

MISPERCEPTIONS AND INFORMATION

Michal Bauer



Motivation

- In economics, choices are thought to be determined by: preferences, beliefs and constraints
 - **Beliefs** play a central role in decision-making
- But:
 - How people form their beliefs? Do they have accurate beliefs about important facts?
 - Do inaccurate beliefs shape important life decisions?
 - Can inaccurate beliefs be corrected by providing facts?
- An active branch of field experiments during the last 10 years

Applications

- (Misperceived) returns to education and schooling decisions (Jensen 2010)
- (Misperceived) views of doctors and vaccination decisions (Bartos, Bauer, Cahlíková, Chytilová 2022)
- (Misperceived) social norms and female labor market participation (Bursztyn et al 2020)
 - For those of you who are interested...

SCHOOLING DECISIONS

Perceived returns to education

Jensen 2010

- Questions
 - Do students have accurate information about the returns when they choose whether to continue schooling?
 - How important are the (perceived) returns to education in determining schooling decisions?
- Settings and Sample
 - a field experiment in the Dominican Republic
 - 2,250 boys in the eighth grade of primary schools randomly assigned to two groups
- Outcomes of interest
 - posterior beliefs about returns to schooling (collected 4-6 months later)
 - amount of schooling completed over the next four years (nice feature)

Elicitation of prior beliefs

Jensen 2010

Own expected returns

Suppose, hypothetically, you were to complete [this school year/secondary school/university], and then stop attending school. Think about the kinds of jobs you might be offered and that you might accept. How much do you think you will earn in a typical week, month or year when you are about 30 to 40 years old?

Estimated (current) returns of male workers

Now, we would like you to think about adult men who are about 30 to 40 years old and who have completed only [primary school/secondary school/university]. Think not just about the ones you know personally, but all men like this throughout the country. How much do you think they earn in a typical week, month or year?

Information treatment

Jensen 2010

Before we end, I would like to provide you with some information from our study. In January, we interviewed adults living in this community and all over the country. We asked them about many things, including their earnings and education.

We found that the average earnings of a man 30 to 40 years old with only a primary school education was about 3,200 pesos per month. And the average income of a man the same age who completed secondary school, but did not attend university, was about 4,500 pesos per month... And people who go to university earn about 5,900 pesos per month... (p. 522-523)

Students vastly underestimate returns to secondary schooling.

Jensen 2010

TABLE III
MEASURED AND PERCEIVED MONTHLY EARNINGS, MALES AGED 30–40

	(1) Measured mean	(2) Perceived (self)	(3) Perceived (others)
Primary	3,180 [1,400]	3,516 [884]	3,478 [863]
Secondary	4,479 [1,432]	3,845 [1,044]	3,765 [997]
Tertiary	9,681 [3,107]	5,127 [1,629]	5,099 [1,588]
Secondary – primary	1,299	329 [403]	287 [373]
Tertiary – secondary	5,202	1,282 [1,341]	1,334 [1,272]

Notes. All figures in 2001 Dominican pesos (RD\$). Standard deviations in brackets. Column (1) provides the mean earnings among men aged 30–40 from a household survey conducted by the author in January 2001. The number of observations is 1,278 primary, 339 secondary, and 83 tertiary. Columns (2) and (3) provide data from the Round 1 survey of eighth-grade male students, conducted by the author in April/May 2001. Column (2) refers to what current students expect to earn themselves under different education scenarios when they are 30–40. Column (3) refers to what current students believe current workers 30–40 years old with different education levels earn. For both columns, there are 2,025 observations with responses for primary and secondary, and 1,847 responses for tertiary.

Students adjust their beliefs in response to information about the returns to secondary schooling..

Jensen 2010

TABLE IV
EFFECT OF THE INTERVENTION ON EXPECTED RETURNS AND SCHOOLING: NO COVARIATES

	Panel A. Perceived returns to school				Difference-in-difference
	Round 1		Round 2		
	Control	Treatment	Control	Treatment	
Expected earnings (self):					
Primary (only)	3,548 (116)	3,484 (124)	3,583 (118)	3,230 (92)	-284*** (43)
Secondary (only)	3,884 (132)	3,806 (145)	4,001 (132)	3,995 (114)	82* (44)
Implied perceived returns	336 (25)	322 (27)	418 (24)	765 (34)	366*** (29)
Expected earnings (others):					
Primary (only)	3,509 (112)	3,447 (120)	3,546 (113)	3,204 (92)	-274*** (41)
Secondary (only)	3,802 (126)	3,728 (143)	3,892 (120)	3,916 (111)	102** (45)
Implied perceived returns	293 (23)	281 (29)	346 (22)	712 (31)	377*** (26)
Number of observations	1,003	1,022	922	977	1,859

Treated students on avg completed 0.2 more years of schooling over the next 4 years compared to the control group.

Jensen 2010

TABLE IV
(CONTINUED)

	Panel B. Schooling					
	Round 2			Round 3		
	Control	Treatment	Difference	Control	Treatment	Difference
Returned to school?	0.55 (0.02)	0.59 (0.02)	0.042* (0.025)			
Completed secondary school?				0.30 (0.02)	0.32 (0.02)	0.020 (0.024)
Years of schooling completed				9.75 (0.070)	9.93 (0.073)	0.18* (0.098)
Number of observations	1,118	1,123	2,241	1,033	1,041	2,074

Notes. Standard errors, corrected for clustering at the school level, in parentheses. All measures of expected earnings are for earnings at 30–40, measured in nominal (2001) Dominican pesos (RD\$). Data are from a survey of eighth-grade male students, conducted by the author. Round 1 was conducted in April and May of 2001; Round 2 was conducted in October of 2001; Round 3 was conducted in May and June of 2005.

* Significant at 10%.

** Significant at 5%.

*** Significant at 1%.

Perceived returns to education

Jensen 2010

- Summary
 - Inaccurate beliefs as a barrier to human capital accumulation
 - Very cost-efficient way of increasing schooling, as compared to other policies aimed to increase schooling (CCT, hiring teachers, buying various types of inputs, etc.)

HEALTH BEHAVIOR

Misperceptions about views of doctors

Bartoš, Bauer, Cahlíková & Chytilová 2022

Understanding sources of Covid-19 vaccine hesitancy was one of the major public policy issues of recent years

Idea

- People report high levels of trust towards doctors' views (Blendon et al. 2014)
- **But:** Media coverage can create uncertainty and polarization in how people perceive expert views, despite broad consensus.
 - Media giving roughly equal share time to both sides of an argument may create impression of controversy

Hypothesis: Misperceptions about the views of doctors about Covid-19 vaccination can reduce people's willingness to get vaccinated.

Views of doctors and vaccination decisions

Bartoš, Bauer, Cahlíková & Chytilová 2022

Questions

1. What are the views of the medical community as a whole about the vaccine?
2. Do people systematically misperceive views of doctors?
3. Does provision of information about true views of doctors **increase vaccine take up**? Are the effects on vaccination demand **lasting**?

Key features

Step 1: Large-scale survey among Czech doctors

- Partnership with Czech Medical Chamber, 10k Czech doctors
- Trust in the vaccine, vaccination intentions, recommendation to patients

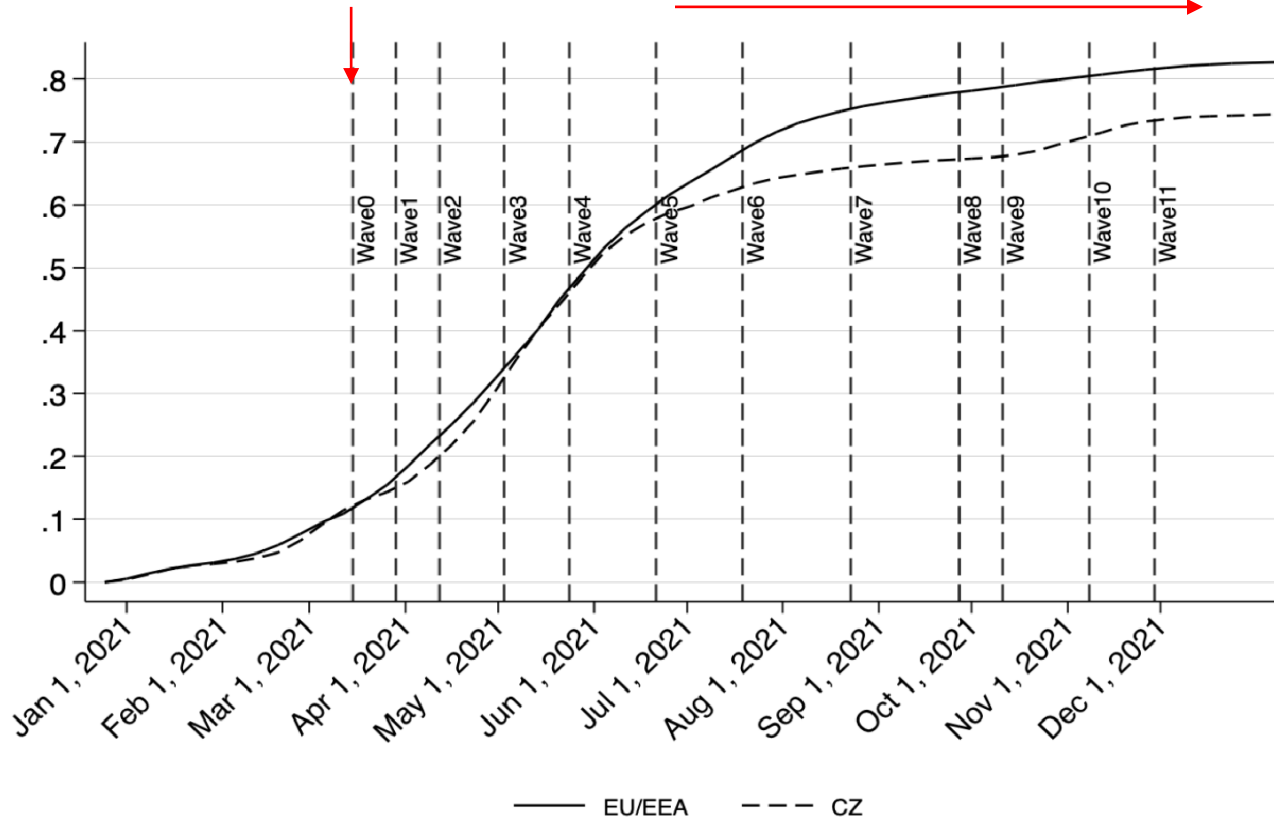
Step 2: Information intervention in a longitudinal study with a national representative sample of Czech population (n=2,101; 12 waves over 9 months),

- Providing facts about widely-shared consensus of trustworthy experts

Background: Vaccination rate dynamics

Information
intervention

All adults eligible for vaccination



Dev't of eligibility criteria

- Jan: 80+, healthcare professionals
- Feb: school staff
- Mar: 70+, severe chronic diseases, critical infrastructure staff
- Apr: social services staff, less severe chronic diseases, 65+, 60+, 55+
- May: academic staff; caring for dependents, 50+, 45+, 40+, 35+, 30+
- Jun: 16+

Supplementary Figure 6. Cumulative fraction of adult (18+) EU/EEA and Czech population receiving at least one dose of Covid-19 vaccines by reporting week. Data source: European Centre for Disease Prevention and Control

(<https://www.ecdc.europa.eu/en/publications-data/data-covid-19-vaccination-eu-eea>, Accessed on January 12, 2022).

Eliciting views about Covid-19 views among Czech medical doctors

1. Will you personally be interested in getting vaccinated, voluntarily, and free of charge, with an approved vaccine against Covid-19?

[Yes / No / I'm not sure / I have already been vaccinated]

2. Do you trust Covid-19 vaccines that have been approved by the European Medicines Agency (EMA) approval process?

[Yes, at least one of the vaccines / No / I'm not sure.]

3. Will you recommend Covid-19 vaccination to your healthy patients to whom you would recommend other commonly used vaccines?

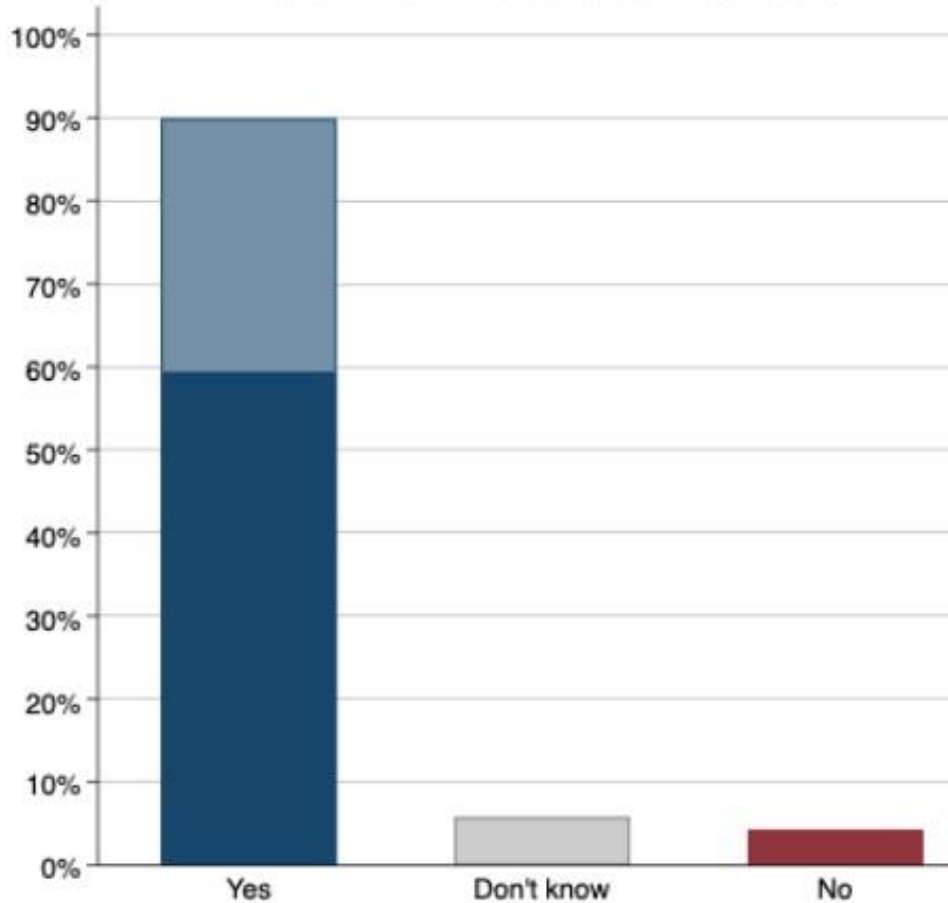
[I will actively recommend it even without being asked / I will recommend it when asked / I will not recommend it when asked / I will actively not recommend it even without being asked]



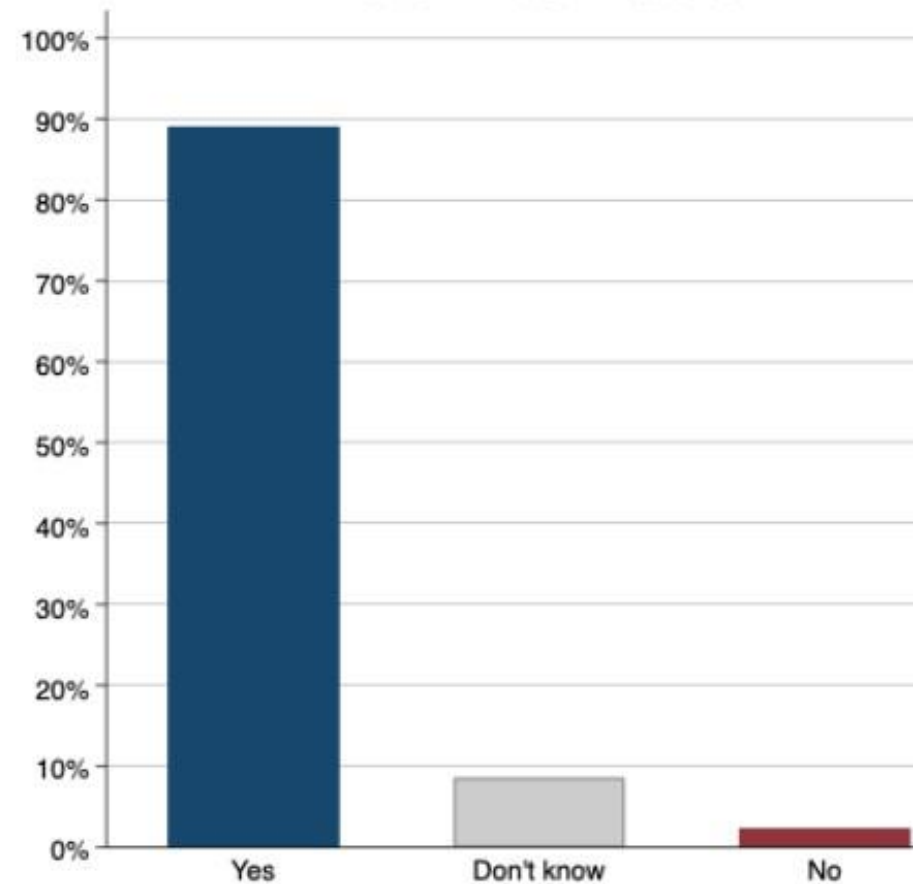
Please try to guess what fraction of medical doctors trusted the approved vaccines against Covid-19 in January 2021 (ie., just at the outset of the vaccine role-out)? Pick the closest number.

Consensus: doctors trust the vaccines

Panel A: Own vaccination intentions



Panel B: Trust in vaccine



Longitudinal data collection

- Longitudinal online data collection
 - www.zivotbehempandemie.cz (NMS, PAQ research and authors), started in March 2020
- Representative of the adult Czech population
 - Sex, age, education, region, municipality size, employment pre-Covid-19 status, age x sex, and age x education
- This paper:
 - 12 waves (March to November 2021)
 - Base sample: Wave0 (n = 2,101, 1,052 females / 1,049 males, mean age 52.9 (s.d. = 15.98), youngest 18, oldest 92) - [Summary statistics](#)
 - Close to representative of actual vaccination rate development - [Vaccinations](#)

Measuring beliefs about doctors' views

Respondents asked to estimate:

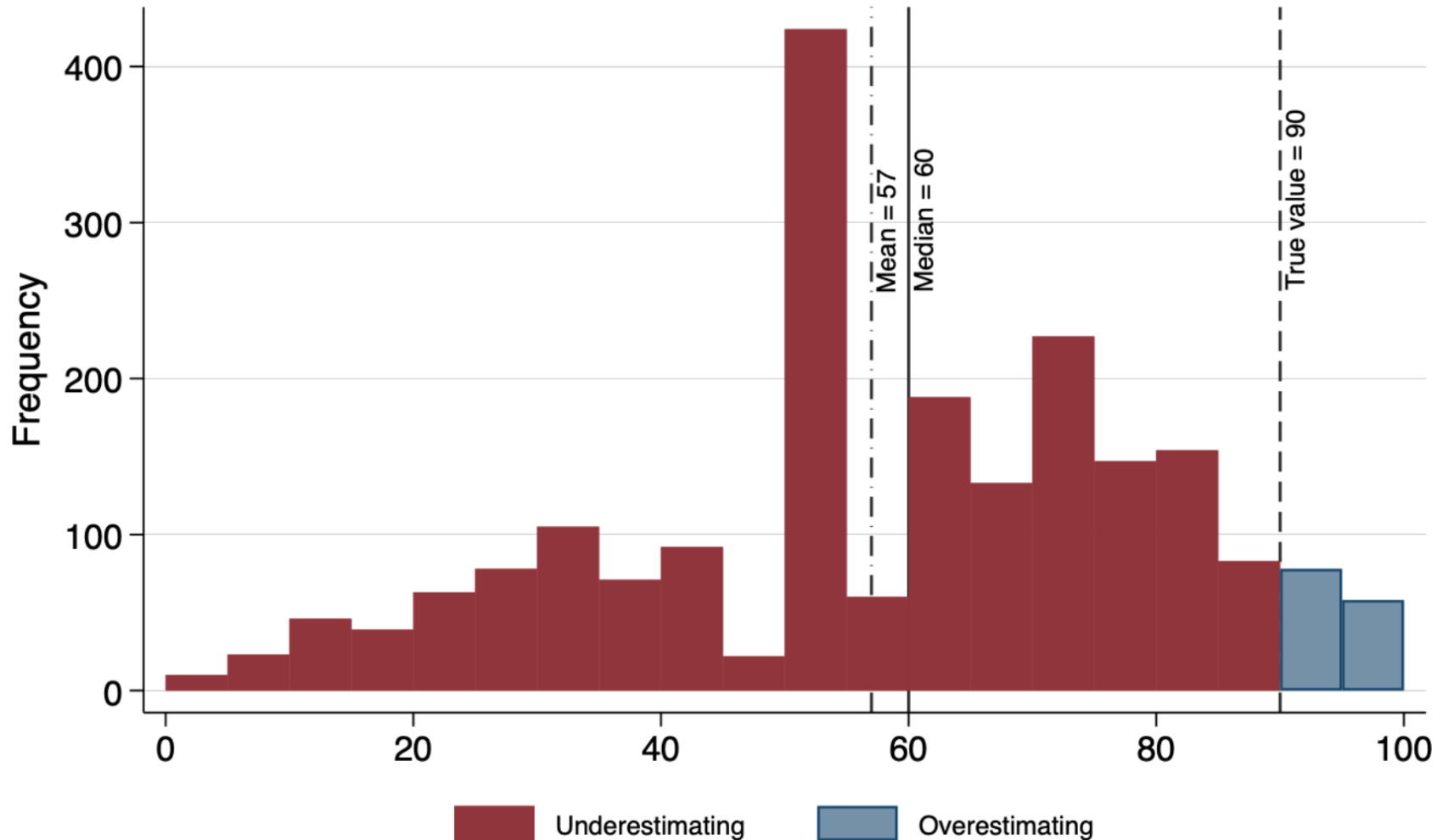
1. The percentage of doctors who are either vaccinated or intend to get vaccinated themselves
2. The percentage of doctors in the Czech Republic who trust the approved vaccines, and

Question: What do you think was the mean estimate in our sample?

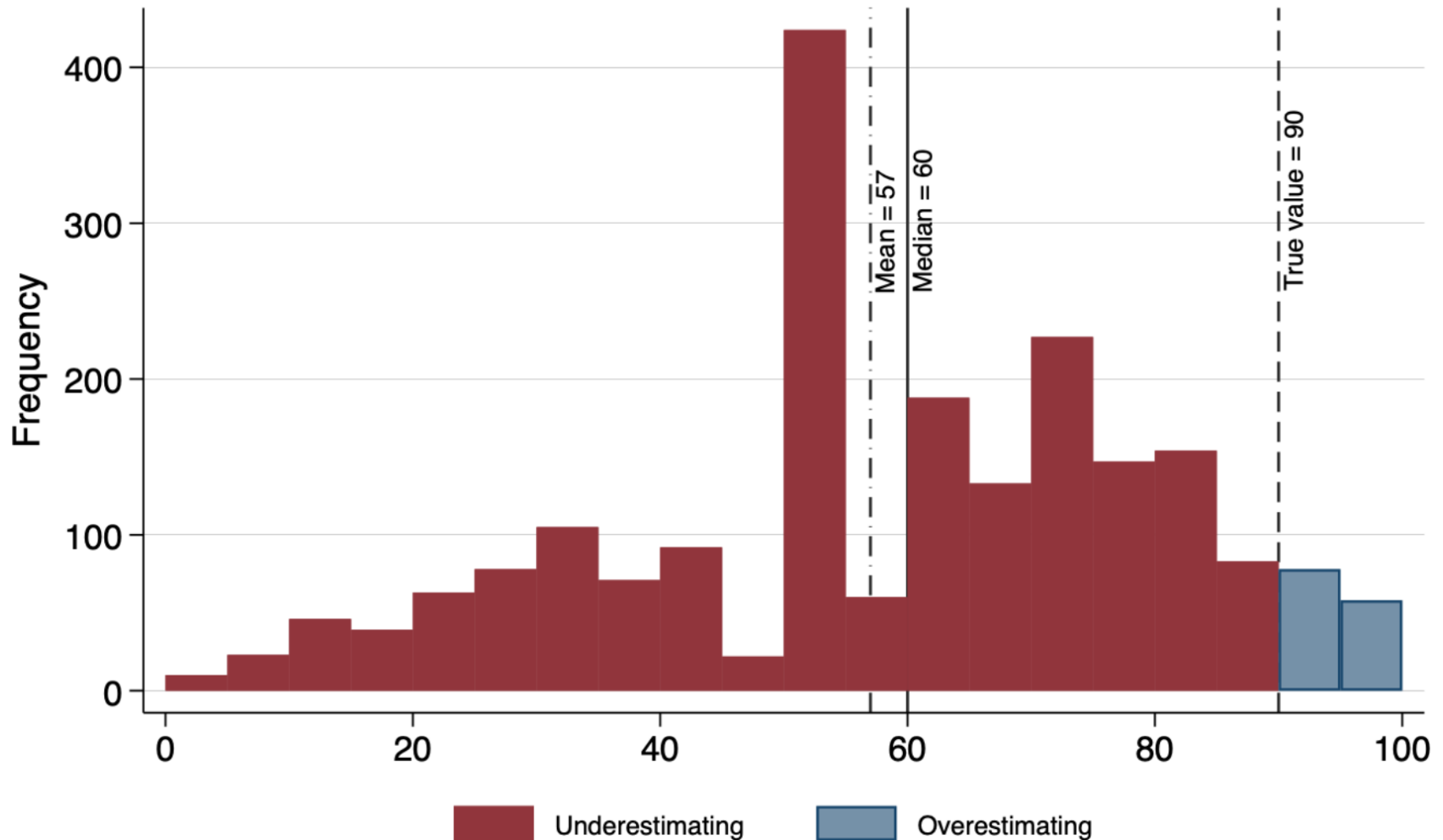


What do you think was the mean estimate in our sample of the fraction of doctors trusting the vaccine? Please pick the closest number

People widely underestimated doctors' vaccination intentions



People underestimated doctors' trust in the vaccines



Experimental conditions

Treatment

- CONTROL condition (n=1,051)
 - regular survey
- CONSENSUS condition (n=1,050)
 - Basic summary: almost 10,000 doctors; results similar across categories
 - Graphs with a short description
 - Average response time: about 1 minute

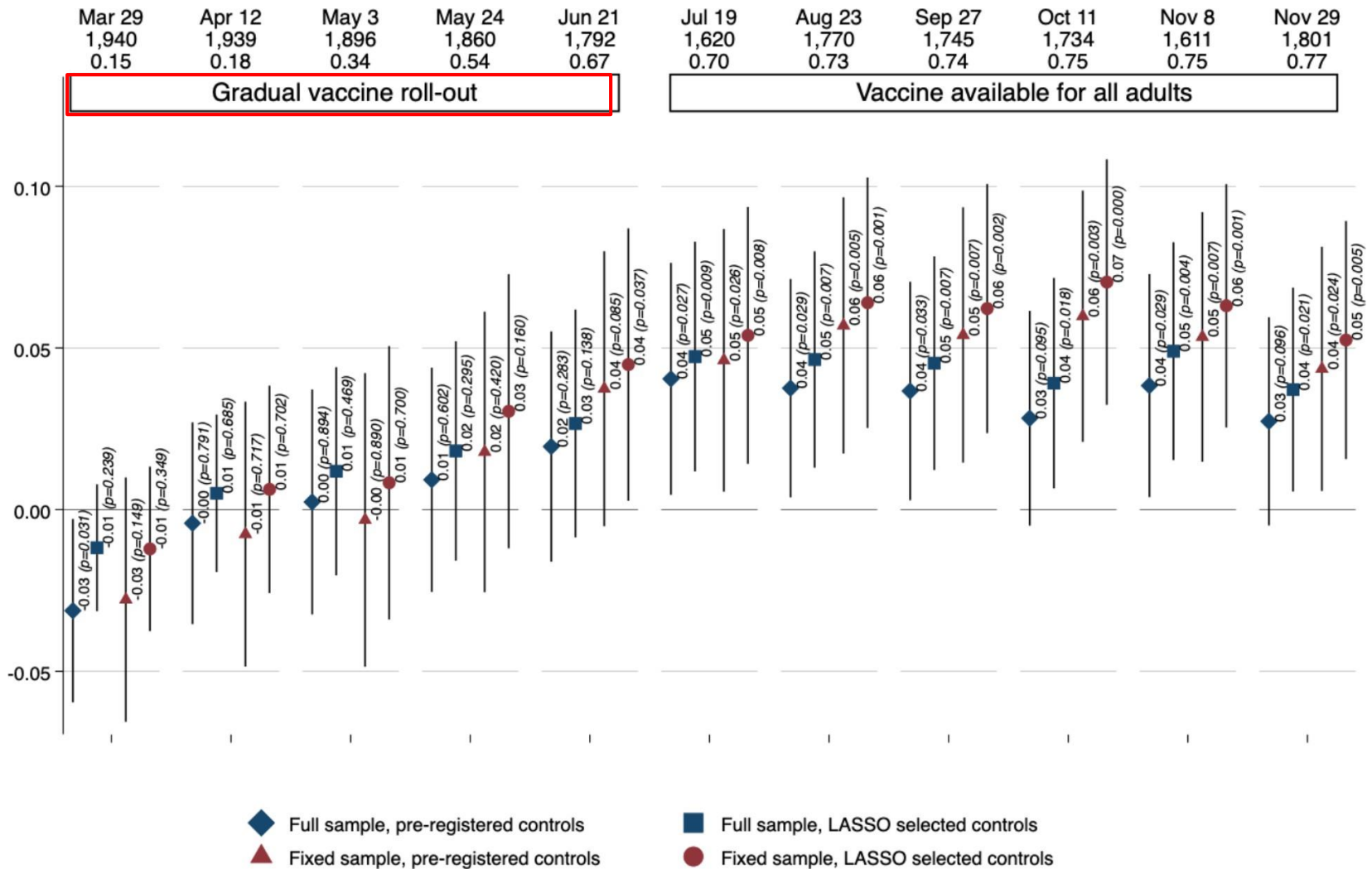
Main outcome

- Vaccine take-up (long-term dynamics); at least one dose

Question:

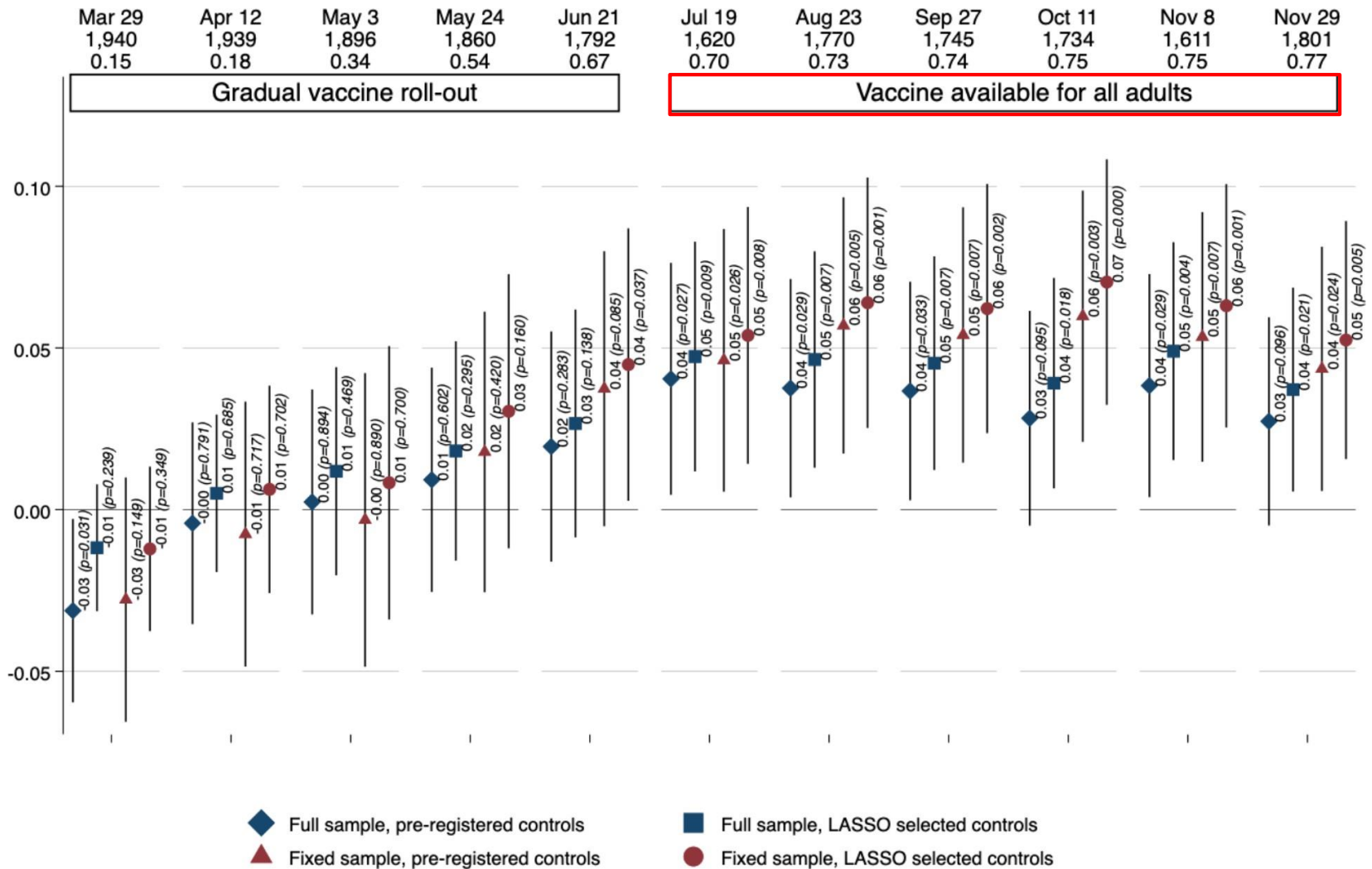
- Try to guess whether this information affected the likelihood of people being vaccinated and if yes, by how many percentage point. In the Control, the vaccination rate was roughly 75%.

Vaccination take up, by wave



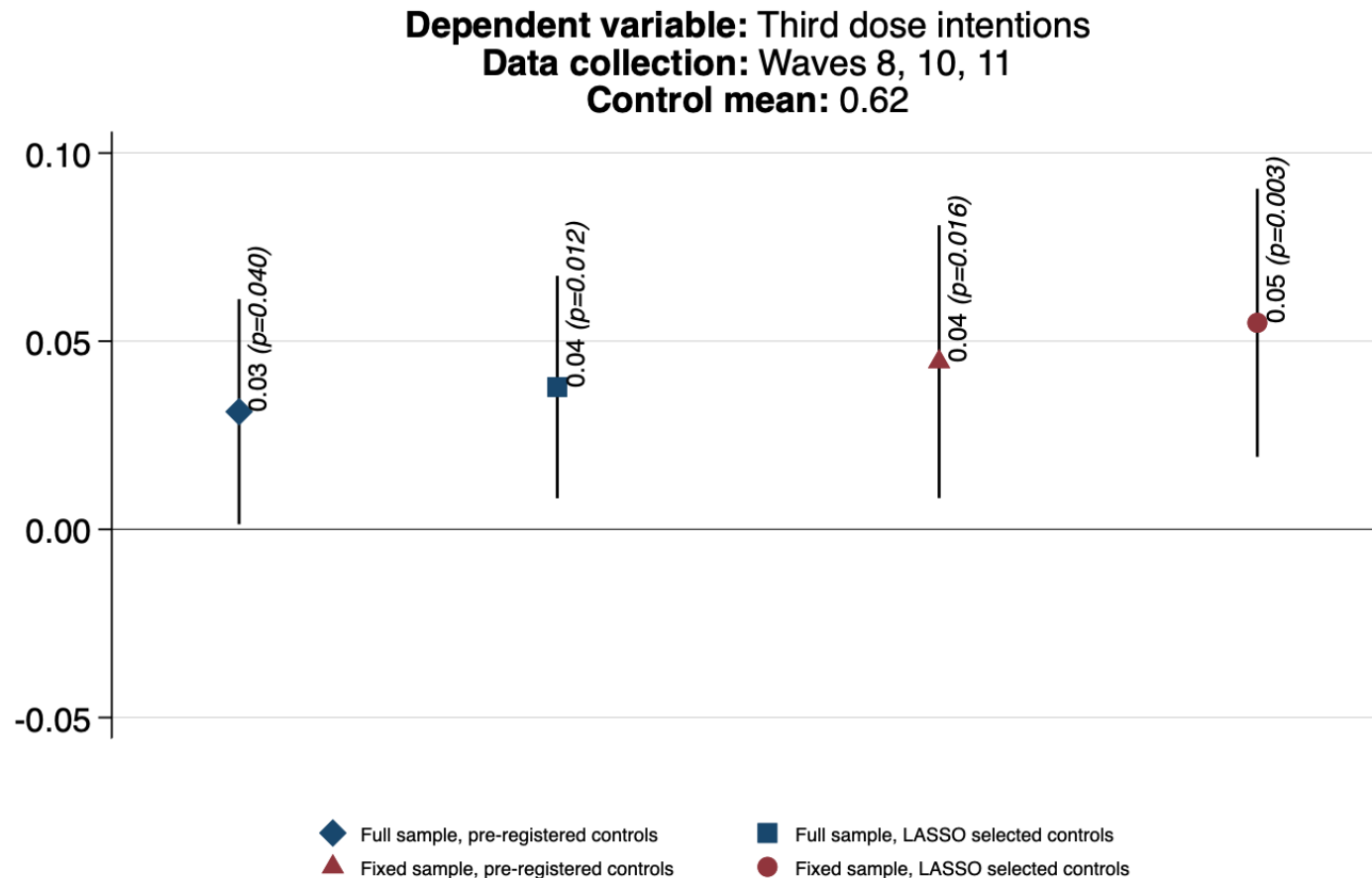
CONSENSUS effects on take up emerge during the vaccine roll-out ([regression](#))

Vaccination take up, by wave



CONSENSUS effects on take up are lasting ([regression](#))

Intention to take up a booster shot (3rd dose)



CONSENSUS condition increases intentions to take up a booster shot.

Concluding remarks

Results summary

- The vast majority of Czech medical doctors trust the approved Covid-19 vaccines
- The vast majority of Czechs substantially underestimate the percentage of doctors with positive views of the vaccine
- Correcting misperceptions has lasting positive impacts on vaccine take-up

Similar issue with misperceptions was documented in research on support for policies tackling climate change

Take-aways

- Simple, informative facts can have lasting impact on behavior
- **Policy:** Low-cost, scalable treatment with lasting effects on behavior; one-off campaign
- **Media:** should supplement contrasting views on controversial issues with information about how prevalent such views are

Some impact

Video and teaching materials for high schools about misperceived conflicts

Co si myslíme, že si myslí odborníci (a jak se pleteme)

Nature / IDEA při CERGE-EI a Maur Film / Česká republika / 2022 / 8 min. / 15—21 let

Audiovizuální lekce

[O lekci](#)

[Film](#)

[Výukové
materiály](#)

[Doprovodné a
doporučené
materiály](#)

[Partneři lekce](#)

[Další
doporučené
lekce](#)

Cíle lekce

1. blíže se seznámit s rolí odborníků v médiích
2. získat povědomí o vyváženosti debaty a mediální objektivitě
3. kriticky přistupovat k mediálnímu obsahu a znát hlavní zpravodajské hodnoty

Dělat informovaná rozhodnutí je v současné době, přeplněné údajně podloženými fakty a informačními zdroji, stále obtížnější. Spíš než média, která v rámci vyváženosti a dojmu objektivity, poskytují obdobný prostor protichůdným názorovým stranám a často tak vytvářejí dojem kontroverze, jsou důvěryhodnějším zdrojem odborníci. Spot popisuje unikátní odbornou studii, v níž 95 % českých lékařů doporučilo během pandemie očkování proti onemocnění Covid-19. Veřejnost však v téměř výzkumu odhadovala, že pouze 60 % lékařů vakcínu považuje za bezpečnou a doporučeněhodnou. Kdyby veřejnost znala skutečný názor odborníků, zájem o očkování by se reálně zvýšil. Spot ukazuje, že univerzálním lékem na chaos, který vytváří záplava neověřených informací z internetu, jsou jasně formulovaná fakta v informačních kampaních a adekvátně zastoupený hlas odborníků v mediálních výstupech.



DOPORUČENÝ VĚK
15—21 let

► Přehrát film

TEMATICKÝ OKRUH
Mediální vzdělávání, Filmy pro veřejnost

► Přehrát ukázkou

Campaign of an insurance company (VZP)

PRŮZKUM MEZI LÉKAŘI UKAZUJE SILNOU PODPORU OČKOVÁNÍ PROTI COVID-19



96 %

LÉKAŘŮ BY OČKOVÁNÍ PROTI
NEMOCI COVID-19 DOPORUČILO
SVÝM ZDRAVÝM PACIENTŮM.

90 %

LÉKAŘŮ BYLO V LEDNU
OČKOVANÝCH NEBO SE CHTĚLO
NECHAT OČKOVAT.

Průzkumu se zúčastnilo 9 650 lékařů a lékařů všech věkových kategorií, ze všech částí České republiky, z malých i velkých měst. Ukázalo se, že jejich názory jsou velmi podobné napříč různými skupinami. Průzkum proběhl v lednu 2021. Více informací o průzkumu najdete na stránkách ČLK a ve výzkumné studii autorů z CERGE-EI, FSV UK, Univerzity v Mnichově a Institutu Maxe Plancka (<https://doi.org/10.7910/DVN/RHOT6R>).

Question

Imagine you are a researcher or policy-maker who wants to design efficient intervention to increase vaccination rate.

1. What would be the type of intervention motivated by **standard economics**?
2. Would you have any ideas for an intervention that would be motivated by a concept from **behavioral econ** (other than misperceptions)?



What would be the type of intervention to increase vaccine take up guided by concepts from standard economics?

① Start presenting to display the poll results on this slide.



What would be an intervention guided by concepts from behavioral economics?

① Start presenting to display the poll results on this slide.

Question

Imagine you are a researcher or policy-maker who wants to design **efficient intervention to increase vaccination rate**

1. What would be the type of intervention motivated by **standard economics**?

- Financial incentives vaccine increased take up in Sweden (Campos-Mercade, P. et al. Monetary incentives increase COVID-19 vaccinations. *Science* **374**, 879–882 (2021)).
 - Authors provided to randomly selected people financial incentives to take up the vaccine
- But using financial incentives to affect health behavior is often controversial (sometimes prohibited).
 - Concern that financial incentives may crowd-out pro-social motivations and create mistrust – relevant when there are positive externalities associated with take up + new products
 - Good news: Schneider, et al. Financial incentives for vaccination do not have negative unintended consequences. *Nature* **613**, 526–533 (2023).

2. Would you have any ideas for an intervention that would be motivated by a concept from **behavioral econ** (other than misperceptions)?

- Reminders and simplicity: Sending text messages with direct links where to register
- Framing of message: Create a sense of ownership (text message: “Vaccine has been just available for you...”)
 - Dai, et al. 2021. “Behavioral Nudges Increase COVID-19 Vaccinations.” *Nature* 597 (September): 404–9.

Readings

Misperceptions

Bartoš, V., Bauer, M., Cahliková, J. and Chytilová, J. (2022) '[Communicating Doctors' Consensus Persistently Increases COVID-19 Vaccinations](#)', *Nature*, **606**, 542–549.

Bursztyn, Leonardo, Alessandra Gonzzlez, and David Yanagizawa-Drott. 2020. "[Misperceived Social Norms: Female Labor Force Participation in Saudi Arabia.](#)" *American Economic Review*.

Bursztyn, L., & Yang, D. Y. (2021). [Misperceptions about others](#). *Annual Reviews in Economics*.

Jensen, R. (2010). [The \(perceived\) returns to education and the demand for schooling](#). *The Quarterly Journal of Economics*, 125(2), 515-548.

Vaccines

Campos-Mercade, P. et al. Monetary incentives increase COVID-19 vaccinations. *Science* **374**, 879–882 (2021)).

Schneider, F.H., Campos-Mercade, P., Meier, S. et al. [Financial incentives for vaccination do not have negative unintended consequences](#). *Nature* **613**, 526–533 (2023).

Dai, et al. 2021. "Behavioral Nudges Increase COVID-19 Vaccinations." *Nature* 597 (September): 404–9.