

Appendix

Survey	Date	Parker	Rhynhart	Gym	Domb	J Brown	A Brown	
Domb Internal	4/16-19/23	16	21	19	17	13	1	
SurveyUSA*	4/21-25/23	17	19	16	15	12	2	
Gym Internal	4/26-29/23	19	21	21	13	9	2	
Parker Internal	4/27/23	20	15	16	11	12	1	
HIT for Parker	4/29-5/2/23	28	22	19	12	9	0	
Emerson*	5/7-9/23	21	20	23	17	12	2	
LeftofCenter*	5/15/23	22	31	19	13	11	0	
Average of Surveys	4/16-5/15/23	20	21	19	14	11	1	
Election Day Results	5/16/23	33	23	22	11	9	1	
Survey	Date	DeLeon	Gray	Bloom	Undec.	Write-In	Else	Ref.
Domb Internal	4/16 - 4/19/23	1	0	0	14	0	0	0
SurveyUSA*	4/21 - 4/25/23	2	0	2	15	0	0	0
Gym Internal	4/26 - 4/29/23	0	0	0	14	0	0	0
Parker Internal	4/27/23	0	0	0	22	0	1	2
HIT for Parker	4/29 - 5/2/23	0	0	0	0	0	0	0
Emerson*	5/7 - 5/9/23	3	1	1	0	0	0	0
LeftofCenter*	5/15/23	0	0	0	0	0	4	0
Average of Surveys	4/16 - 5/15/23	1	0	0	9	0	1	
Election Day Results	5/16/23	1	0	0	0	0	0	0

Table A1: Comparison of Independent Surveys and Actual Results. *indicates survey results with leaners.

Survey	Date	Johnson	Vallas	Lightfoot	Garcia	Wilson	Buckner
M3	1/15-1/17/23	12	26	10	19	9	
GBAO	1/18-1/22/23	9	22	25	18	11	2
Mason-Dixon	1/31-2/3/23	11	18	17	20	12	1
Northwestern University	2/5-2/10/23	6	18	13	15	11	4
Victory Research	2/24-2/26/23	20	27	19	16	11	
Average of Surveys	1/15-2/26/23	13	24	17	17	10	
Election Day Results	2/28/23	22	33	17	14	9	2
Survey	Date	King	Sawyer	Green	Other	Undecided	
M3	1/15-1/17/23						
GBAO	1/18-1/22/23	2			10	10	
Mason-Dixon	1/31-2/3/23	1	0	2		18	
Northwestern University	2/5-2/10/23	4	3	5		22	
Victory Research	2/24-2/26/23						
Average of Surveys	1/15-2/26/23						
Election Day Results	2/28/23	1	0	2			

Table A2: Comparison of Surveys and Actual Results in the February 2023 Chicago mayoral race. *indicates survey results with leaners

Survey	Date	Johnson	Vallas	Undecided
Emerson College	3/23-3/25/23	41	46	13
Victory Research	3/20-3/22/23	44	46	10
Northwestern University*	3/15-3/23/23	44	44	12
IZQ Strategies	1/4-3/4/23	50	45	6
Average of Surveys	3/23-3/4/23	46	46	
Election Day Results	4/4/23	52	48	

Table A3: Comparison of Surveys and Actual Results in the April 2023 run-off for the Chicago mayoral race. *indicates survey results with leaners

Take a short survey about Philadelphia's race for mayor and key issues facing our community

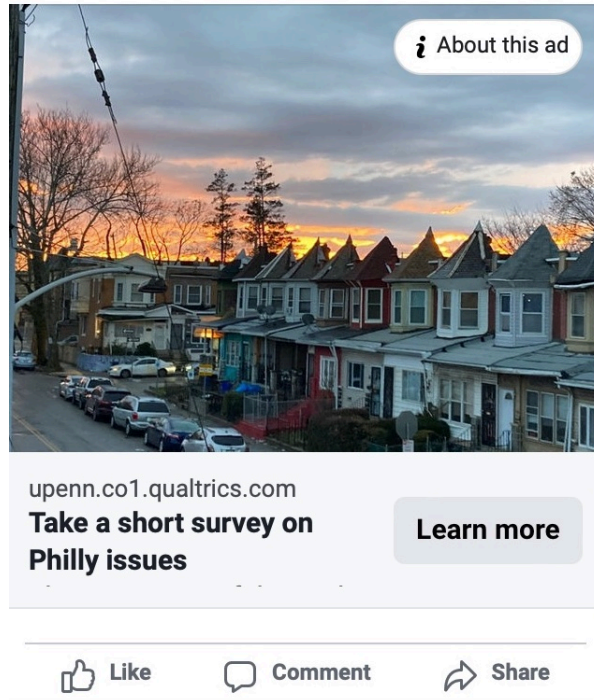


Figure A1: Sample Facebook advertisement for survey recruitment.

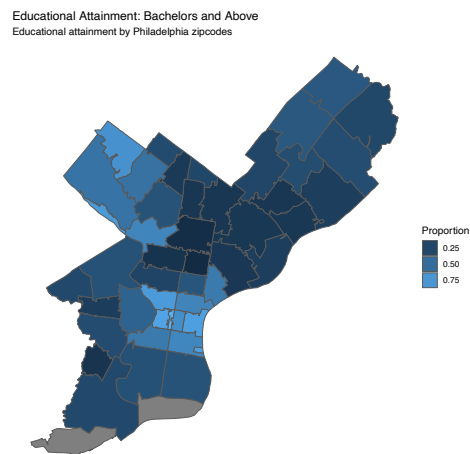


Figure A2: This figure displays the fraction of the population 25 and over with at least a BA by ZIP code.

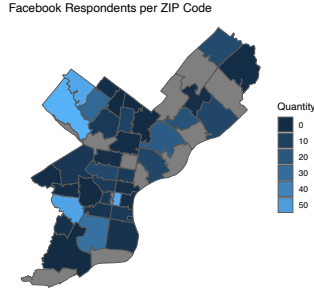


Figure A3: This figure displays the number of respondents by ZIP code.

	β	# of Surveys		# of Surveys/Reach		
		SE	df	β	SE	df
Pct. White	5.641*	2.657	12.000	0.011*	0.003	12.000
Pct. Black	-3.026	3.140	12.000	-0.006	0.004	12.000
Pct. Asian Am.	7.909	13.739	12.000	0.024	0.019	12.000
Pct. Hispanic	-4.519	3.265	12.000	-0.009*	0.004	12.000
Pct. with BA	5.180	2.949	12.000	0.011*	0.004	12.000
Med. Hsh. Income	4.366	2.668	12.000	0.010*	0.003	12.000

Table A4: This table reports bivariate regressions of each of the listed independent variables separately on the two dependent variables for the 15 targeted Chicago ZIP codes. * denotes significant at the $p < 0.05$ level.

	Actual	Facebook	Civiqs	In Person
Black, Pro-Establishment	0.183	0.083	0.071	0.048
Black, Other	0.286	0.232	0.206	0.511
Hispanic, Poor	0.064	0.102	0.055	0.012
White, Affluent	0.139	0.210	0.205	0.190
White, Younger, Progressive	0.185	0.210	0.205	0.221
White, Moderate	0.143	0.163	0.259	0.018

Table A5: This table reports the fraction of voters/respondents across the six neighborhood clusters estimated by Shukla and Terruso (2023). It reports the distributions for: 1) 2019 Democratic primary turnout, 2) the Facebook polls, 3) the Civiqs polls, and 4) the in-person polls. Cluster names denote demographic tendencies, not individual characteristics.

	Took Poll
Intercept	-0.189 (0.180)
Hispanic	-0.449* (0.226)
Black	-0.846* (0.143)
White	1.063* (0.124)
Male	0.296* (0.076)
Under 30	0.987* (0.153)
30-39	0.012 (0.124)
40-49	-0.216 (0.128)
50-59	0.148 (0.124)
60-69	0.214* (0.108)
Black, pro-establishment	-2.913* (0.293)
Hispanic, high poverty	-1.468* (0.266)
Young, White, Progressive	-1.637* (0.224)
White, Moderate	-2.003* (0.174)
White, Liberal, Affluent	-1.330* (0.168)
Num. obs.	4368

* $p < 0.05$

Table A6: Sample logistic regression model to generate weights. This model was fit to a data set including all survey respondents across modes as well as 3,182 randomly sampled Philadelphia Democratic primary voters from 2019. The outcome is whether the individual is from the voter file or the survey.

Candidate	In-Person Pre-Election	Facebook Wave 1	Civiqs Wave 1	Facebook Wave 2	Civiqs Wave 2	Actual Results
Cherelle Parker	7.65	5.15	4.41	12.90	12.27	32.42
Rebecca Rhynhart	17.06	17.28	19.61	27.42	38.63	22.97
Helen Gym	45.29	16.18	25.98	20.97	28.16	22.01
Allan Domb	11.18	22.06	18.63	12.90	12.27	11.39
Jeff Brown	12.94	24.26	24.02	22.58	7.58	8.79
Amen Brown	1.18	1.10	0.49	1.61	0.72	1.32
James DeLeon	0.00	1.47	0.49	1.61	0.00	0.60
Delscia Gray	0.00	0.00	0.00	0.00	0.00	0.23
Warren Bloom	0.00	0.00	0.00	0.00	0.00	0.20
Derek Green	1.18	1.10	0.98	0.00	0.00	0.00
Maria Quiñones Sánchez	2.35	8.09	2.94	0.00	0.00	0.00
Michael Nutter	0.00	0.00	0.49	0.00	0.00	0.00
Someone else	1.18	3.31	1.96	0.00	0.36	0.00
Sum	100.00	100.00	100.00	100.00	100.00	100.00

Table A7: Percent per Candidate in Pre-Election Polls vs. Actual Results, Unweighted.

	Allan Domb	Amen Brown	Cherelle Parker	Helen Gym	Jeff Brown	Rebecca Rhynhart	Undecided
Allan Domb	0.08	0.00	0.00	0.00	0.00	0.05	0.00
Amen Brown	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cherelle Parker	0.00	0.00	0.02	0.00	0.00	0.00	0.00
Derek Green	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Helen Gym	0.00	0.00	0.00	0.19	0.00	0.02	0.00
James DeLeon	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jeff Brown	0.00	0.00	0.02	0.03	0.04	0.05	0.00
Maria Quiñones Sánchez	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Michael Nutter	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rebecca Rhynhart	0.00	0.00	0.00	0.00	0.01	0.14	0.00
Someone else	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Undecided	0.01	0.00	0.04	0.05	0.00	0.11	0.05

Table A8: For 232 Civiqs respondents surveyed in March and May 2023, this table provides the fraction of respondents who reported support for the candidate listed in the row in wave 1 and the column in wave 2.

Exit Polls

Voting Method	Total	Penn Alex	Trinity	Lea School	Harrington	Chew Rec	Germantown
In-Person (Elec. Day)	73.14	74.92	67.02	74.46	76.26	81.70	75.00
Mail-in	25.86	24.57	32.23	23.92	23.00	16.29	23.19
Provisional	1.01	0.50	0.75	1.62	0.74	2.01	1.81
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table A9: Percent of Ballots Completed by Method and Polling Location

Candidate	Total	Total	Penn Alex	Penn Alex	Trinity	Trinity	Lea School	Lea School
	Exit Polls	In-Person	Exit Polls	In-Person	Exit Polls	In-Person	Exit Polls	In-Person
Cherelle Parker	16.67	19.91	13.33	8.14	6.67	4.98	15.00	12.37
Rebecca Rhynhart	22.41	22.22	13.33	17.43	60.00	52.61	10.00	14.95
Helen Gym	51.72	46.07	73.33	70.86	26.67	31.04	75.00	62.89
Allan Domb	1.72	4.05	0.00	1.29	3.33	9.72	0.00	2.58
Jeff Brown	4.60	6.32	0.00	1.43	3.33	1.18	0.00	5.41
Amen Brown	1.72	0.83	0.00	0.43	0.00	0.47	0.00	1.03
James DeLeon	0.57	0.36	0.00	0.43	0.00	0.00	0.00	0.26
Delscia Gray	0.00	0.16	0.00	0.00	0.00	0.00	0.00	0.52
Warren Bloom	0.57	0.08	0.00	0.00	0.00	0.00	0.00	0.00
Sum	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Candidate	Total	Total	Harrington	Harrington	Chew Rec	Chew Rec	Germantown	Germantown
	Exit Polls	In-Person	Exit Polls	In-Person	Exit Polls	In-Person	Exit Polls	In-Person
Cherelle Parker	16.67	19.91	26.56	44.68	4.35	23.75	28.57	43.01
Rebecca Rhynhart	22.41	22.22	1.56	7.31	60.87	29.62	0.00	11.29
Helen Gym	51.72	46.07	53.13	24.01	30.43	34.60	57.14	29.57
Allan Domb	1.72	4.05	3.13	3.13	0.00	6.16	0.00	3.23
Jeff Brown	4.60	6.32	7.81	18.58	4.35	4.69	14.29	9.68
Amen Brown	1.72	0.83	4.69	1.67	0.00	0.59	0.00	1.08
James DeLeon	0.57	0.36	1.56	0.00	0.00	0.59	0.00	1.61
Delscia Gray	0.00	0.16	0.00	0.42	0.00	0.00	0.00	0.00
Warren Bloom	0.57	0.08	1.56	0.21	0.00	0.00	0.00	0.54
Sum	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table A10: Percent per Candidate in Election Day Exit Polls vs. Actual In-Person Results, by Polling Location. Note that these results are unweighted and only for in-person voters at each precinct.

Table A10 provides the results from our exit polls by polling place alongside the reported vote totals for each polling place. The “Exit Polls” columns report the percentage of respondents at each selected voting location who supported each candidate according to our exit polls. The “In-Person” columns report the percentage of in-person voters who supported each candidate at these same locations, according to Philadelphia City Commissioners’ data. (Note that these results exclude mail votes to allow for a cleaner comparison.) The “Total Exit Polls” and “Total In-Person” columns aggregate these columns to show what percent of our exit poll respondents and in-person voters, respectively, supported each candidate across these locations.

As the table illustrates, support for progressive candidate Helen Gym was often overstated in the exit polls while support for Cherelle Parker—the eventual winner—was slightly understated.

Candidates	Wave 1 Survey	Wave 1 Expected	Wave 2 Survey	Wave 2 Expected	Exit Polls	Exit Polls Expected
Parker	0.10	0.30	0.03	0.31	0.17	0.20
Rhynhart	0.11	0.21	0.24	0.19	0.22	0.22
Gym	0.32	0.30	0.67	0.31	0.52	0.46
Domb	0.14	0.08	0.05	0.07	0.02	0.04
J. Brown	0.22	0.08	0.02	0.08	0.05	0.06
A. Brown	0.02	0.02		0.02	0.02	0.01
DeLeon		0.00		0.00	0.01	0.00
Gray		0.00		0.00		0.00
Bloom		0.00		0.00	0.01	0.00
Write-In	0.02	0.00		0.00		0.00
Sum Error	0.53		0.81		0.15	

Table A11: Actual and expected in-person survey results. The expected results were calculated based on the actual election day results for the ZIP codes measured in the in-person surveys.

Survey Question Wordings

[UNIVERSITY NAME REDACTED] Mayoral Primary Poll 2023

Poll No: _____

This is a voluntary and anonymous exit poll about current events conducted for research by researchers at the [UNIVERSITY NAME REDACTED]. Please do not write your name on this survey. This poll is not official, and is not affiliated with any government or jurisdiction. Your effort in answering these questions may make sure that the views of residents from your community are represented. There are no benefits or compensation for those taking the survey, which seeks to understand how voters think about issues. Some questions may be sensitive and you may decline to answer any questions at any point in the survey. Data will be de-identified, with the possibility of being stored and distributed for further research.

1. [REGISTERED DEMOCRATS ONLY] In the Democratic primary election for Mayor of Philadelphia, who did you vote for today? (check one)

- | | |
|---------------------------------------|--|
| <input type="checkbox"/> Warren Bloom | <input type="checkbox"/> Helen Gym |
| <input type="checkbox"/> Amen Brown | <input type="checkbox"/> Cherelle Parker |
| <input type="checkbox"/> Jeff Brown | <input type="checkbox"/> Rebecca Rhyhart |
| <input type="checkbox"/> James DeLeon | <input type="checkbox"/> Someone else |
| <input type="checkbox"/> Allan Domb | _____ |
| <input type="checkbox"/> Delscia Gray | <input type="checkbox"/> I did not vote in this race |

2. [REGISTERED REPUBLICANS ONLY] In the Republican primary election for Mayor of Philadelphia, who did you vote for today? (check one)

- | | |
|---------------------------------------|--|
| <input type="checkbox"/> David Oh | <input type="checkbox"/> I did not vote in this race |
| <input type="checkbox"/> Someone else | _____ |

3. Which of these issues was the most important to you in today's election? (check one)

- | | |
|---|---|
| <input type="checkbox"/> Crime, gun violence, public safety | <input type="checkbox"/> Racism and racial discrimination |
| <input type="checkbox"/> Jobs/unemployment | <input type="checkbox"/> Taxes |
| <input type="checkbox"/> Housing | <input type="checkbox"/> Environment/climate change |
| <input type="checkbox"/> Education/schools | <input type="checkbox"/> Other _____ |
| <input type="checkbox"/> Transportation, traffic, roads | |

4. A few years ago Philadelphia implemented a tax on sweetened beverages like soda which provides money for pre-kindergarten, libraries, and community centers. Do you support or oppose this beverage tax? (check one)

- | | |
|---|--|
| <input type="checkbox"/> Strongly support | <input type="checkbox"/> Somewhat oppose |
| <input type="checkbox"/> Somewhat support | <input type="checkbox"/> Strongly oppose |
| | <input type="checkbox"/> Don't know/unsure |

5. Some Philadelphia neighborhoods have mandatory inclusionary zoning, which means that proposed housing developments must rent 20% of units at lower prices. Do you support or oppose mandatory inclusionary zoning? (check one)

- | | |
|---|--|
| <input type="checkbox"/> Strongly support | <input type="checkbox"/> Somewhat oppose |
| <input type="checkbox"/> Somewhat support | <input type="checkbox"/> Strongly oppose |
| | <input type="checkbox"/> Don't know/unsure |

6. Do you think that Philadelphia should increase or decrease the size of its police force, or should it remain the same? (check one)

- | | |
|-----------------------------------|--|
| <input type="checkbox"/> Increase | <input type="checkbox"/> Remain the same |
| <input type="checkbox"/> Decrease | <input type="checkbox"/> Don't know/unsure |

7. There's a proposal to build a new sports arena in Chinatown in Center City Philadelphia. From what you've heard, do you support or oppose this proposal?

- | | |
|---|--|
| <input type="checkbox"/> Strongly support | <input type="checkbox"/> Somewhat oppose |
| <input type="checkbox"/> Somewhat support | <input type="checkbox"/> Strongly oppose |
| | <input type="checkbox"/> Don't know/unsure |

8. Do you have a favorable or unfavorable view of the Philadelphia Federation of Teachers? (check one)

- | | |
|---|---|
| <input type="checkbox"/> Very favorable | <input type="checkbox"/> Somewhat unfavorable |
| <input type="checkbox"/> Somewhat favorable | <input type="checkbox"/> Very unfavorable |

9. Do you have a favorable or unfavorable view of the Fraternal Order of Police here in Philadelphia? (check one)

- | | |
|---|---|
| <input type="checkbox"/> Very favorable | <input type="checkbox"/> Somewhat unfavorable |
| <input type="checkbox"/> Somewhat favorable | <input type="checkbox"/> Very unfavorable |

10. Do you have a favorable or unfavorable opinion of the Black Lives Matter movement or haven't you heard enough yet to have an opinion? (check one)

- | | |
|---|---|
| <input type="checkbox"/> Very favorable | <input type="checkbox"/> Somewhat unfavorable |
| <input type="checkbox"/> Somewhat favorable | <input type="checkbox"/> Very unfavorable |
| | <input type="checkbox"/> Unsure/don't know |

11. Do you approve of the job James "Jim" Kenney is doing as mayor of Philadelphia? (check one)

- | | |
|---|--|
| <input type="checkbox"/> Strongly approve | <input type="checkbox"/> Somewhat disapprove |
| <input type="checkbox"/> Somewhat approve | <input type="checkbox"/> Strongly disapprove |
| | <input type="checkbox"/> Unsure/don't know |

12. Generally speaking, as of today, do you consider yourself to be a: (check one)

- | | |
|-------------------------------------|--------------------------------------|
| <input type="checkbox"/> Democrat | <input type="checkbox"/> Independent |
| <input type="checkbox"/> Republican | |

13. Your gender: (circle one) M F Non-binary Other _____

14. Your race/ethnicity: (check all that apply)

- | | |
|---|-----------------------------------|
| <input type="checkbox"/> Asian | <input type="checkbox"/> White |
| <input type="checkbox"/> Black/African American | <input type="checkbox"/> Hispanic |
| | <input type="checkbox"/> Other |

15. Highest educational level completed: (check one)

- | | |
|--|--|
| <input type="checkbox"/> Less than high school | <input type="checkbox"/> College graduate |
| <input type="checkbox"/> High school graduate | <input type="checkbox"/> Postgraduate degree |
| <input type="checkbox"/> Some college | |

16. Thinking back to when you were growing up, how often did you attend or watch religious services? (check one)

- | | |
|---|--|
| <input type="checkbox"/> Never | <input type="checkbox"/> Monthly |
| <input type="checkbox"/> A few times per year | <input type="checkbox"/> 2-3 times per month |
| | <input type="checkbox"/> Weekly or more |

17. In the past 12 months, how often did you attend or watch religious services? (check one)

- | | |
|--------------------------------------|--|
| <input type="checkbox"/> Never | <input type="checkbox"/> Monthly |
| <input type="checkbox"/> A few times | <input type="checkbox"/> 2-3 times per month |
| | <input type="checkbox"/> Weekly or more |

18. Year you were born: _____

19. Please provide your zip code: _____

Version D

Figure A4: This is one of two versions of the exit poll fielded on the day of the primary. The other version differs by a single question which was not assessed in this paper.

Pre-election Survey Questions:

- If the November 2023 general election for Mayor of Philadelphia were held today, who would you vote for?
 - The Republican David Oh, The Democratic nominee, Someone else, Don't know/unsure, Not voting in this race
- Who is your first choice to become the Democratic nominee for Mayor of Philadelphia? (check one)¹³
 - Cherelle Parker, Jeff Brown, Helen Gym, Allan Domb, Rebecca Rhynhart, James DeLeon, Amen Brown, Someone else, Undecided, Not voting in this race
- Who is your second choice to become the Democratic nominee for Mayor of Philadelphia? (check one)
 - Cherelle Parker, Jeff Brown, Helen Gym, Allan Domb, Rebecca Rhynhart, James DeLeon, Amen Brown, Someone else, Undecided, Not voting in this race
- Which of the following candidates for Philadelphia mayor have you heard of? (check all that apply)
 - Cherelle Parker, Jeff Brown, Helen Gym, Allan Domb, Rebecca Rhynhart, James DeLeon, Amen Brown
- Which of these issues is the most important to you in the upcoming election for Philadelphia mayor? (check one)
 - Crime, gun violence, public safety; Jobs/unemployment; Housing; Education/schools; Transportation, traffic, roads; Racism and racial discrimination; Taxes; Environment/climate change; Other
- A few years ago Philadelphia implemented a tax on sweetened beverages like soda which provides money for pre-kindergarten, libraries, and community centers. Do you support or oppose this beverage tax? (check one)
 - Strongly support, Somewhat support, Somewhat oppose, Strongly oppose, Don't know/unsure
- The Philadelphia School district recently changed the process for applying to some high schools. Now, applying is a random lottery for students whose grades and test scores are above a certain level. Do you support or oppose this change? (check one)

- Strongly support, Somewhat support, Somewhat oppose, Strongly oppose, Don't know/unsure
- Some Philadelphia neighborhoods have mandatory inclusionary zoning, which means that proposed housing developments must rent 20% of units at lower prices. Do you support or oppose mandatory inclusionary zoning? (check one)
 - Strongly support, Somewhat support, Somewhat oppose, Strongly oppose, Don't know/unsure
- Do you think that Philadelphia should increase or decrease the size of its police force, or should it remain the same? (check one)
 - Increase, Decrease, Remain the same, Don't know/unsure
- There's a proposal to build a new sports arena in Chinatown in Center City Philadelphia. From what you've heard, do you support or oppose this proposal?
 - Strongly support, Somewhat support, Somewhat oppose, Strongly oppose, Don't know/unsure
- Do you have a favorable or unfavorable view of the Philadelphia Federation of Teachers? (check one)
 - Very favorable, Somewhat favorable, Somewhat unfavorable, Very unfavorable
- Do you have a favorable or unfavorable view of the Fraternal Order of Police here in Philadelphia? (check one)
 - Very favorable, Somewhat favorable, Somewhat unfavorable, Very unfavorable
- Do you have a favorable or unfavorable opinion of the Black Lives Matter movement or haven't you heard enough yet to have an opinion? (check one)
 - Very favorable, Somewhat favorable, Somewhat unfavorable, Very unfavorable, Unsure/don't know
- Do you approve of the job James "Jim" Kenney is doing as mayor of Philadelphia? (check one)
 - Strongly approve, Somewhat approve, Somewhat disapprove, Strongly disapprove, Unsure/don't know
- Generally speaking, as of today, do you consider yourself to be a: (check one)

- Democrat, Republican, Independent
- Your gender:
 - M, F, Non-binary, Other
- Your race/ethnicity: (check all that apply)
 - Asian, Black/African American, White, Hispanic, Other
- Highest educational level completed:
 - Less than high school, High school graduate, Some college, College graduate, Post-graduate degree
- Year you were born:
- Please provide your zip code: