

For Better or Worse? Subjective Expectations  
and Cost-Benefit Trade-Offs in Health Behavior:  
An application to lockdown compliance in the  
United Kingdom

Gabriella Conti

UCL, IFS, IZA, and CEPR

Pamela Giustinelli

Bocconi, IGIER, and LEAP

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# What We Do In a Nutshell

**We study** citizens' perceptions of the costs (risks) and benefits (returns) of alternative compliance behaviors with respect to the Spring 2020 lockdown's rules in the UK, with a focus on how citizens trade off these perceived risks and benefits.

- ▶ *Stay home and be "miserable", or Go out and get infected?*

**We survey** a sample of UK-based individuals, eliciting their subjective expectations for consequences of alternative compliance behaviors along with their compliance plans.

- ▶ *E.g., Contracting the Coronavirus; Developing COVID-19 having contracted the virus; Becoming depressed; Becoming unfit; etc.*

**We estimate** a simple model of compliance decision-making with uncertain consequences, which quantifies the tradeoffs individuals face and the monetary compensation required to comply.

- ▶ *Because expectations and utilities explicitly enter the model, we can study their roles in determining compliance decisions and group differences in compliance.*

**We assess** the effect of a randomized (negative) sensitization intervention reviewing the timeline of the "Cummings scandal" on respondents' compliance plans.

- ▶ *Lower compliance and higher noncompliance probs among Labour supporters.*

# Related Literatures

Methodologically, we build on the survey expectations literature

- Manski (1999, 2004), Delavande (2008a,b), Blass et al. (2010), Zafar (2011, 2012, 2013), Stinebrickner and Stinebrickner (2012, 2014a,b), van der Klaauw (2012), Wiswall and Zafar (2015a,b, 2021), Giustinelli (2016), Arcidiacono et al. (2012, 2020), Giustinelli and Shapiro (2019), Hudomiet et al. (2021), Handbook of Economic Expectations (forth), ...

Substantively, we contribute to the fast-growing COVID-19 literature

- Brodeur et al. (2021)'s review (the first) has >500 cites on Google Scholar
- Especially research using survey expectations, e.g., Akesson et al. (2020), Aucejo et al. (2020, 2021), Baker et al. (2020), Belot et al. (2021), Bicese et al. (2020), Bordalo et al. (2021), Bruine de Bruin and Bennett (2020), Ciancio et al. (2020), Delavande et al. (2021), Faia et al. (2021), Kuper-Smith et al. (2020), Martinez-Bravo and Sanz (2022), Metcalfe et al. (2020), Papageorge et al. (2020), Rude et al. (2020), Wise et al. (2020), ...

And to research studying individuals' perceptions of the returns to health behaviors

- E.g., Sloan et al. (2003, 2011) on smoking; Conti et al. (2022) on dieting and exercising; ...

# UK COVID-19 Pandemic and First Lockdown's Rules

The UK entered a strict **lockdown on March 23, 2020**, later than other European countries, with a TV announcement by PM Boris Johnson.

**“Stay home”** was the single most important message and rule, with **varying bindingness across citizen categories**.

- 1 **Vulnerables** could not leave home for 12 weeks.
- 2 **Self-isolating individuals (HHs)** could not leave home for 7 days (14 days).
- 3 **Key workers** could leave home to go to work and for limited essential activities.
- 4 **Others** could leave home for limited essential activities.

**No clear rules on specific protective behaviors** such as wearing face masks.

- ▶ This has **implications for thinking about compliance** behavior (coming up).

# Baseline Survey

**Survey mode:** Online, using the **Prolific Academic platform** ([More](#)).

**Baseline:** We surveyed a sample of **1,000+ adults living in UK on May 3-10, 2020**, representative with respect to age, gender, and ethnicity.

- ▶ Right before Johnson announced a conditional plan for lifting of the first lockdown on May 10. (Implemented in June.)

**Survey sections:**

- (A) **You and Your Health** (age, gender, SRH, health history and conditions, BMI)
- (B) **Coronavirus Knowledge** (awareness, symptoms, protective behaviors, statistics, lockdown rules)
- (C) **Coronavirus Experience** (own and family/friends' experience with the virus)
- (D) **Coronavirus Behaviors** (own habits during lockdown)
- (E) **Coronavirus Expectations** (Coronavirus-related risks; compliance consequences and behavior)
- (F) **Background Information** (more demographics, SES, IQ, econ and social preferences)

**Sample characteristics:** [To table](#)

# Expectations Battery: Intro

## Introductory Screen to the Expectations Section (E)

To fight the ongoing Coronavirus epidemic, the Government introduced stringent rules on social distancing. The rules came into effect on March 23, 2020, and identify “Stay at home” as the single most important action that citizens can take in fighting the Coronavirus. The police was given the powers to fully enforce the rules – including through fines and dispersing gatherings, as well as through arrests in case of failed compliance. The strictness of the social distancing rules differs somewhat, depending on whether someone belongs to a particular category (e.g. key worker).



- ▶ Followed by additional info on category-specific rules ([Details](#)).
- ▶ *After* eliciting Coronavirus/COVID-related knowledge and experience, so everyone on the same page re lockdown basics, citizen categories, etc.

# Compliance Probabilities As Percent Chance: Question

Between 0 and 100 percent, what are the chances that **you will take the following actions** over the next 4 weeks?

Please note: Your choices must add up to 100.

0 10 20 30 40 50 60 70 80 90 100

Action 1: You never leave home  0

Action 2: You strictly follow all the rules that apply to you, exactly as described in the government's text  0

Action 3: You generally follow the rules that apply to you, but with a little discretion (e.g., leaving home once or twice more than allowed for essential shopping)  0

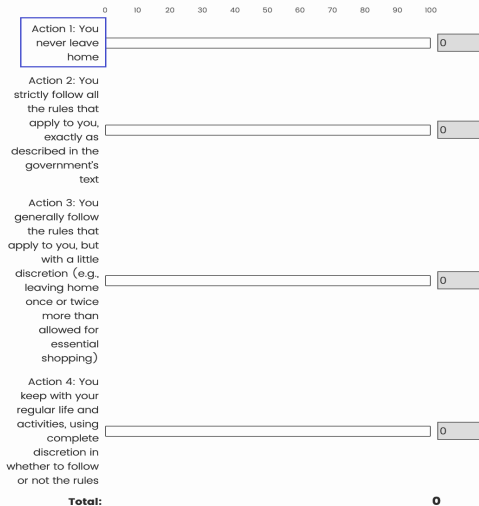
Action 4: You keep with your regular life and activities, using complete discretion in whether to follow or not the rules  0

**Total:** 0

# Compliance Probabilities As Percent Chance: Question

Between 0 and 100 percent, what are the chances that **you will take the following actions** over the next 4 weeks?

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Between 0 and 100 percent, what are the chances that **you will take the following actions over the next 4 weeks?**

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Action 3: You generally follow the rules that apply to you, but with a little discretion (e.g., leaving home once or twice more than allowed for essential shopping)

Action 4: You keep with your regular life and activities, using complete discretion in whether to follow or not the rules

**Total:**

# Compliance Probabilities As Percent Chance: Evidence

Actions	Mean	SD	Min	P10	P25	P50	P75	P90	Max	N
1 - Never leave home	22.25	29.39	0	0	0	10	38	75	100	1,132
2 - Strict compliance	54.15	32.30	0	8	25	54.5	84.5	96	100	1,132
3 - General compliance	19.31	24.37	0	0	0	10	28.5	55	100	1,132
4 - Non-compliance	4.28	11.55	0	0	0	0	2	13	100	1,132

## ► Main patterns ( [Histogram](#) )

- Stay home only ( $P1 = 1$ ): **3.18%** (18.26 Vulnerables / 1.47 Non-Vulnerables).
- Stay home or strictly comply ( $P1 + P2 = 1$ ): **27.74%** (50.44 V / 25.17 NV).
- Some non-compliance ( $P3 > 0$  &/or  $P4 > 0$ ): **72.26%** (49.57 V / 74.83 NV).
- Discretion or non-compliance only ( $P3 + P4 = 1$ ): **2.2%** (3.48 V / 2.07 NV).

## ► More heterogeneity: [By Gender](#), [By COVID-19 Exp](#), [By Vulnerability](#)

## ► Understanding of scale: Self-rated. Mean = 78/100, Median = 83/100 ( [Full Hist](#) ).

## ► Rounding: With clickable sliders, less heaping at multiples of 10 and 5.

## ► Interpretation of A3-A4: Meeting relatives/friends, exercising >1/day, ... ( [Graph](#) ).

## ► Validation: Compliance probabilities at baseline predict self-reported compliance behavior at follow-up ( [Reqs](#) ).

# Choice Consequences I:

## *Perceived Risks* of Non/Compliance

- 1 PC of **contracting Coronavirus (w/ or w/o symptoms)** over the next 4 weeks.
  - 2 PC of **not finding space in a hospital with ICU** over the next 4 weeks, if were to contract Coronavirus and develop COVID-19 with severe-to-acute symptoms.
  - 3 PC of **COVID-19 being fatal** over the next 4 weeks, if were to contract Coronavirus and develop COVID-19.
  - 4 PC of **infecting someone living with you** over the next 4 weeks.
  - 5 PC of **infecting someone NOT living with you** over the next 4 weeks.
  - 6 PC of **being caught transgressing** over the next 4 weeks.
  - 7 Expected **fine (in GBP)** over the next 4 weeks, if caught transgressing.
- ▶ (1) & (4)-(6) *asked conditionally on each non/compliance behavior (IF never leave home/comply strictly/comply generally/don't comply)*. Ex: **Cond Q**.
- ▶ (2)-(3) and (7) asked unconditionally and multiplied by (1). Ex: **Uncond Q**.

## Choice Consequences II: *Perceived Returns* of Non/Compliance

- 1 PC of *not* **becoming unhappy or depressed**.
  - 2 PC of *not* **gaining weight or becoming unfit**.
  - 3 PC of *not* **worsening relationship with family, close friends, and/or close colleagues**.
  - 4 PC of *not* **losing job** (if working).
  - 5 PC of *not* **running behind with exams** (if studying).
  - 6 PC of *not* **running out of money**.
- ▶ *Asked conditionally on each non/compliance behavior* (IF never leave home/comply strictly/comply generally/don't comply).
  - ▶ *"Not"* framing for presentation only; actually asked PC for complement events.

## *Perceived Risks* of Non/Compliance: In Levels and Relative to *Staying Home (A1)* Graph

Unconditional risk perceptions: Graph, Tab1, Tab2

	Never out home (A1)	Strict compl. (A2)	General compl. (A3)	Non- compl. (A4)	A2-A1	A3-A1	A4-A1
PC of contracting Coronavirus over next month	10.14 (18.65)	19.61 (23.39)	27.74 (21.15)	54.35 (28.72)	9.47 (17.81)	17.60 (22.35)	44.21 (35.71)
PC of infecting someone living w/ you over next month	7.95 (17.98)	15.38 (21.65)	26.96 (22.69)	52.56 (31.65)	7.43 (15.94)	19.01 (22.12)	44.62 (35.48)
PC of infecting someone not living w/ you over next month	4.71 (15.50)	11.78 (19.51)	22.32 (21.11)	47.07 (30.83)	7.07 (14.89)	17.62 (21.62)	42.36 (34.75)
PC of being caught transgressing	0	0	15.31 (20.08)	38.10 (31.56)	0	15.31 (20.08)	38.10 (31.56)
Expected fine if caught transgressing	0	0	21.89 (54.83)	51.17 (88.82)	0	21.89 (54.83)	51.17 (88.82)

Note: PC=Percent Chance. N=1,132. Means and standard deviations (in parentheses). The last three columns display means of within-person differences.

## *Perceived Returns of Non/Compliance:* In Levels and Relative to *Staying Home (A1)* Graph

	Never out home (A1)	Strict compl. (A2)	General compl. (A3)	Non- compl. (A4)	A2-A1	A3-A1	A4-A1
PC of not becoming unhappy or depressed over next month	52.50 (34.63)	62.90 (30.46)	68.78 (26.08)	73.90 (26.90)	10.39 (20.44)	16.28 (26.15)	21.39 (36.30)
PC of not gaining weight or becoming unfit over next month	48.33 (34.41)	61.16 (30.39)	67.33 (27.13)	77.80 (22.78)	12.82 (22.08)	19.00 (25.42)	29.47 (33.03)
PC of relationship not deteriorating over next month	74.45 (30.58)	77.49 (27.31)	78.21 (24.35)	74.03 (29.82)	3.04 (14.02)	3.76 (21.84)	-0.428 (37.48)
PC of not losing job (or falling behind w/ exams)	81.26 (31.24)	85.71 (25.41)	86.25 (23.88)	86.42 (23.67)	4.45 (20.75)	5.00 (22.73)	5.16 (27.56)
PC of not running out of money over the next month	81.27 (30.50)	83.97 (26.92)	85.12 (24.89)	86.26 (23.64)	2.71 (17.17)	3.86 (19.38)	5.00 (25.74)

Note: PC=Percent Chance. N=1,132. Means and standard deviations (in parentheses). The last three columns display means of within-person differences.



# Simple Framework to Model Non/Compliance

Individuals face a choice among a fine set of non/compliance behaviors,  $\mathcal{J} = \{A1, A2, A3, A4\}$ . Individuals are forward looking, so their choice depends on the consequences or outcomes of alternative actions, through the associated utilities and subjective probabilities (assumed separable).

Person  $i$ 's decision problem, with  $\{b_k\}_{k=1}^{K_B}$  denoting **binary** outcomes and  $\{s_k\}_{k=1}^{K_S}$  **continuous** ones:

$$\begin{aligned} j_i^* &= \arg \max_{j \in \mathcal{J}} \sum_{k=1}^{K_B} \{P_{ij}(b_k = 1) \cdot u(b_k = 1) + [1 - P_{ij}(b_k = 1)] \cdot u(b_k = 0)\} + \sum_{k=1}^{K_S} \gamma_k \cdot E_{ij}(s_k) \\ &= \arg \max_{j \in \mathcal{J}} \sum_{k=1}^{K_B} P_{ijk} \cdot \Delta u_k + \sum_{k=1}^{K_B} u(b_k = 0) + \sum_{k=1}^{K_S} \gamma_k \cdot E_{ijk} \end{aligned}$$

where:

- $P_{ijk}$  is  $i$ 's subj prob that  $b_k = 1$  will result (e.g.,  $i$  gets infected), if  $j$  is chosen;
- $\Delta u_k$  is the (dis)utility  $i$  derives from  $b_k = 1$  (e.g.,  $i$  gets infected) relative to  $b_k = 0$  (e.g.,  $i$  does not get infected) following **any choice**;
- $\sum_{k=1}^{K_B} u(b_k = 0)$  drops out, as it is constant across alternatives;
- $E_{ijk}$  is  $i$ 's subj expectation for  $s_k$  (e.g., monetary fine), if  $j$  is chosen;
- $\gamma_k$  represents the associated (dis)utility following **any choice**.

# Problem *At Time of Choice* vs *Before Choice*

Form of problem *at the time of actual choice*:

$$j_i^* = \arg \max_{j \in \mathcal{J}} \sum_{k=1}^{K_B} P_{ijk} \cdot \Delta u_k + \sum_{k=1}^{K_S} \gamma_k \cdot E_{ijk} + \varepsilon_{ij},$$

where  $\varepsilon_{ij}$  is known to decision maker  $i$ , but unknown to the econometrician.

Form of problem *at a time before actual choice* (e.g., **at survey**):

$$q_{ij^*} = Q_i \left[ \sum_{k=1}^{K_B} P_{ij^*k} \cdot \Delta u_k + \sum_{k=1}^{K_S} \gamma_k \cdot E_{ij^*k} + \varepsilon_{ij^*} > \sum_{k=1}^{K_B} P_{ijk} \cdot \Delta u_k + \sum_{k=1}^{K_S} \gamma_k \cdot E_{ijk} + \varepsilon_{ij} \quad \forall j \neq j^* \right]$$

where:

- $q_{ij^*} = i$ 's subj prob of choosing action  $j^*$  over the other actions;
- standard SEU as before *but* for  $\varepsilon_{ij}$ , now including “**resolvable uncertainty**”.

That is,  $\varepsilon_{ij} = \vartheta_{ij} + \xi_{ij}$ , where:

- $\vartheta_{ij}$  known to  $i$ , but not to the econometrician (like  $\varepsilon_{ij}$  above);
- $\xi_{ij}$  unknown to both  $i$  and the econometrician, both holding (rational) beliefs about its distribution.

# Econometric Implementation

**Econometric implementation:** Assuming that  $\xi_{ij}$  and  $(\xi_{ij} + \vartheta_{ij})$  are each i.i.d. Type 1 Extreme Value, and inverting the choice probabilities, yields:

$$\begin{aligned} \ln[q_{ij}] - \ln[q_{i1}] &= (\alpha_j - \alpha_1) + \sum_{k=1}^K \beta_k \cdot (p_{ijk} - p_{i1k}) + (\vartheta_{ij} - \vartheta_{i1}) \\ &= \alpha_j + \sum_{k=1}^K \beta_k \cdot \Delta p_{ik} + v_{ij}, \end{aligned}$$

where  $j = 1$  (never leave home) is the reference action;  $\alpha_1 = 0$ ;  $\vec{\beta}$  includes the utility params  $\Delta u_k$ 's and  $\gamma_k$ 's to be estimated;  $\vec{p}_{ij}$  includes expectations for all outcomes.

**Empirical specification:** Elements of  $\{\Delta p_{ijk}\}_{k=1}^K$  are  $i$ 's perceived risks and returns of conducts  $j = 2, 3, 4$  relative to  $j = 1$  (the recommended "stay home"). That is,

- $k = 1$ :  $\Delta$  subj prob of contracting Coronavirus if chose  $j$  vs 1;
- ...
- $k = K$ :  $\Delta$  subj prob of not running out of money if chose  $j$  vs 1.

**Estimation:** By LS (and LAD for robustness), using data on subjective probabilities over choices (LHS) and outcomes (RHS),  $\{\{q_{ij}, \{p_{ijk}\}_{k=1}^K\}_{j=1}^4\}_{i=1}^{1132}$ .

# Estimates With Homogenous Preferences

$\beta_k$	Expected Sign	OLS	LAD
<b>Risks/Costs</b>			
$\beta_1$ (contract the Coronavirus)	-	0.557 (0.468)	0.324 (0.401)
$\beta_2$ (no ICU with acute COVID)	-	-1.129 (2.063)	-1.987 (1.599)
$\beta_3$ (passing away of COVID)	-	-2.005 (0.934)**	-1.119 (0.694)
$\beta_4$ (infecting people living with)	-	-0.899 (0.420)**	-0.999 (0.352)***
$\beta_5$ (infecting people not living with)	-	-1.419 (0.521)***	-1.592 (0.367)***
$\beta_6$ (being caught transgressing)	-	-3.408 (0.362)***	-2.754 (0.362)***
$\beta_7$ (expected fine)	-	-0.003 (0.001)**	-0.003 (0.001)**
<b>Benefits</b>			
$\beta_8$ (not unhappy/depressed)	+	1.618 (0.327)***	1.933 (0.287)***
$\beta_9$ (not unfit/gain weight)	+	0.409 (0.359)	0.639 (0.286)**
$\beta_{10}$ (no worse relationship)	+	0.232 (0.316)	0.899 (0.291)***
$\beta_{11}$ (not losing job)	+	1.130 (0.459)**	1.382 (0.349)***
$\beta_{12}$ (not running behind with exams)	+	0.703 (1.331)	0.615 (0.954)
$\beta_{13}$ (not running out of money)	+	-0.688 (0.513)	-0.850 (0.364)**
<b>Constant</b>		0.816 (0.126)***	0.776 (0.100)***
<b>N</b>		1,132	1,132

Notes: Standard errors clustered at the individual level in (). \*\*\*:  $p < 0.01$ ; \*\*:  $p < 0.05$ ; \*:  $p < 0.1$ .

# Preferences Are Heterogeneous

## Summary

- ▶ **Vulnerables** have larger disutilities of contracting the Coronavirus and of infecting people they live with.  
**Nonvulnerables** have a larger disutility of infecting people they do not live with, a larger utility of avoiding becoming unhappy/depressed, and more trade-offs in general.
- ▶ **Nonvulnerables with prior COVID-19 experience** have a larger disutility of passing away from COVID.  
**Those without prior COVID-19 experience** have a larger disutility of not finding ICU space with acute COVID.
- ▶ **Vulnerable men** have a larger utility of avoiding becoming unfit/gaining weight.  
**Vulnerable women** have a larger utility of avoiding deterioration of relationships.  
**Nonvulnerables** have a larger utility of avoiding losing their job.

Estimates: [Go to](#)

# Perceived Risks/Returns of Leaving Home (A2-A4) VS. Staying Home (A1) Are Also Heterogeneous

## Summary

- ▶ **Vulnerables** have higher perceived risks of not finding ICU space with acute COVID and of passing away from COVID, associated to leaving home (A2-A4) vs. staying home (A1), and lower perceived risk of being caught transgressing, and lower perceived returns in general (nearly all outcomes).
- ▶ **Men** have lower perceived risks in general (all outcomes), and higher perceived returns of avoiding deterioration of relationships.
- ▶ **Those with prior COVID-19 experience** have higher perceived risks (nearly all outcomes), and selected higher perceived returns (avoid becoming unfit/gaining weight and losing job) or lower ones (avoid relationships deterioration).

Estimates:

Risks

Returns

# Group Decomposition of Compliance Probabilities: Expectations vs Preferences

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	Differences in Subjective Probabilities of Compliance (A2-A4 vs A1) between...	
	Females Vs. Males	Not Vulnerables Vs. Vulnerables
	Log form	Log form
Overall Difference	-0.713***	2.056***
Share Expectations	0.399***	0.164
Share Preferences	0.762***	0.913***
Share Interaction	-0.164	-0.078

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Notes: Oaxaca-Blinder decomposition. \*\*\*:  $p < 0.01$ ; \*\*:  $p < 0.05$ ; \*:  $p < 0.1$ .

The difference in choice probabilities among respondents with and without COVID-19 experience is not statistically significant.

## Compensation Needed to “Stay Home”

- $\approx$  **25-26%** of sample requires compensation to be indifferent between staying home and their optimal choice; **mean = £300-350**. ([Details](#))
  - ▶ **Vulnerables** are less likely to need compensation (22%) and require less-than-average compensation (£169-206).
  - ▶ **Those with prior COVID-19 exp > 0** are more likely to need compensation (26-27%) and require more-than-average compensation (£356-412).
  - ▶ **Men** are less likely to need compensation (20%) and require more-than-average compensation (£466-523).
- **UK Gov scheme for the self-isolating on low income:** initially trial amount of **£130 over 10 days** for positive person (+ **£182 over 14 days** for HH members), then increased to **£500 over 10 days**.
  - ▶ **Those on low income** are less likely to need compensation (21%) and require more-than-average compensation (£556-577).



# Conclusion

We have studied perceptions of risks and benefits of non/compliance to COVID-19 social distancing rules among UK citizens in May 2020.

We have estimated a simple model of compliance behavior with uncertain consequences and quantified the trade-offs individuals face and the monetary compensation required to comply.

We have found significant heterogeneity in both preferences and expectations and decomposed their contribution to (expected) compliance.

We have performed a negative sensitization intervention and found that it affects elicited compliance probabilities for specific groups.

Thank You!

[<gabriella.conti@ucl.ac.uk>](mailto:gabriella.conti@ucl.ac.uk)

[<pamela.giustinelli@unibocconi.it>](mailto:pamela.giustinelli@unibocconi.it)

# Bonus Slides

# Categories of Citizens [Back](#)

- **Four categories of citizens** were identified by the government's rules:
  - 1 **Self-isolating individuals or households:** People positive to Coronavirus or with COVID symptoms.
  - 2 **Vulnerables:** People aged 70+ and/or with certain health conditions; pregnant women.
  - 3 **Key workers:** People working in critical sectors (e.g. NHS).
  - 4 **Others**
- **The first two categories were subject to the strictest rules**, as they could not leave the house:
  - for 7 days (self-isolating individual) or 14 days (self-isolating household);
  - for 12 weeks (vulnerables).

## More on Prolific Academic Back

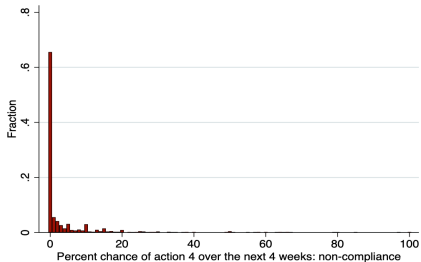
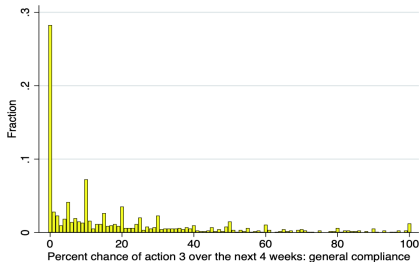
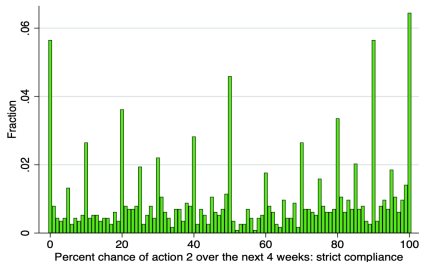
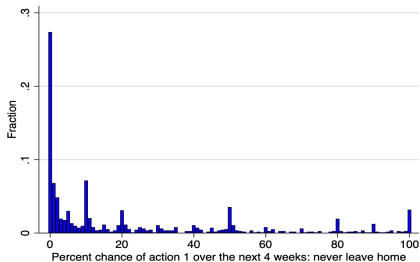
- Information about Prolific Academic at <https://www.prolific.co/>.
- Age-gender-ethnicity representative for UK and US.
- High quality.
  - Peer et al. (2017) show that participants are less dishonest, are less likely to fail attention checks, and produce higher quality data than participants recruited via other comparable online research platforms.
  - Prolific versus M-Turk:  
<https://www.prolific.co/prolific-vs-mturk/>.
- Increasingly used in economics.
  - For instance, Akesson et al. (2020), Buso et al. (2020), Campos-Mercade et al. (2020), among others.

## Sample Characteristics at Baseline [Back](#)

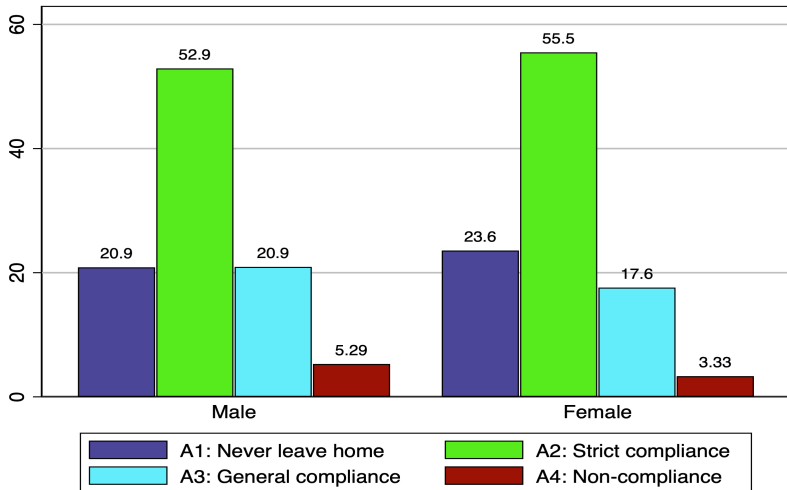
	Mean	SD	N
Respondent is female	0.504	0.500	1,127
Age 18-29	0.188	0.391	1,132
Age 30-39	0.172	0.378	1,132
Age 40-49	0.191	0.393	1,132
Age 50-59	0.168	0.374	1,132
Age 60+	0.281	0.450	1,132
White	0.823	0.381	1,132
Lives in England	0.874	0.332	1,132
Undergraduate Degree	0.411	0.492	1,132
Postgraduate Degree	0.153	0.360	1,132
Household Income < £16,000/year	0.155	0.362	1,132
Living Alone	0.157	0.364	1,132
Vulnerable	0.102	0.302	1,132
Self-Isolating	0.152	0.359	1,132
Key Worker	0.163	0.370	1,132
Other Working	0.286	0.452	1,132
Other Not Working	0.285	0.452	1,132
COVID-19 Literacy Index	0.753	0.066	1,132
COVID-19 Experience Index	0.127	0.144	1,132
Willing to Take Risks $\geq 5$	0.462	0.499	1,132
Willing to Wait for More Tomorrow $\geq 6$	0.574	0.495	1,132

- ▶ Other not working includes non-working students, retired, unemployed, those on sick/other leave, unable to work, staying at home. 90 of these 323 respondents were working (without studying) in February 2020.
- ▶ COVID-19 literacy and experience indexes run from 0 to 1.
- ▶ Risk and patience scales run from 0 to 10.

# Compliance Probs As Percent Chance: Histograms [Back](#)

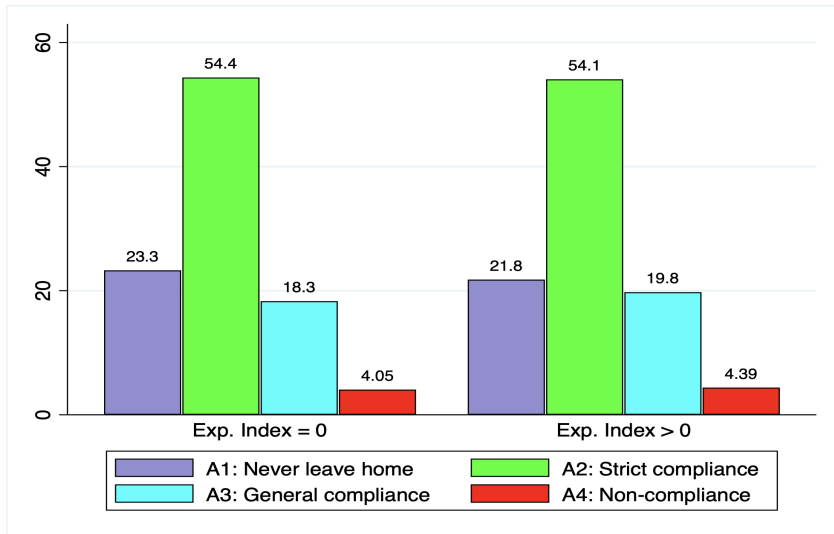


## Mean Compliance Probs by Gender [Back](#)



# Mean Compliance Probs by COVID-19 Experience

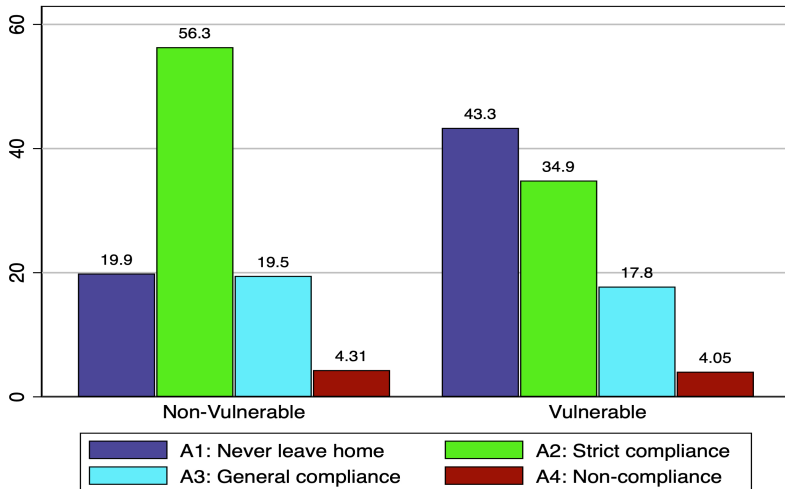
Back



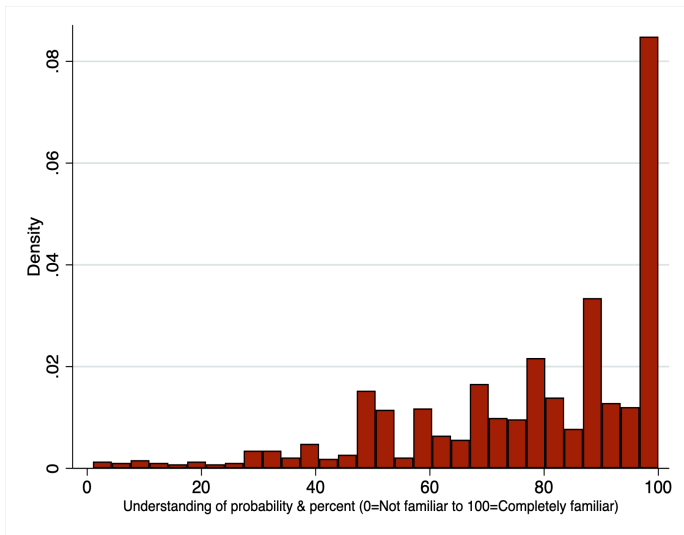


# Mean Compliance Probs by Vulnerability Status

Back



# Familiarity with Probabilities and Percent [Back](#)



Note: Mean=78. Median=83.

# Validation of Compliance Probs Back

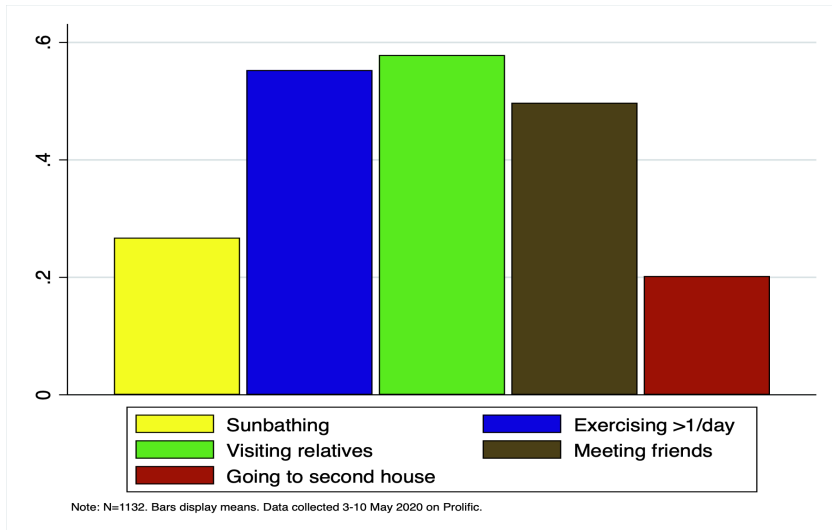
	Predicted Variable: Stay-Home Dummy						COVID-19	COVID-19
	Full Sample	Male	Female	Vulnerable	Non-Vulnerable	Exp $\neq$ 0	Exp = 0	
<b>Prob A1</b>	0.536*** (0.033)	0.527*** (0.047)	0.536*** (0.046)	0.683*** (0.097)	0.471*** (0.036)	0.564*** (0.038)	0.479*** (0.062)	
<b>Constant</b>	0.022* (0.012)	0.022 (0.017)	0.022 (0.018)	0.047 (0.057)	0.025*** (0.012)	0.007 (0.014)	0.053** (0.024)	
<b>t-stat</b>								
<b>slope=1</b>	-14.27	-10.08	-10.14	-3.27	-14.86	-11.53	-8.44	
<b>F-stat const=0 &amp; slope=1</b>	138.75	67.31	71.59	8.10	145.88	98.64	71.15	
<b>N</b>	1,041	516	520	105	936	712	329	
<b>R<sup>2</sup></b>	0.208	0.197	0.209	0.325	0.158	0.238	0.156	

	Predicted Variable: No-Compliance Dummy						COVID-19	COVID-19
	Full Sample	Male	Female	Vulnerable	Non-Vulnerable	Exp $\neq$ 0	Exp = 0	
<b>Prob A4</b>	0.267** (0.117)	0.265* (0.140)	0.311 (0.220)	- (0.220)	0.298** (0.126)	0.310** (0.136)	0.142 (0.232)	
<b>Constant</b>	0.693*** (0.015)	0.679*** (0.021)	0.705*** (0.020)	- (0.020)	0.658*** (0.016)	0.697 (0.017)	0.682*** (0.027)	
<b>t-stat</b>								
<b>slope=1</b>	-6.25	-5.24	-3.13	-	-5.57	-5.09	-3.69	
<b>F-stat const=0 &amp; slope=1</b>	1213.33	553.98	651.96	-	927.15	868.94	345.51	
<b>N</b>	1,131	558	568	-	1,016	782	349	
<b>R<sup>2</sup></b>	0.005	0.006	0.004	-	0.006	0.007	0.001	

Standard errors in parenthesis,  $R^2$  in brackets. \*\*\*:  $p < 0.01$ ; \*\*:  $p < 0.05$ ; \*:  $p < 0.1$ .

# *“What non-compliance behaviour did you think about?”*

Back



# "What non-compliance... did you think about?"

Back

visiting scenic locations far from home  
shopping  
Travelling to beauty spots or outdoor parks  
Just walking round built-up areas with no purpose  
You didnt ask me this  
Shopping for essential food; exercise half an hour a day  
going to the beach for mental health/wellness reasons  
going to a gathering, or going to the shops more than necessary  
shopping non essentials  
Having parties, having people round to socialise  
going to shops other than grocery kind  
Meeting my partner who lives separately  
None  
None  
Traveling somewhere far away to walk  
Meeting my partner who lives 2 hours away from myself.  
shop more than once  
Going to Costco to buy items that are not strictly essential  
none  
Meeting up with girlfriend/boyfriend or going to each others house  
Socialising at the park  
Long drives, visit city  
I didn't actually think of HOW I would fail to comply - I am actually happy to fully comply with the government's requirements (I believe it is good to be cooperative with the authorit...  
Shopping for shoes  
Seeing my young children whilst wearing a ffp3 facemask is the only thing I leave home for. Otherwise I do not leave or have contact with anyone.  
I guess just a second inessential trip out (whilst social distancing) as feeling trapped but I am lucky to be in a sunny flat with lots of windows (no garden but am near trees and open...  
Going out for exercise and subsequently going out again for a shop (don't think you're allowed out more than once a day)  
Non essential shopping  
None  
going to the shop over the road, sometimes multiple times a day  
been in car  
Picnic  
working  
Eating out  
Going to supermarkets more often than recommended  
travelling / holidays  
Going to see my partner, who lives 50 mies away and who I haven't seen for 7 weeks  
Neighbours in a group together with their children/local youths present and music up load, good times had buy all!  
Leaving the house for any 'non essential' reason  
going to buy a car  
Generally carrying on with life as normal before coronavirus and leaving home regularly for non essential reasons  
Going to gym  
I would and have fully complied  
shopping  
taking disabled son for a drive  
None  
Driving my daughter (a key worker) to work twice per week to avoid her using public transport. Not very clear whether this is permitted, but I think it is in the spirit of the rules.

# PC of Contracting the Coronavirus, Contingent on Alternative Compliance Conducts: Question Ex [Back](#)

For each action listed below, **what are the chances that you will contract Coronavirus (with or without developing symptoms) over the next 4 weeks**, if you were to take that action?

0 10 20 30 40 50 60 70 80 90 100

Action 1: You never leave home



Action 2: You strictly follow all the rules that apply to you, exactly as described in the government's text



Action 3: You generally follow the rules that apply to you, but with a little discretion (e.g., leaving home once or twice more than allowed for essential shopping)



Action 4: You keep with your regular life and activities, using complete discretion in whether to follow or not the rules



# PC of Contracting the Coronavirus, Unconditionally: Question Ex [Back](#)

Percent chance (PC) of contracting Coronavirus, with or without symptoms, over next 4 weeks.

## ► Elicitation Example:

Between 0 and 100 percent, what are the chances that **you will contract the Coronavirus** (with or without developing symptoms) *over the next 4 weeks?*

0    10    20    30    40    50    60    70    80    90    100

Probability



► **Note:** Initially asked unconditionally. That is, without specifying alternative compliance scenarios.

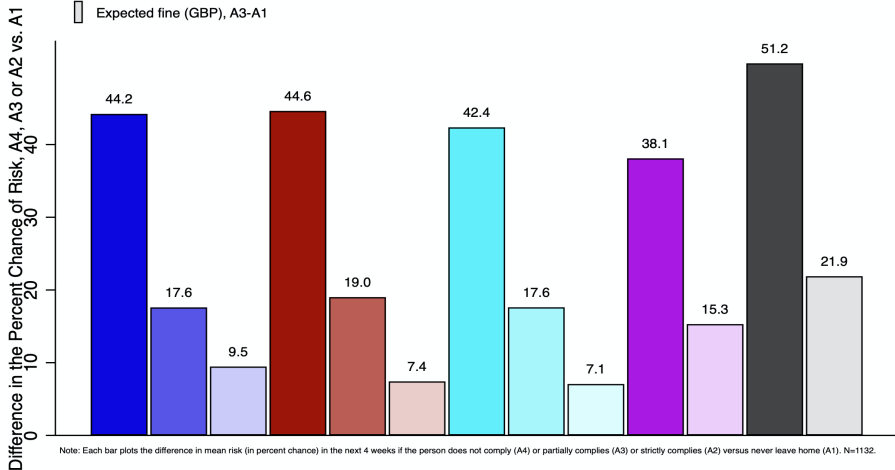
## Perceptions of Corona-Related Risks: List of Risks [Back](#)

- 1 PC of **contracting Coronavirus (w/ or w/o symptoms)** over the next 4 weeks.
- 2 PC of **developing No/ At most mild/ Severe-to-acute COVID-19 symptoms** requiring hospitalisation over the next 4 weeks, if were to contract Coronavirus.
  - ▶ These sum to 100 percent.
- 3 PC of **not finding space in a hospital with ICU** over the next 4 weeks, **if were to develop COVID-19 with severe-to-acute symptoms**.
- 4 PC of **COVID-19 being fatal** over the next 4 weeks, **if were to contract Coronavirus and develop COVID-19**.
- 5 Expected **fine (in GBP), if caught transgressing** over the next 4 weeks.

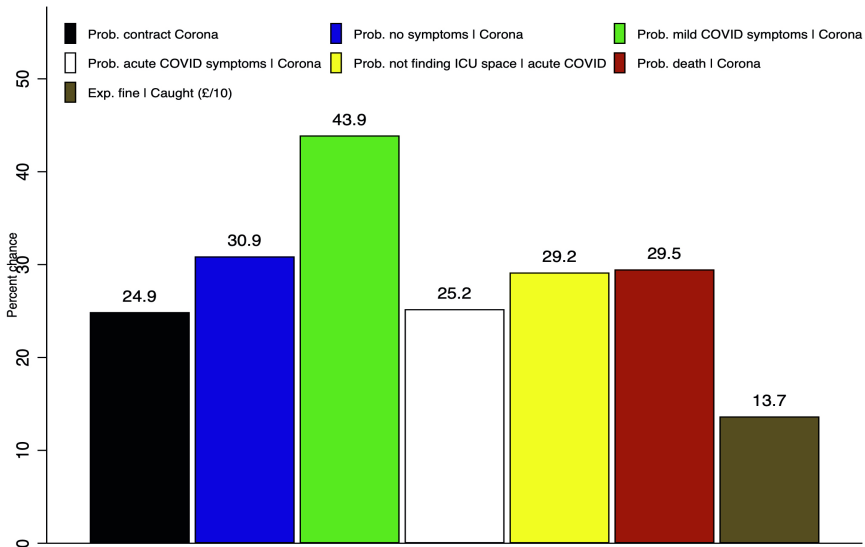


# Perceived Risks of Leaving Home: A4, A3, A2 vs A1 Back

- Contracting Corona, A4-A1
- Contracting Corona, A3-A1
- Contracting Corona, A2-A1
- Infecting ppl living w/ you, A4-A1
- Infecting ppl living w/ you, A3-A1
- Infecting ppl living w/ you, A2-A1
- Infecting ppl not living w/ you, A4-A1
- Infecting ppl not living w/ you, A3-A1
- Infecting ppl not living w/ you, A2-A1
- Being caught transgressing, A4-A1
- Being caught transgressing, A3-A1
- Being caught transgressing, A2-A1
- Expected fine (GBP), A4-A1
- Expected fine (GBP), A3-A1



# Mean Perceptions of Corona-Related Risks: Graph [Back](#)



Note: N=1132. Bars display means. Data collected 3-10 May 2020 on Prolific.

## Mean Perceptions of Corona-Related Risks: Table [Back](#)

	min	p10	p25	p50	p75	p90	max	mean	sd	N
PC that will contract Coronavirus	0	3	9	20	40	51	100	24.89	21.07	1,132
PC of developing no symptoms, if contract Coronavirus	0	5	11	25	47.5	64	100	30.88	22.76	1,132
PC of developing mild symptoms, if contract Coronavirus	0	18	30	42	60	73	100	43.91	20.69	1,132
PC of developing severe symptoms, if contract Coronavirus	0	3	9	18	35.5	60	100	25.21	23.08	1,132
PC of not finding space in ICU, if contract Coronavirus and severe symptoms	0	0	7	20	49	71	100	29.15	27.16	1,132
PC of dying, if contract Coronavirus	0	3	8	20	50	70	100	29.48	25.76	1,132
Expected fine (GBP)	0	44	60	61	123.5	301	1,000	136.5	178.1	1,132

PC = Percent Chance.

# Heterogeneity in Perceptions of Corona-Rel Risks: Table

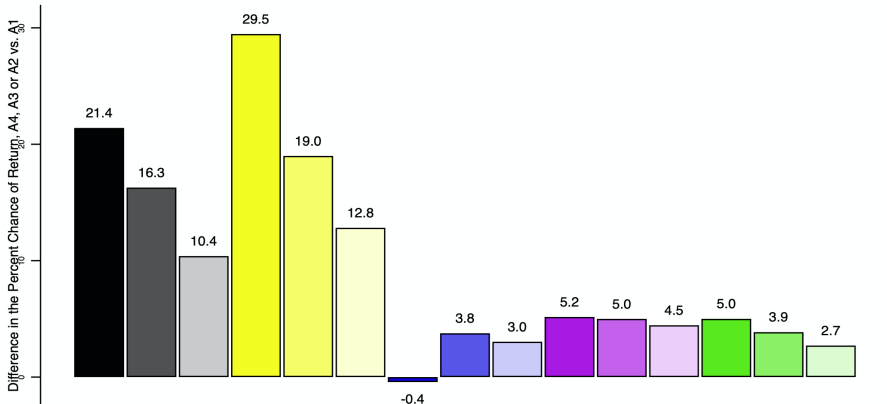
Back

	min	p10	p25	p50	p75	p90	max	mean	sd	N
PC that will contract Coronavirus	0	3	9	20	40	51	100	24.89	21.07	1,132
PC of developing no symptoms, if contract Coronavirus	0	5	11	25	47.5	64	100	30.88	22.76	1,132
PC of developing mild symptoms, if contract Coronavirus	0	18	30	42	60	73	100	43.91	20.69	1,132
PC of developing severe symptoms, if contract Coronavirus	0	3	9	18	35.5	60	100	25.21	23.08	1,132
PC of not finding space in ICU, if contract Coronavirus and severe symptoms	0	0	7	20	49	71	100	29.15	27.16	1,132
PC of dying, if contract Coronavirus	0	3	8	20	50	70	100	29.48	25.76	1,132
Expected fine (GBP)	0	44	60	61	123.5	301	1,000	136.5	178.1	1,132

PC = Percent Chance.

# Perceived Returns of Leaving Home: A4, A3, A2 vs A1 Back

- |   |  |   |
|---|--|---|
| <span style="display: inline-block; width: 10px; height: 10px; background-color: black; border: 1px solid black;"></span> Not becoming unhappy/depressed, A4-A1     | <span style="display: inline-block; width: 10px; height: 10px; background-color: gray; border: 1px solid black;"></span> Not becoming unhappy/depressed, A3-A1           | <span style="display: inline-block; width: 10px; height: 10px; background-color: lightgray; border: 1px solid black;"></span> Not becoming unhappy/depressed, A2-A1     |
| <span style="display: inline-block; width: 10px; height: 10px; background-color: yellow; border: 1px solid black;"></span> Not gaining weight/becoming unfit, A4-A1 | <span style="display: inline-block; width: 10px; height: 10px; background-color: lightyellow; border: 1px solid black;"></span> Not gaining weight/becoming unfit, A3-A1 | <span style="display: inline-block; width: 10px; height: 10px; background-color: paleyellow; border: 1px solid black;"></span> Not gaining weight/becoming unfit, A2-A1 |
| <span style="display: inline-block; width: 10px; height: 10px; background-color: blue; border: 1px solid black;"></span> Not worsening relationships, A4-A1         | <span style="display: inline-block; width: 10px; height: 10px; background-color: lightblue; border: 1px solid black;"></span> Not worsening relationships, A3-A1         | <span style="display: inline-block; width: 10px; height: 10px; background-color: verylightblue; border: 1px solid black;"></span> Not worsening relationships, A2-A1    |
| <span style="display: inline-block; width: 10px; height: 10px; background-color: purple; border: 1px solid black;"></span> Not losing job/failing exams, A4-A1      | <span style="display: inline-block; width: 10px; height: 10px; background-color: lightpurple; border: 1px solid black;"></span> Not losing job/failing exams, A3-A1      | <span style="display: inline-block; width: 10px; height: 10px; background-color: verylightpurple; border: 1px solid black;"></span> Not losing job/failing exams, A2-A1 |
| <span style="display: inline-block; width: 10px; height: 10px; background-color: green; border: 1px solid black;"></span> Not running out of money, A4-A1           | <span style="display: inline-block; width: 10px; height: 10px; background-color: lightgreen; border: 1px solid black;"></span> Not running out of money, A3-A1           | <span style="display: inline-block; width: 10px; height: 10px; background-color: verylightgreen; border: 1px solid black;"></span> Not running out of money, A2-A1      |



Note: Each bar plots the difference in mean return (in percent chance) in the next 4 weeks if the person does not comply (A4) or partially complies (A3) or strictly complies (A2) versus never leave home (A1). N=1132.

# LS Estimates: Heterogeneous Preferences Back

$\beta_k$	Ref Group	Male	Vulnerable	COVID-19 Exp > 0
<b>Risks</b>				
$\beta_1$ (contract the Coronavirus)	-1.112 (1.086)	1.374 (0.952)	-4.033* (2.126)	1.309 (1.040)
$\beta_2$ (no ICU with acute COVID)	-4.097 (3.958)	-0.206 (4.359)	3.404 (4.649)	4.368 (4.219)
$\beta_3$ (passing away of COVID)	1.735 (2.057)	-1.657 (1.826)	4.513 (2.769)	-3.431* (1.982)
$\beta_4$ (infecting people living with)	-0.388 (0.981)	-0.045 (0.852)	-3.655** (1.613)	-0.338 (0.965)
$\beta_5$ (infecting people not living with)	-2.264 (1.534)	0.059 (1.093)	3.608* (1.848)	0.339 (1.414)
$\beta_6$ (being caught transgressing)	-3.638*** (0.784)	-0.398 (0.792)	-1.291 (1.429)	0.753 (0.821)
$\beta_7$ (expected fine)	0.0008 (0.002)	-0.0006 (0.002)	-0.0020 (0.005)	-0.0030 (0.002)
<b>Benefits</b>				
$\beta_8$ (not unhappy/depressed)	1.346** (0.639)	0.259 (0.647)	-1.497 (1.299)	0.396 (0.672)
$\beta_9$ (not unfit/gain weight)	-0.080 (0.853)	0.807 (0.723)	0.947 (1.203)	-0.193 (0.835)
$\beta_{10}$ (no worse relationship)	0.587 (0.821)	-0.114 (0.659)	2.477** (1.161)	-0.683 (0.794)
$\beta_{11}$ (not losing job)	4.289*** (1.193)	-1.757** (0.882)	-2.903 (3.009)	-2.701** (1.133)
$\beta_{12}$ (not running behind with exams)	-3.369** (1.442)	4.393* (2.554)	-1.505 (5.300)	1.913 (2.365)
$\beta_{13}$ (not running out of money)	-2.743** (1.189)	0.387 (1.049)	0.222 (2.599)	2.175* (1.161)
<b>Constant</b>	0.883*** (0.123)			

# Heterogeneity in Expectations: *Risks* [Back](#)

	Expectation of outcome (k) if Action $j(\neq 1)$ vs. Action 1					
	(1) Contract Coronavirus	(2) No ICU with acute COVID	(3) Passing away of COVID	(4) Infesting People Living With	(5) Infesting People Not Living With	(6) Being Caught Transgressing
Male	-0.040*** (0.011)	-0.004 (0.002)	-0.018** (0.005)	-0.029*** (0.011)	-0.044*** (0.010)	-0.015 (0.009)
Vulnerable	-0.026 (0.017)	0.015*** (0.003)	0.061*** (0.008)	0.023 (0.018)	-0.024 (0.017)	-0.026* (0.015)
COVID-19 Exp > 0	0.032** (0.011)	-0.0009 (0.002)	0.005 (0.005)	0.078*** (0.011)	0.047*** (0.011)	0.032*** (0.009)
N	1,127	1,127	1,127	1,127	1,127	1,127

# Heterogeneity in Expectations: *Returns* [Back](#)

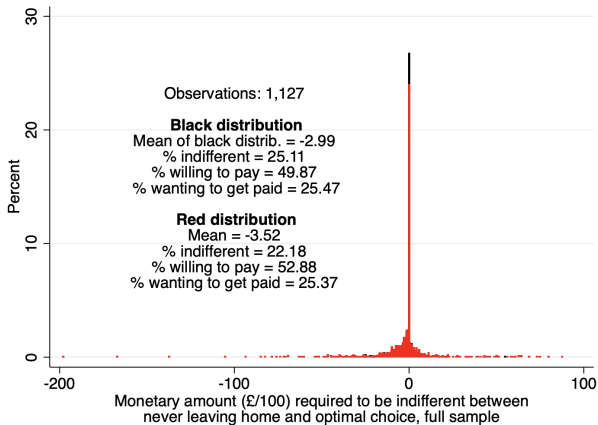
Expectation of outcome (k) if Action  $j(\neq 1)$  vs. Action 1

	(8) Not Unhappy Or Depressed	(9) Not Unfit or Gain Weight	(10) No Worse Relationship	(11) Not Losing Job	(12) Not Behind with Exams	(13) Not Running Out of Money
Male	0.014 (0.009)	-0.005 (0.009)	0.032*** (0.009)	0.011 (0.009)	-0.002 (0.023)	-0.001 (0.007)
Vulnerable	-0.104*** (0.016)	-1.119*** (0.016)	-0.093*** (0.015)	-0.058** (0.023)	0.017 (0.071)	-0.041*** (0.012)
COVID-19 Exp > 0	0.015 (0.011)	0.039*** (0.016)	-0.025** (0.009)	0.067*** (0.009)	-0.009 (0.019)	0.003 (0.012)
N	1,127	1,127	1,127	1,127	1,127	1,127



# Compensation Needed to “Stay Home” Back

Using an indifference condition from the model, we compute the amount of money that makes each individual indifferent between their optimal choice and the recommended “stay home”:



**Note:** the black distribution breaks ties by selecting the lowest action (toward compliance), the red distribution the highest (toward noncompliance).