

Learning to love big brother: Chinese attitudes toward online privacy after the pandemic

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The results of the survey strongly suggest that, despite all of the invasive government monitoring used to attempt to control the spread of Covid, respondents were generally supportive of government invasions of their privacy. These findings cast doubt on the long-term impact of the White Paper movement protests and connect to a larger body of literature on why surveys of Chinese citizens indicate high levels of trust in their government.

Introduction

Literature review

Data and summary statistics

The data for this project was collected via a commercial survey firm in two waves, February of 2021 and March of 2023. In both the first and second waves, Wuhan was oversampled, with residents of the city set to be 10% of respondents. The 2021 survey had an $n=1500$ and the second had an $n=2000$. Questions on the two surveys were identical other than a minor change to a question that referenced a specific date. The timing of the two surveys came at two very different points in time of China's Covid-19 experience. The first survey was conducted approximately seven months after the last round of restrictions were lifted on the city of Wuhan. China, at the time, was essentially closed to foreign travel but otherwise had little in the way of day to day public health restrictions. Nationwide, daily Covid cases hovered around the single digits (*BBC News*, 2021). China was at a very different point in its journey in March of 2023. The year of 2022 saw widespread, intrusive digital monitoring introduced. Many major cities, such as Shanghai, Xi'an, and Shenzhen, underwent long and painful city-wide lockdown procedures. At the end of 2023, under the weight of a spiraling number of cases and widespread protests (termed the White Paper Revolution), China finally abandoned its zero Covid policy (Mao, 2022). The two waves of these surveys aim to compare attitudes before and after this widespread and highly visible change in digital monitoring strategies.

Table 1: Survey demographics

	2021	2023
	1500.00	2007.00

Table 2: Government performance questions

Q1	Overall, I’m happy with the performance of the central government
Q2	Overall, I’m happy with the performance of my local government
Q3	The government does a good job balancing the rights of citizens to be free of surveillance in their daily lives with the need to preserve order and prevent crime.
Q4	Government performance index

The demographics of the 2021 and 2023 surveys are presented in Table 1.

As is typical of online surveys in China, the sample respondents skew somewhat younger and more educated. Comparing the two waves, there are some modest demographic differences (notably education and marriage) differences between the two samples. As will be shown in Section , these minor differences do not appear to change any of the substantive results. Focusing on the 2023 survey, the modal respondent is someone from a small city, male, married, working in a white collar job at a small enterprise, who earns about 10,000 RMB a month and has an urban *hukou*. This demographic profile already suggests that while the large-scale lockdowns that occurred in a few of the big cities generated a lot of press, they may not be the modal or average citizen’s experience with zero Covid policies.

Taking a wide-angle view on the government’s performance, Table 3 compares some different measures of government performance. While the higher level of government trust in the central government is unsurprising (consistent with previous literature, see CITATION), the magnitude of the gap is somewhat smaller than in previous studies. There has been a small but statistically significant decrease in trust of both since 2021. Most interestingly, though, is that there was no decrease in how residents feel the government handled their privacy information. This seems to indicate that it not necessarily government monitoring that made residents unhappy but instead other zero Covid policy failures.

Table 3: Government performance data

	2021 (N=1500)		2023 (N=2007)		Diff. in Means	p
	Mean	Std. Dev.	Mean	Std. Dev.		
Central government performance	5.98	1.14	5.73	1.36	-0.25	0.00
Local government performance	5.55	1.25	5.35	1.43	-0.20	0.00
Government performance Q3	5.45	1.22	5.42	1.41	-0.03	0.44
Government performance index	0.78	0.17	0.75	0.21	-0.03	0.00

Table 4: Government and private monitoring questions

Q1	There are good reasons for the central government to monitor the activity of users online
Q2	There are good reasons for the local government to monitor the activity of users online
Q3	There are good reasons for private companies to monitor the activity of users online
Q4	It doesn't bother me to provide the government with biometric information including my fingerprints and face details for the purposes of monitoring public places
Q5	It doesn't bother me to provide private companies with biometric information including my fingerprints and face details for the purposes of monitoring public places
Q6	Government monitoring index of Q1 + Q2 + Q4
Q7	Private monitoring index of Q3 + Q5
Q8	Total monitoring index of Q1-Q5

Turning to the issue of specific attitudes regarding monitoring, Table 5 suggests that while the differences are not large, respondents in the second wave were more accepting of almost all forms of monitoring. Given the phrasing of the question - “there are good reasons for the government to monitor you”, it seems likely that respondents were accepting the government’s framing that such digital monitoring and control was a necessary part of the pandemic response. Not surprisingly, and consistent with previous research (Chen, 2017; Chen and MacDonald, 2020; Li, 2016), respondents trust the government at significantly higher levels than private corporations. While the pandemic-era monitoring was in fact a public-private partnership¹, respondents seem to have a very clear delineation of which parties may acceptably gather their data and which should not.

This result is one of the largest differences between 2021 and 2023 among all survey questions. In 2023, respondents felt that the central government had a significantly stronger reason to monitor them compared to 2021. Respondents also agreed that the local government had a better case to monitor them compared to 2021, though the magnitude of the change was not as dramatic. Other types of monitoring (private monitoring, biometric monitoring) also exhibited a statistically significant change in the direction of being more accepting of tracking. The most direct interpretation of this response pattern is that respondents fundamentally accepted the government’s position that monitoring was necessary and justified during the pandemic. Contrary to the Western popular press reports of the White Paper Revolution, it does not seem that most Chinese citizens were unhappy about Covid electronic controls. The slight decrease in government trust could indicate dissatisfaction with other Covid policies (including forced quarantines), but it does not seem that app-based monitoring itself caused any great concern among the general public.

One possible reason why respondents may believe that private corporations are less trustworthy could arise from feeling that their monitoring is more invasive. However, this turns out not to be the case - respondents feel that all three entities are roughly equally likely to monitor

¹Alibaba and Tencent served as the interface for the health code system while the data was analyzed and manipulated by local governments (McMorrow and Leng, 2022).

Table 5: Government and private monitoring data

	2021 (N=1500)		2023 (N=2007)		Diff. in Means	p
	Mean	Std. Dev.	Mean	Std. Dev.		
Central government monitoring	4.67	1.46	5.25	1.39	0.59	0.00
Local government monitoring	4.66	1.37	5.04	1.46	0.38	0.00
Private company monitoring	2.91	1.56	3.08	1.84	0.18	0.00
Government biometric monitoring	4.80	1.50	5.00	1.59	0.21	0.00
Private biometric monitoring	2.87	1.60	2.88	1.85	0.01	0.88
Government monitoring index	0.62	0.21	0.68	0.22	0.07	0.00
Private monitoring index	0.31	0.23	0.33	0.29	0.02	0.08
Total monitoring index	0.50	0.17	0.54	0.19	0.05	0.00

them. A likely interpretation of this result is that respondents are unable to precisely identify who is monitoring them and when. When the question about privacy is rephrased to further emphasize that these different groups could access their private information, trust with government sources decreases modestly compared to the previous phrasing in Table 4. However, this decrease is matched by a similar decrease in comfort with private companies monitoring them. These results reinforce the results in Table 5 and further strengthen the finding of

What may explain the lack of increased concern about digital privacy is that respondents generally did not notice a major change in the level of online monitoring. While the increase was statistically significant, it was just barely at the edge of significance and amounts to less than 1/10th a standard deviation increase in perceived monitoring. Given the invasiveness of the technological means of control employed to control Covid, this result is surprising. Two reasonable explanations for this divergence are 1) respondents do not consider the Covid controls to be online monitoring and/or, in my view, more likely, 2) respondents have already readjusted their frame of reference and no longer bring to mind the Covid-19 era when answering this question. While the survey results cannot arbitrate between these two explanations, both of these explanations suggest that even a massive and intrusive increase in surveillance has shifted attitudes about monitoring overall. If the first explanation is true, it suggests that the kinds of monitoring that Chinese citizens are worried about are drastically different than the kinds Western privacy advocates are concerned about. If a government is monitoring your every move and such activity is not considered to be tracking your activity, then it suggests a very different set of ideas about what is a concerning type of monitoring. If the second explanation is true, it does suggest that respondents that view somewhat time-limited surveillance and surveillance for a specific purpose as being acceptable. One can easily imagine, however, such tools being used again for periodic incidents of unrest and these results suggest that respondents may view controls, as long as viewed as ‘necessary’ may be seen as acceptable at least after the fact.

Rounding out the final section of the regular survey questions are a set of questions designed to further parse attitudes about online monitoring, the results of which are shown in Table 9.

Table 6: Attitudes regarding tracking questions

Q1	How closely do you think the central government tracks your online activity?
Q2	How closely do you think the local government tracks your online activity?
Q3	How closely do you think private companies track your online activity?
Q4	How comfortable are you with the central government knowing personal details about your activity online?
Q5	How comfortable are you with the local government knowing personal details about your activity online?
Q5	How comfortable are you with the local government knowing personal details about your activity online?

Table 7: Attitudes regarding tracking summary data

	2021 (N=1500)		2023 (N=2007)		Diff. in Means	p
	Mean	Std. Dev.	Mean	Std. Dev.		
Central government tracking - prevalence	4.31	1.30	4.40	1.44	0.09	0.05
Local government tracking - prevalence	4.22	1.28	4.35	1.45	0.13	0.01
Private company tracking - prevalence	4.37	1.56	4.32	1.71	-0.05	0.34
Central government tracking - comfort	4.22	1.48	4.13	1.61	-0.09	0.10
Local government tracking - comfort	4.09	1.49	4.05	1.63	-0.04	0.44
Private company tracking - comfort	2.64	1.68	2.54	1.78	-0.11	0.07

The results of these questions generally confirm and support the findings of all the previous question blocks. As with most of the survey questions, there appeared to be only a very modest change in response patterns between 2021 and 2023. Respondents generally agree that they do not notice government tracking. They strongly agree that the government protects their data better than private corporations. They strongly disagree that they are willing to give up their privacy simply to use apps for free. Finally, many respondents feel worried about having their payment data stolen. In most cases, it is unwise to place too much emphasis on any one question, given respondents can misinterpret or gloss over any specific question. In this survey, however, respondents have repeatedly indicated that they trust the government at significantly higher rates than private corporations and that most of users worries about being online are related to protection of their information from corporations.

One obvious objection to the finding that respondents have a higher degree of concern with private monitoring compared to government monitoring is that respondents are engaging in preference falsification - they may be worried about, either consciously or subconsciously, marking the government negatively in a survey. To address this concern, the end of the survey employed a list experiment to measure variation in levels of trust. The list experiment question gives respondents a list of organizations that they may trust and then asks them to report the number of organizations that they trust. Half of the respondents were given a list of organizations that included a sensitive organization (such as the central government).

Table 8: Attitudes on general questions

Q1	I don't notice government use of technology to monitor my behavior in my daily life.
Q2	The government is likely to securely store my online personal data and information better than private companies.
Q3	It doesn't bother me if private companies sell my user data to third parties if it will allow me to use their applications for free.
Q4	I'm worried that my payment information might be stolen or compromised.

Table 9: General questions data

	2021 (N=1500)		2023 (N=2007)		Diff. in Means	p
	Mean	Std. Dev.	Mean	Std. Dev.		
Do not notice government tracking	4.27	1.34	4.46	1.51	0.20	0.00
Government secures data better than private	5.50	1.27	5.48	1.36	-0.02	0.71
OK if apps sell my data so can use for free	2.27	1.55	2.44	1.77	0.17	0.00
Payment data stolen worries	5.64	1.27	5.50	1.53	-0.14	0.00

The other half was given a list without the sensitive organization included. The idea is that respondents may be more comfortable reporting that they do not trust an organization when they do not have to consciously mark on a survey that they do not trust it but instead is part of a mental math calculation along with other items (Blair and Imai, 2012). List experiments have been used across many fields to study sensitive topics such as racism, abortion, and sexual violence (Moseson et al., 2017; Redlawsk et al., 2010; Traunmüller et al., 2019). Since trust in corporations does not seem likely to generate preference falsification problems, they were not included as a separate list experiment. However, the contents of the list items are largely technology companies so some inference can be drawn about trust in technology companies versus the government.

The results of the list experiment are shown in Table 11. For respondents shown the sensitive list item, one can estimate that about 60% of people selected it (given that the baseline level is about 0.6 number of items selected lower than compared to when respondents are shown the sensitive list item). While it is hard to directly compare with the Likert-scaled questions, note that the average on the Likert scale questions for various trust measure of government use of data was about 4.5 out of 7, or roughly the 65th percentile of the scale. By way of contrast, 3 out of the 4 list items were private technology firms and the other list item was their family. Considering private corporations, if one speculatively assumes is that most people will select the trust in their family list item, roughly indicating that a little over 1 out of 3 of the private corporations on the list were mentally chosen. This roughly accords with the average responses to trust in private corporations of 2.5 out of 7 on a Likert scale. These results are not meant to definitively confirm that there are no issues of preference falsification. That being said, the results do strongly parallel to the directly asked questions, adding confidence to the

Table 10: List experiment questions

Q1	<p>For the question below, please count how many of the entities listed below you trust with your online personal information, such as details about your purchase history, your browsing</p> <ul style="list-style-type: none"> • Alibaba • Tencent • Foreign internet companies (such as Microsoft) • Your family <p>->Sensitive item only shown to 50 per cent of respondents</p> <ul style="list-style-type: none"> • The central government
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interpretation of the results of the previous tables.

Additional Analysis

In order to help rule out the possibility that some of the differences observed between 2021 and 2023 in the government trust and comfortability of being monitored are driven simply by demographic changes, Table 12 reports on the results of a simple regression framework. The response variables are: 1) trust in the central government, 2) trust in the local government, 3) comfort with central government monitoring, 4) comfort with local government monitoring, and 5) comfort with private company monitoring. Included in the regression are a standard suite of demographic variables and the year variable.

The year variable magnitude matches almost exactly the simple difference in means observed in Section . This result is unsurprising given the very modest difference in demographics between the two waves of the survey. It may be the case that other factors besides the Covid situation precipitated the observed difference in means though it is hard to imagine any event or trend that had a stronger impact than the 2022 lockdowns. In terms of interesting coefficients, age is consistently positively related to acceptance of government monitoring and negatively related to private corporation monitoring. This finding may partially explain events like the White Paper Revolution, which was primarily a protest of the young. However, the magnitude of coefficient is not very impactful - changing a respondent's age from 20 to 70 changes the predicted response to the acceptance of monitoring questions by 0.5 points - less than the size of the year coefficient (0.6). Not being a party member also decreased acceptance of monitoring by about 0.2 points. Income is sometimes a relevant predictor though inconsistently so. Overall, the regressions have a very low R², indicating that most of the variation in individual responses is due to

Table 11: List experiment summary data

(a) Central government list experiment

	2021		2023	
	SI not shown	SI shown	SI not shown	SI shown
Number of items selected	2.19	2.84	2.18	2.84

SI = sensitive item

(b) Local government list experiment

	2021		2023	
	SI not shown	SI shown	SI not shown	SI shown
Number of items selected	2.25	2.86	2.24	2.77

SI = sensitive item

factors outside of demographic variables. So while suggestive, the demographic variables have only limited substantive relationship to variation in attitudes on these questions.

Turning toward differences between government and private protection of privacy, Table 13 presents regression results for tracking questions on the same suite of demographic controls. In particular, these regressions consider the question of “how closely do you think x tracks your online activity?” (regressions 1-3) and “How comfortable are you with x knowing personal details about your activity online?” (regressions 4-6). Again, it should be repeated that the R^2 for all regressions are also very low - most variation in question response is not accounted for in the model. However, there are a few interesting observations to make. First is that those in larger cities are more likely to notice monitoring as compared to those living small cities, even controlling for income and education. The magnitude of the coefficient is not large (0.3 for those living in big cities) but does suggest that urban surveillance does not go unnoticed. While the year coefficient is significant in some instances, the magnitude is very small (0.1) indicating a substantively insignificant effect. Interestingly, not being a party member is associated both with less noticing of monitoring and less comfort with organizations knowing their private details. Again, the coefficients are relatively small but does suggest that having some level of knowledge of what kind of surveillance is associated with more positive views of its use. Some of the other demographic variables are occasionally significant but not in a way that indicates a consistent and meaningful relationship with the response variables.

Finally, a look at the subset of the data for those living in Xi’an, Shanghai, and Wuhan. Both Shanghai and Xi’an suffered painful lockdowns in December of 2021 and April 2022, respectively. Wuhan was the original source of the Covid outbreak and underwent a many months long set of lockdowns and restrictions in 2021. The results for key questions broken down by city can be found in Table 14. The set of questions relating to overall trust and whether respondents see good reasons to allow each entity to collect their data (part (a))

Table 12: Regressions on individual question results

	CG Trust	LG Trust	CG Monitor	LG Monitor	PR Monitor
(Intercept)	5.813*** (0.174)	5.364*** (0.186)	4.256*** (0.194)	4.257*** (0.195)	3.640*** (0.236)
Age	0.002 (0.002)	0.000 (0.002)	0.009*** (0.002)	0.010*** (0.002)	−0.007** (0.003)
Middle school	−0.132 (0.122)	−0.240+ (0.130)	−0.042 (0.135)	−0.069 (0.136)	−0.121 (0.165)
High school	−0.032 (0.114)	−0.215+ (0.121)	0.101 (0.127)	0.074 (0.127)	−0.158 (0.154)
University	−0.023 (0.114)	−0.189 (0.121)	0.192 (0.127)	0.202 (0.127)	−0.149 (0.154)
Grad school	−0.130 (0.143)	−0.175 (0.152)	0.018 (0.159)	0.105 (0.159)	−0.166 (0.193)
Income 3000-5999	0.276** (0.089)	0.272** (0.095)	0.022 (0.100)	0.097 (0.100)	−0.084 (0.121)
Income 6000-9999	0.258** (0.090)	0.242* (0.096)	0.115 (0.100)	0.148 (0.100)	−0.160 (0.122)
Income 10000-19999	0.288** (0.091)	0.316** (0.097)	0.184+ (0.102)	0.161 (0.102)	−0.437*** (0.124)
Income 20000-49999	0.285** (0.107)	0.341** (0.114)	0.188 (0.119)	0.171 (0.119)	−0.501*** (0.145)
Income 50000-99999	0.237 (0.156)	0.362* (0.166)	0.253 (0.174)	0.008 (0.174)	−0.107 (0.211)
Income > 100000	0.189 (0.173)	0.166 (0.184)	−0.034 (0.193)	−0.051 (0.193)	−0.061 (0.234)
Male	0.034 (0.043)	−0.003 (0.046)	−0.075 (0.048)	−0.092+ (0.048)	−0.010 (0.058)
Not a party member	−0.112+ (0.065)	−0.038 (0.069)	−0.215** (0.073)	−0.186* (0.073)	0.020 (0.088)
Location: small city	0.040 (0.072)	0.132+ (0.076)	0.078 (0.080)	0.017 (0.080)	−0.129 (0.097)
Location: mid city	−0.030 (0.076)	0.233** (0.081)	0.073 (0.085)	0.019 (0.085)	−0.156 (0.103)
Location: big city	−0.151* (0.075)	0.176* (0.080)	0.083 (0.084)	0.046 (0.084)	−0.079 (0.102)
Year 2023	−0.245*** (0.044)	−0.187*** (0.047)	0.612*** (0.049)	0.402*** (0.049)	0.150* (0.059)
Num.Obs.	3507	3507	3507	3507	3507
R2	0.018	0.015	0.055	0.030	0.017

+ p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001

Reference categories are Less than middle, Income 0-2999, Female, Party member, Countryside

Table 13: Regressions on government vs. private tracking

	CG Track	LG Track	PR Track	CG PD	LG PD	PR PD
(Intercept)	4.121*** (0.188)	4.009*** (0.188)	3.913*** (0.224)	4.247*** (0.214)	4.209*** (0.216)	3.481*** (0.238)
Age	0.000 (0.002)	0.002 (0.002)	0.002 (0.003)	0.004+ (0.003)	0.002 (0.003)	-0.007* (0.003)
Middle school	-0.066 (0.131)	-0.085 (0.131)	0.146 (0.156)	-0.143 (0.149)	-0.013 (0.151)	-0.033 (0.166)
High school	0.021 (0.123)	0.010 (0.123)	0.037 (0.147)	-0.062 (0.140)	0.046 (0.141)	-0.059 (0.155)
University	0.006 (0.123)	0.019 (0.123)	0.129 (0.146)	-0.049 (0.140)	0.046 (0.141)	-0.169 (0.155)
Grad school	0.218 (0.154)	0.259+ (0.154)	0.244 (0.184)	-0.081 (0.176)	-0.082 (0.177)	0.088 (0.195)
Income 3000-5999	-0.013 (0.096)	0.015 (0.097)	-0.017 (0.115)	0.026 (0.110)	-0.052 (0.111)	-0.117 (0.122)
Income 6000-9999	0.073 (0.097)	0.035 (0.097)	0.186 (0.116)	0.081 (0.111)	-0.046 (0.112)	-0.045 (0.123)
Income 10000-19999	0.069 (0.099)	0.064 (0.099)	0.244* (0.118)	-0.006 (0.112)	-0.117 (0.113)	-0.288* (0.125)
Income 20000-49999	0.129 (0.115)	0.136 (0.115)	0.384** (0.137)	0.082 (0.131)	-0.177 (0.132)	-0.344* (0.146)
Income 50000-99999	0.290+ (0.168)	0.134 (0.168)	0.554** (0.201)	-0.016 (0.192)	-0.067 (0.193)	-0.085 (0.213)
Income > 100000	0.146 (0.187)	0.038 (0.187)	0.320 (0.222)	-0.141 (0.212)	-0.198 (0.214)	-0.196 (0.236)
Male	0.012 (0.046)	-0.092* (0.047)	0.184*** (0.055)	0.010 (0.053)	0.057 (0.053)	0.103+ (0.059)
Not a party member	-0.125+ (0.070)	-0.090 (0.070)	-0.178* (0.084)	-0.203* (0.080)	-0.227** (0.081)	-0.220* (0.089)
Location: small city	0.089 (0.077)	0.096 (0.077)	0.070 (0.092)	-0.022 (0.088)	-0.058 (0.089)	-0.222* (0.098)
Location: mid city	0.187* (0.082)	0.218** (0.082)	0.145 (0.098)	0.065 (0.093)	0.012 (0.094)	-0.253* (0.104)
Location: big city	0.356*** (0.081)	0.335*** (0.081)	0.270** (0.097)	0.072 (0.093)	0.086 (0.093)	-0.170+ (0.103)
Year 2023	0.112* (0.047)	0.148** (0.047)	-0.014 (0.056)	-0.083 (0.054)	-0.041 (0.054)	-0.131* (0.060)
Num.Obs.	3507	3507	3507	3507	3507	3507
R2	0.020	0.020	0.026	0.006	0.005	0.014

+ p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001

Reference categories are Less than middle, Income 0-2999, Female, Party member, Countryside

suggests that the only city that is significantly different from the overall pattern of cities is Shanghai, but in ways that one might expect. Shanghainese trust their local government more than cities overall (the Shanghai coefficient on LG Trust). This is not a surprising result given that Shanghai has long been seen as one of the most technocratic and sophisticated local governments (citation). However, the results also seem to indicate that Shanghai residents saw a very substantively large decrease in trust in their local governments (the Shanghai x 2023 coefficient on CG Trust and LG Trust). Furthermore Shanghai residents also had a major decrease in agreement that the government has a good reason to monitor them in 2023 (the Shanghai x 2023 coefficient on CG Monitor and LG monitor). The size of the coefficient on all of these is also substantively very large. None of the other cities seem significantly different from the average of other cities or locations.

These results make sense given the severity of the Shanghai lockdown and the post-lockdown strict controls. For many residents, the lockdown was highly traumatic but without a sense of shared unity or purpose, as was the case in the 2020 Wuhan lockdown. Furthermore, the Shanghainese local government, long considered one of the most capable city governments in China, seriously mishandled the logistics of the lockdown, leaving many people scrambling for food and medicine. However, the results presented in part (b) complicate this story somewhat. Shanghai does not appear to be any different than other cities while respondents from Wuhan consistently are more likely to notice tracking efforts. I have no strong hypothesis as to the Wuhan results but the Shanghai findings may be suggestive that respondents are reading this set of questions as referring to the present rather than including the pandemic time period.

Conclusion

Table 14: Key questions by city

(a) Trust questions

	CG Trust	LG Trust	CG Monitor	LG Monitor	PR Monitor
(Intercept)	5.994*** (0.036)	5.541*** (0.038)	4.673*** (0.040)	4.663*** (0.040)	2.919*** (0.049)
Shanghai	0.163 (0.172)	0.371* (0.183)	0.292 (0.192)	0.214 (0.192)	-0.235 (0.234)
Xi'an	0.052 (0.197)	0.063 (0.210)	0.025 (0.220)	-0.082 (0.220)	0.151 (0.268)
Wuhan	-0.173 (0.109)	-0.071 (0.117)	-0.169 (0.122)	-0.133 (0.122)	-0.078 (0.149)
2023	-0.227*** (0.047)	-0.190*** (0.051)	0.608*** (0.053)	0.405*** (0.053)	0.194** (0.065)
Shanghai x 2023	-0.634** (0.215)	-0.613** (0.230)	-0.633** (0.241)	-0.559* (0.241)	-0.007 (0.293)
Xi'an x 2023	-0.045 (0.303)	-0.092 (0.323)	0.081 (0.339)	0.079 (0.339)	-0.264 (0.412)
Wuhan x 2023	0.064 (0.145)	0.161 (0.154)	0.047 (0.162)	0.006 (0.162)	-0.085 (0.197)

+ p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001

(b) Data use questions

	CG Track	LG Track	PR Track	CG PD	LG PD	PR PD
(Intercept)	4.264*** (0.039)	4.192*** (0.039)	4.360*** (0.047)	4.187*** (0.044)	4.054*** (0.044)	2.649*** (0.049)
Shanghai	0.490** (0.186)	0.439* (0.186)	0.166 (0.223)	0.146 (0.211)	0.209 (0.213)	-0.088 (0.235)
Xi'an	0.340 (0.213)	0.343 (0.213)	0.314 (0.255)	0.022 (0.242)	0.039 (0.244)	0.537* (0.269)
Wuhan	0.146 (0.118)	0.046 (0.119)	-0.009 (0.142)	0.243+ (0.134)	0.237+ (0.135)	-0.179 (0.150)
2023	0.079 (0.051)	0.112* (0.051)	-0.102+ (0.062)	-0.064 (0.058)	-0.009 (0.059)	-0.125+ (0.065)
Shanghai x 2023	-0.289 (0.233)	-0.259 (0.234)	0.180 (0.280)	-0.279 (0.265)	-0.254 (0.267)	0.039 (0.295)
Xi'an x 2023	-0.232 (0.328)	-0.453 (0.328)	-0.153 (0.393)	0.371 (0.372)	0.077 (0.375)	-0.609 (0.414)
Wuhan x 2023	0.273+ (0.157)	0.348* (0.157)	0.444* (0.188)	-0.153 (0.178)	-0.223 (0.179)	0.328+ (0.198)

+ p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001

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