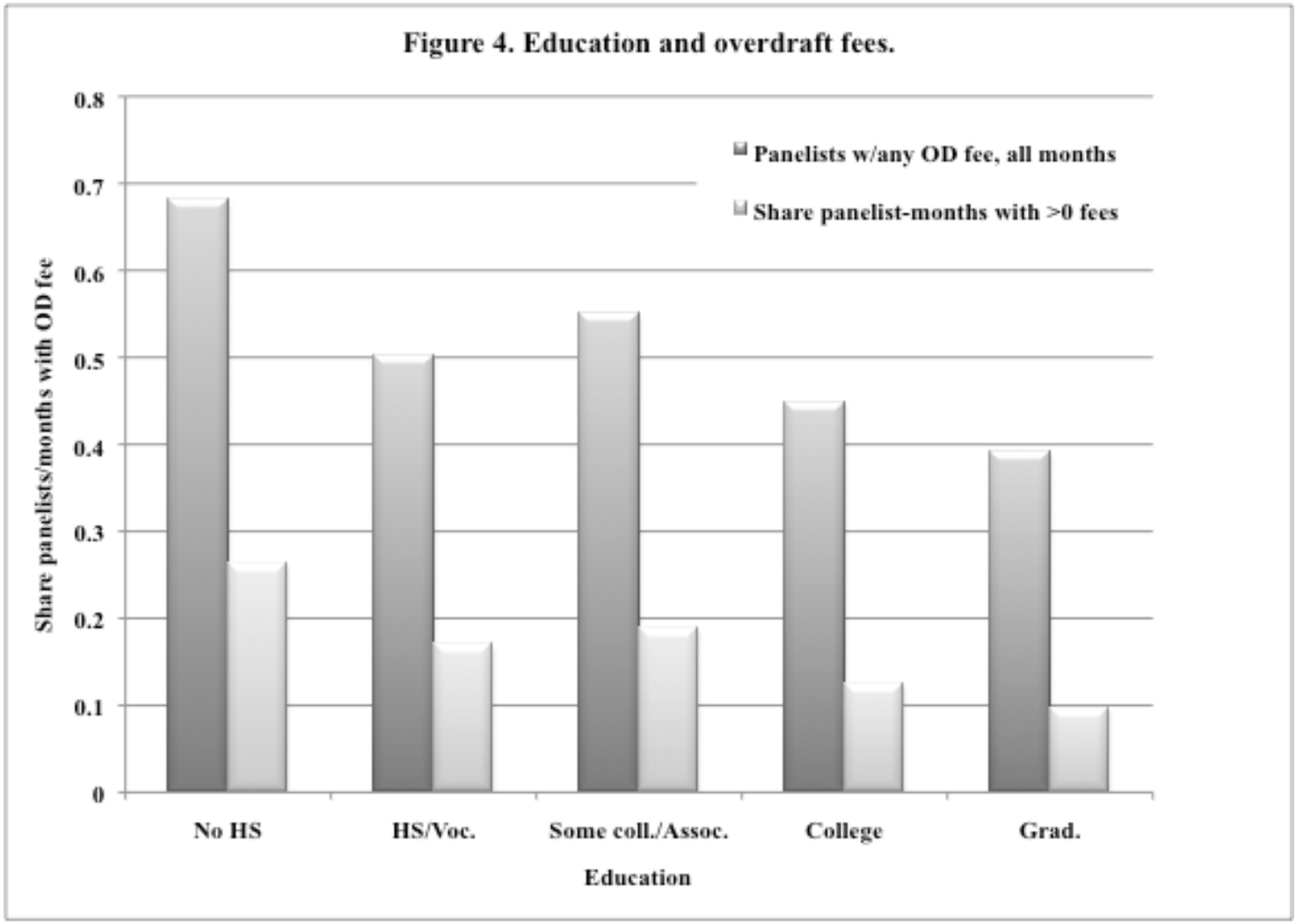
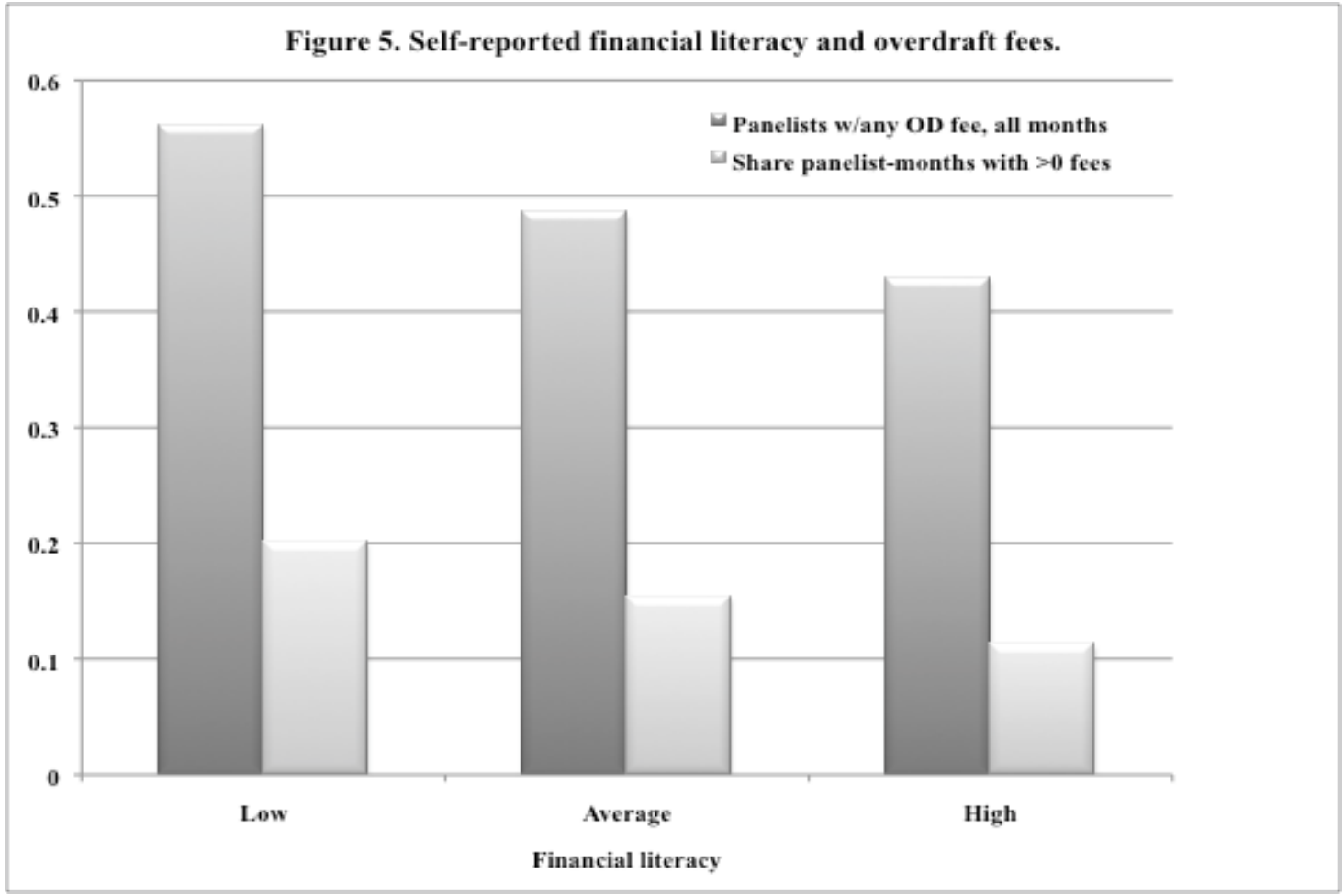


Figure 3. Monthly OD fees, conditional on overdrafting.
Share of panelist-months
0
.05
.1
.15
.2
0
50
100
150
200
250
Monthly OD fees incurred

Education and Overdrafts



Financial Literacy and Overdrafts



Income and Overdrafts