Introduction



You are invited to participate in a research study focused on exploring users' experiences and perceptions of *Password Strength Meters (PSMs)* on websites.

A PSM is a tool that evaluates a password's strength by assessing factors such as length, complexity, and character variety (uppercase and lowercase letters, numbers, and symbols). It indicates whether a password is weak, medium, or strong, helping users create more secure passwords for their online accounts. PSMs can provide feedback in various forms, including text, progress bars, percentage scores, or color indicators.

Participation in this research is voluntary, and you may withdraw at any time. If you choose to participate, you will complete a short survey about your views on PSMs. The survey will take approximately 15 minutes, and you will receive \$2 for your participation.

To qualify for this study, you must:

- 1. Be currently located in North America.
- 2. Be 18 years of age or older.
- 3. Have experience creating accounts and passwords on online websites.
- 4. If you have previously participated in this survey and submitted feedback on PSM features, please do not participate again. <u>Duplicate responses will be rejected.</u>
- 5. Please note that we will conduct an Al response detection check, and any <u>Al-generated answers will be disqualified.</u>
- 6. Please note: We will carefully review your answers. Low-quality responses will be rejected, especially Al generated.

Thank you for considering participating in our research study. If you meet the qualifications and are willing to participate, please click the " \rightarrow " button to continue. (Please wait 15 seconds for the button to appear.)

Below is an example of a PSM to help you visualize how these evaluations are typically shown:



Choose a unique password with at least 8 characters. Include at least 1 number, mix uppercase letters, lowercase letters and 1 symbol to increase the strength of your password.

Medium

Demographics

How old are you?

- O 18-24 years old
- 25-34 years old
- O 35-44 years old
- O 45-54 years old
- O 55-64 years old
- O 65+ years old

How do you describe yourself?

- O Male
- Female
- O Non-binary / third gender
- Prefer to self-describe
- O Prefer not to say

What is the highest level of education you have completed?

- O Some high school or less
- O High school diploma or GED

\bigcirc	Some college, but no degree
0	Associates or technical degree
0	Bachelor's degree
0	Graduate or professional degree (MA, MS, MBA, PhD, JD, MD, DDS etc.)
0	Prefer not to say
Ch	noose the race that you consider yourself to be:
0	White or Caucasian
0	Black or African American
0	American Indian/Native American or Alaska Native
0	Asian
0	Native Hawaiian or Other Pacific Islander
0	Prefer not to say
0	Other
Wł	nat is your field of study or occupation?
0	Engineering and Technology
0	Health and Medicine
0	Skilled Trades
0	Education
0	Social Sciences
0	Computer Science and Information Technology
0	Business and Management
0	Natural Sciences
0	Arts and Humanities
0	Prefer not to say
0	Other

Background questions

When was the last time you created a new online account using a password?
 Within the past week Within the past month Within the past three months Within the past six months More than six months ago I don't remember
How often do you encounter password strength meters while creating passwords on websites? (For example, out of 10 times you've created a password, how many times did you see a password strength meter?)
 Always (10 out of 10 times) Often (7–9 out of 10 times) Sometimes (4–6 out of 10 times) Rarely (1–3 out of 10 times) Never (0 out of 10 times)
What factors do you think password strength meters usually consider when assessing a password's strength?
Have you ever chosen to ignore the suggestions from a password strength meter to improve your password? If so, why?

How much do you trust password strength meters to secure your accounts?
 Very much Somewhat Neutral Not very much Not at all
Considering many websites' password requirements (e.g., length >8, use at least 3 of the following: uppercase letters, lowercase letters, numbers, and special symbols), create a password you think is strong . <i>Please do not enter your actual password</i> .
Describe why you think this password is strong.
Considering many websites' password requirements (e.g., length >8, use at least 3 of the following: uppercase letters, lowercase letters, numbers, and special symbols), create a password you think is weak . <i>Please do not enter your actual password</i> .
Describe why you think this password is weak.

Have you received any training or education in password security? (Select all that apply)

Formal Education (e.g., School programs, Company programs, Security certifications) Self-Education (e.g., Online resources, Workshops or seminars) Guidance and Support (e.g., Updates from platforms, IT professional guidance) No Training or Education Received Other (please specify)						
Attention Check						
Which of the following best describes what a Password Strength Meter does?						
A service that securely stores and manages passwords for users. A tool that evaluates password strength and provides feedback to users. A program that continuously monitors account activity for potential threats.						
Group 1 (50%-60%)1st-inconsistent						
How would you rate the strength of the following password? Unversity45*						
Weak Medium Strong O O O						
How confident are you in your rating?						
Not at all Not very much Neutral Somewhat Very	y much					
Websites' password strength meters rate this password as 'Strong'. How much do you agree with this rating?						
\${e://Field/RandomText}						
Strongly agree Somewhat agree						

Neither agree nor disagree	
O Somewhat disagree	
Strongly disagree	
Despite being rated as 'Strong' by many websites, this password is actually NOT strong (It could be medium or weak). Given this information, would you change your initial rating? \${e://Field/RandomText}	
Yes, I would change it.	
No, I would not change it.	
Please choose your new rating: \${e://Field/RandomText}	
Weak Medium Strong O O O	
Please provide at least one reason for your new rating:	
	//
Please provide at least one reason for choosing ' No ': \${e://Field/RandomText}	
	<u>//</u>

Group 1 (50%-60%)2nd-inconsistent

How would you rate the strength of the following password?

Weak	Medium	Strong				
How co	onfident a	re you in	your rating?			
	Not at all	Ν	lot very much	Neutral O	Somewhat	Very much
	es' passw with this ra		gth meters rate	this password	as 'Strong' . How	much do you
			\${e://Field	l/RandomText1	-2}	
O Son O Neit O Son	ongly agree newhat agre ther agree n newhat disa ongly disagr	or disagre agree	e			
strong			m or weak). Give		password is actuation, would you cl	-
	, I would ch I would not					
Please	choose yo	our new r		l/RandomText1	-2}	
Weak	Medium	Strong				

\${e://Field/RandomText1-2}

Pleas	Please provide at least one reason for your new rating:					
Pleas	se provide at lea	st one reason for cho \${e://Field/	osing ' No ': /RandomText1	-2}		
Grou	ıp 1 (50%-60%)	3rd-inconsistent				
How	would you rate	the strength of the fol \${e://Field/	lowing passwoor/RandomText1			
Wea	ak Medium Sti	rong				
How	confident are yo	ou in your rating?				
	Not at all	Not very much	Neutral O	Somewhat	Very much	
	sites' password e with this rating		his password /RandomText1		much do you	
\sim		•		•		
	trongly agree					
	omewhat agree					
_	leither agree nor d					
_	omewhat disagree	9				
\cup S	trongly disagree					

strong (It could be medium or weak). Given this information, would you change your initial rating?
\${e://Field/RandomText1-3}
Yes, I would change it.No, I would not change it.
Please choose your new rating: \$\{e://Field/RandomText1-3\}
Weak Medium Strong O O O
Please provide at least one reason for your new rating:
Please provide at least one reason for choosing ' No ': \$\{e://Field/RandomText1-3}
Group 1 (50%-60%)4th-consistent
How would you rate the strength of the following password?

\${e://Field/RandomText1-4}

Despite being rated as 'Strong' by many websites, this password is actually NOT

Weak	Medium	Strong				
How co	onfident a	re you in y	our rating?			
	Not at all	No	ot very much	Neutral O	Somewhat	Very much
	es' passw vith this ra	_		·	as 'Strong' . How	much do you
			\${e://Field	/RandomText1	-4}	
O Som O Neit O Som	ongly agree newhat agreer her agreer newhat disa ongly disagr	ee nor disagree agree				
-		•	change your i	-	strength meters in	ndicated. Giver
	, I would ch	nange it. t change it.				
Please	choose y	our new ra		/RandomText1	-4}	
Weak	Medium	Strong				

				//
Please provide at le	east one reason for cho \${e://Field	osing ' No ': /RandomText1	-4}	
				//
Group 2 (60%-70%	%)1st-inconsistent			
How would you rat	e the strength of the fol \${e://Field	lowing passwork/RandomText2		
Weak Medium S	Strong			
How confident are	you in your rating?			
Not at all	Not very much	Neutral O	Somewhat	Very much
Websites' passwor agree with this ratii		this password /RandomText2		much do you
Strongly agreeSomewhat agreeNeither agree norSomewhat disagrStrongly disagree	disagree ree			

Despite being rated as 'Strong' by many websites, this password is actually NOT strong (It could be medium or weak). Given this information, would you change your initial rating?	
\${e://Field/RandomText2-1}	
Yes, I would change it.No, I would not change it.	
Please choose your new rating: \$\{e://Field/RandomText2-1\}	
Weak Medium Strong O O	
Please provide at least one reason for your new rating:	_
	//
Please provide at least one reason for choosing ' No ': \$\{e://Field/RandomText2-1\}	
	<u></u>
Group 2 (60%-70%)2nd-inconsistent	
How would you rate the strength of the following password? \${e://Field/RandomText2-2}	
Weak Medium Strong	

How confident are you in your rating?						
Not at all	Not very much	Neutral O	Somewhat	Very much		
Websites' password sagree with this rating	?	this password /RandomText2		much do you		
Strongly agreeSomewhat agreeNeither agree nor disSomewhat disagreeStrongly disagree						
Despite being rated a strong (It could be m initial rating?	edium or weak). Give	•	tion, would you c			
O Yes, I would change O No, I would not char						
Please choose your n		/RandomText2	!-2}			
Weak Medium Stro						

					li
Please	provide at lea	ast one reason for cho \${e://Field/	osing ' No ': /RandomText2	?-2}	
					//
Group	2 (60%-70%)3rd-inconsistent			
How w	ould you rate	the strength of the fol \${e://Field/	llowing passwork /RandomText2		
Weak	Medium St	trong			
How co	onfident are y	ou in your rating?			
	Not at all	Not very much	Neutral O	Somewhat	Very much
	es' password with this rating		this password /RandomText2		/ much do you
O Son O Neit O Son	ongly agree newhat agree ther agree nor d newhat disagre ongly disagree	_			

Despite being rated as 'Strong' by many websites, this password is actually NOT strong (It could be medium or weak). Given this information, would you change your
initial rating? \$\{e://Field/RandomText2-3\}
φίς://Γισια/Καπασιπτοχίζ-σξ
Yes, I would change it.No, I would not change it.
Please choose your new rating:
\${e://Field/RandomText2-3}
Weak Medium Strong O O
Please provide at least one reason for your new rating:
Please provide at least one reason for choosing 'No': \$\{e://Field/RandomText2-3}\}
Group 2 (60%-70%)4th-consistent
How would you rate the strength of the following password? \${e://Field/RandomText2-4}
Weak Medium Strong

How o	confident are	you in your rating?			
	Not at all	Not very much	Neutral O	Somewhat	Very much
	tes' passwor with this rati		this password //RandomText2	_	much do you
O Soil	ongly agree mewhat agree ither agree nor mewhat disagree ongly disagree	ree			
-		ctually strong , just like ould you change your i \${e://Field	-		ndicated. Giver
_	s, I would char , I would not c				
Please	e choose you	r new rating: \${e://Field	/RandomText2	-4}	
Weak	Medium S	Strong			

					/1
Please	provide at lea	ast one reason for cho \${e://Field/	osing ' No ': /RandomText2	?-4}	
					//
Group	3 (70%-80%)	1st-inconsistent			
How w	ould you rate	the strength of the fol \${e://Field/	lowing passwork /RandomText3		
Weak	Medium Str	rong			
How co	onfident are yo	ou in your rating?			
	Not at all	Not very much	Neutral O	Somewhat	Very much
	es' password with this rating		this password /RandomText3		/ much do you
O Son O Neit O Son	ongly agree newhat agree ther agree nor d newhat disagree ongly disagree	_			

Despite being rated as 'Strong' by many websites, this password is actually NOT strong (It could be medium or weak). Given this information, would you change your
initial rating? \$\{e://Field/RandomText3-1\}
Yes, I would change it.No, I would not change it.
Please choose your new rating: \$\{e://Field/RandomText3-1\}
Weak Medium Strong O O O
Please provide at least one reason for your new rating:
Please provide at least one reason for choosing 'No': \$\{e://Field/RandomText3-1\}
Group 3 (70%-80%)2nd-inconsistent
How would you rate the strength of the following password? \${e://Field/RandomText3-2}
Weak Medium Strong

How confident are you in your rating?							
Not at all	Not very much	Neutral O	Somewhat	Very much			
Websites' password agree with this rating		this password /RandomText3		much do you			
Strongly agreeSomewhat agreeNeither agree nor ofSomewhat disagreeStrongly disagree							
	as ' Strong' by many wedium or weak). Give		tion, would you c				
O Yes, I would chang O No, I would not cha							
Please choose your		/RandomText3	3-2}				
	trong						

					//
Please	provide at lea	st one reason for cho \${e://Field	osing ' No ': /RandomText3	3-2}	
Group	3 (70%-80%)	3rd-inconsistent			
How wo	ould you rate	the strength of the fol \${e://Field	lowing passwork /RandomText3		
Weak	Medium Str	rong			
How co	onfident are yo	ou in your rating?			
	Not at all	Not very much	Neutral O	Somewhat	Very much
	es' password vith this rating		this password /RandomText3		/ much do you
O Som	ngly agree newhat agree her agree nor di newhat disagree ngly disagree				

Despite being rated as 'Strong' by many websites, this password is actually NOT strong (It could be medium or weak). Given this information, would you change your initial rating?
\${e://Field/RandomText3-3}
Yes, I would change it.No, I would not change it.
Please choose your new rating: \$\{e://Field/RandomText3-3\}
Weak Medium Strong O O O
Please provide at least one reason for your new rating:
Please provide at least one reason for choosing 'No': \$\{e://Field/RandomText3-3\}
Group 3 (70%-80%)4th-consistent
How would you rate the strength of the following password? \${e://Field/RandomText3-4}
Weak Medium Strong

How confid	dent are you	ı in your rating?			
No	t at all	Not very much	Neutral O	Somewhat	Very much
	password s this rating?		this password /RandomText3		/ much do you
O Neither a	agree nat agree agree nor dis nat disagree disagree				
-		ally strong , just like d you change your i \${e://Field	•		ndicated. Giver
	ould change i uld not chan				
Please cho	ose your ne	•	/RandomText3	-4}	
Weak Me	edium Stro	ng			

					/1
Please	provide at lea	ast one reason for cho \${e://Field/	osing ' No ': /RandomText3	3-4}	
					//
Group	4 (80%-90%)1st-inconsistent			
How w	ould you rate	the strength of the fol \${e://Field/	lowing passwork /RandomText4		
Weak	Medium St	trong			
How co	onfident are y	ou in your rating?			
	Not at all	Not very much	Neutral O	Somewhat	Very much
	es' password with this rating		this password /RandomText4		/ much do you
O Son O Neit O Son	ongly agree newhat agree ther agree nor onewhat disagre ongly disagree	_			

Despite being rated as 'Strong' by many websites, this password is actually NOT strong (It could be medium or weak). Given this information, would you change your
initial rating? \$\{e://Field/RandomText4-1\}
ψίσ.//Γισια/ιταπαοπτισχί α -1/
O Yes, I would change it.
No, I would not change it.
Please choose your new rating:
\${e://Field/RandomText4-1}
Weak Medium Strong
0 0 0
Please provide at least one reason for your new rating:
Please provide at least one reason for choosing 'No': \${e://Field/RandomText4-1}
φ{e.//Field/Randonnext4-1}
Group 4 (80%-90%)2nd-inconsistent
How would you rate the strength of the following password?
\${e://Field/RandomText4-2}
Weak Medium Strong

How confident are you	ou in your rating?			
Not at all	Not very much	Neutral O	Somewhat	Very much
Websites' password agree with this rating				much do yo
	\${e://Fleid	/RandomText4	-2}	
Strongly agreeSomewhat agreeNeither agree nor dSomewhat disagreeStrongly disagree				
	as 'Strong' by many v nedium or weak). Give	•		
	\${e://Field	/RandomText4	-2}	
O Yes, I would change O No, I would not cha				
Please choose your		/RandomText4	-2}	
Weak Medium Str	rong			

					lı .
Please	provide at lea	ast one reason for cho \${e://Field/	osing ' No ': /RandomText4	l-2}	
					//
Group	4 (80%-90%)3rd-inconsistent			
How w	ould you rate	the strength of the fol \${e://Field/	llowing passwork /RandomText4		
Weak	Medium St	trong			
How co	onfident are y	ou in your rating?			
	Not at all	Not very much	Neutral O	Somewhat	Very much
	es' password with this rating		this password /RandomText4		/ much do you
O Son O Neit O Son	ongly agree newhat agree ther agree nor d newhat disagre ongly disagree	_			

Despite being rated as 'Strong' by many websites, this password is actually NOT strong (It could be medium or weak). Given this information, would you change your initial rating?
\${e://Field/RandomText4-3}
Yes, I would change it.No, I would not change it.
Please choose your new rating: \$\{e://Field/RandomText4-3\}
Weak Medium Strong O O O
Please provide at least one reason for your new rating:
Please provide at least one reason for choosing 'No': \$\{e://Field/RandomText4-3}\}
Group 4 (80%-90%)4th-consistent
How would you rate the strength of the following password? \${e://Field/RandomText4-4}
Weak Medium Strong

How	confident ar	e you in your	rating?			
	Not at all	Not ve	ry much	Neutral O	Somewhat	Very much
	sites' passwo			this password a	as 'Strong' . Hov -4}	v much do you
O S O N O S	trongly agree omewhat agre either agree n omewhat disa trongly disagre	or disagree gree				
	-	actually stror would you cha	ange your i i	-	strength meters	indicated. Giver
	es, I would cha					
Pleas	se choose yo	our new rating		/RandomText4-	-4}	
Wea	k Medium	Strong				

					li
Please	provide at lea	ast one reason for cho \${e://Field/	osing ' No ': /RandomText4	-4 }	
					//
Group	5 (90%-100%	%)1st-inconsistent			
How w	ould you rate	the strength of the fol \${e://Field/	lowing passwork /RandomText5		
Weak	Medium St	rong			
How co	onfident are y	ou in your rating?			
	Not at all	Not very much	Neutral O	Somewhat	Very much
	es' password with this rating		this password /RandomText5		/ much do you
O Son O Neit O Son	ongly agree newhat agree ther agree nor d newhat disagree ongly disagree				

Despite being rated as 'Strong' by many websites, this password is actually NOT strong (It could be medium or weak). Given this information, would you change your initial rating?
\${e://Field/RandomText5-1}
Yes, I would change it.No, I would not change it.
Please choose your new rating: \$\{e://Field/RandomText5-1\}
Weak Medium Strong O O O
Please provide at least one reason for your new rating:
Please provide at least one reason for choosing 'No': \$\{e://Field/RandomText5-1\}
Group 5 (90%-100%)2nd-inconsistent
How would you rate the strength of the following password? \${e://Field/RandomText5-2}
Weak Medium Strong

How confident are yo	u in your rating?			
Not at all	Not very much	Neutral O	Somewhat	Very much
Websites' password sagree with this rating	?	this password /RandomText5		much do you
Strongly agreeSomewhat agreeNeither agree nor disSomewhat disagreeStrongly disagree				
Despite being rated a strong (It could be m initial rating?	edium or weak). Give	•	tion, would you c	
O Yes, I would change O No, I would not char				
Please choose your n		/RandomText5	-2}	
Weak Medium Stro				

					//
Please	provide at lea	st one reason for cho \${e://Field	osing ' No ': /RandomText5	i-2}	
Group	5 (90%-100%	3)3rd-inconsistent			
How w	ould you rate	the strength of the fol \${e://Field	lowing passwork /RandomText5		
Weak	Medium Str	rong			
How co	onfident are yo	ou in your rating?			
	Not at all	Not very much	Neutral O	Somewhat	Very much
	es' password vith this rating		this password /RandomText5		/ much do you
O Som O Neit O Som	ingly agree newhat agree her agree nor di newhat disagree ingly disagree				

Despite being rated as 'Strong' by many websites, this password is actually NOT strong (It could be medium or weak). Given this information, would you change your
initial rating? \$\{e://Field/RandomText5-3}\}
Yes, I would change it. No, I would not change it.
Please choose your new rating:
\${e://Field/RandomText5-3}
Weak Medium Strong O O O
Please provide at least one reason for your new rating:
Please provide at least one reason for choosing 'No': \$\{e://Field/RandomText5-3}\}
Group 5 (90%-100%)4th-consistent
How would you rate the strength of the following password? \${e://Field/RandomText5-4}
Weak Medium Strong

How	confident ar	e you in your r	ating?			
	Not at all	Not ver	y much	Neutral O	Somewhat	Very much
	sites' passwo			his password a	as 'Strong' . Hov -4}	v much do you
O S	trongly agree omewhat agre either agree no omewhat disa trongly disagre	or disagree gree				
		actually stron would you cha	nge your i i	•	strength meters	indicated. Giver
	es, I would cha					
Pleas	se choose yo	our new rating:		/RandomText5-	-4}	
Wea	k Medium	Strong				

	//
Please provide at least one reason for choosing ' No ': \$\{e://Field/RandomText5-4\}	
	//
General perceptions of inconsistency	
How do you view the inconsistency between the password strength ratings given by the website's PSMs and the actual strength of passwords?	Э
Do you believe that inconsistency in PSMs affect your trust? Please explain your reason	IS.

Now that you're aware of the **inconsistencies in PSMs**, how do you plan to create passwords for your online accounts **in the future**?

Regarding the inconsistency of PSMs, what are your suggestions for their future design?
The end
Dear Participant,
Thank you for participating in our survey. As part of our ongoing study, we may reach out to you for follow-up surveys related to the Password Strength Meters . Please keep an eye on your messages for any further tasks.
We appreciate your valuable contributions to our research.
Please enter your MTurk Worker ID below. This ID will be used solely to match your survey responses with your profile for payment purposes and to facilitate follow-up contact as part of this study.