

Article

Social Trust and Commercial Insurance Participation in China: Distinguishing Within-Person Change from Between-Person Differences

Saad Andalib Syed Shah

College of Business and Public Management, Wenzhou-Kean University, 88 Daxue Rd., Ouhai, Wenzhou 325060, China; ssaadand@wku.edu.cn

Abstract

This study examines how trust is associated with household commercial-insurance participation in China and separates two sources of variation that pooled estimates combine. Within-person change asks whether changes in the same respondent's trust across survey waves are accompanied by changes in that respondent's household insurance participation. Between-person differences compare respondents who maintain different average trust levels over time. Using six waves of the China Family Panel Studies (CFPS) from 2012 to 2022, we analyze 47,006 respondent-wave observations from 15,176 respondents. Pooled linear probability and Probit models show a positive association between the aggregate trust index and insurance participation. In contrast, respondent fixed-effects, conditional fixed-effects Logit, and city-by-wave fixed-effects models provide little evidence of a systematic within-person association. Correlated random-effects estimates locate most of the pooled relationship in persistent differences between respondents. The trust dimensions also differ: persistent trust in strangers is positively associated with participation, whereas trust in local government cadres is negatively associated. Expenditure models lead to a similar conclusion. The results show why generalized interpersonal trust and institutional trust should not be treated as interchangeable and why pooled trust–insurance associations need not describe changes within the same person over time.

Keywords: social trust; commercial insurance; household finance; panel data; within-between decomposition; China

JEL Classification: G22; D14; C23



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1. Introduction

China's commercial-insurance market expanded rapidly during the period studied in this paper. Premium income received by insurance companies rose from RMB 1.55 trillion in 2012 to RMB 4.70 trillion in 2022 ([National Bureau of Statistics of China, 2013, 2023](#)). In the analytical China Family Panel Studies (CFPS) sample, the share of respondent-wave observations with positive household commercial-insurance expenditure rises from 10.5 percent in 2012 to 40.6 percent in 2022. The trust measures, however, change much less over the same period. This contrast motivates a simple question: when trust and commercial-insurance participation are positively related in pooled data, does the relationship reflect changes occurring within the same person, or persistent differences between people?

The distinction is substantive rather than merely statistical. A *within-person* relationship asks whether the household associated with a respondent is more likely to participate

in waves when that respondent reports more trust than usual. A *between-person* relationship asks whether respondents who are persistently more trusting than others are also persistently more likely to belong to households that participate in commercial insurance. Pooled estimates combine these two sources of variation. They can, therefore, be positive even when changes in trust within the same respondent are unrelated to changes in insurance participation.

Standard insurance theory explains demand through risk aversion and the transfer of uncertain future losses across states of the world (Mossin, 1968; Yaari, 1965). Insurance markets also contain informational and contractual frictions. Adverse selection affects the availability and design of contracts (Rothschild & Stiglitz, 1976), while uncertainty about whether an insurer will honor a future claim can reduce insurance demand even when coverage is otherwise valuable (Peter & Ying, 2020). Gennaioli et al. (2022) formalize this point by showing how trust and honesty can shape insurance contracts, claim disputes, and payments when formal enforcement is costly.

Trust may reduce these non-price frictions by lowering the perceived risk of opportunistic behavior and the costs of obtaining information, monitoring counterparties, and relying on formal institutions. In household finance, social capital and generalized trust are associated with greater use of institutional credit and participation in financial markets (Guiso et al., 2004, 2008). Financial literacy and the capacity to evaluate complex products also influence household financial participation (Campbell, 2006; Lusardi & Mitchell, 2014). These mechanisms are especially relevant to insurance because the household pays before the uncertain event occurs and depends on future contract performance.

Recent evidence also points to the importance of information, trust, and market access in insurance decisions. Field experiments in India identify lack of trust, liquidity constraints, and limited product salience as barriers to rainfall-insurance demand (Cole et al., 2013). In rural China, information transmitted through social networks affects insurance take-up (Cai et al., 2015). CFPS-based studies associate Internet use and insurance-market development with household commercial-insurance participation (Li et al., 2021; Yang et al., 2019). More recent Chinese evidence links commercial-insurance engagement to financial literacy and insurance-specific trust (Guo et al., 2024), while digital payment and information access are associated with commercial-insurance purchasing (Gao et al., 2025). Most directly, Cao et al. (2025) distinguish interpersonal and institutional trust and report that trust structure is associated with commercial-insurance participation.

These findings make the definition of “social trust” important. Trust in close family members, neighbors, strangers, professionals, and public officials does not necessarily represent the same underlying attitude. The radius-of-trust literature distinguishes particularized in-group trust from generalized trust that extends to unfamiliar others (Delhey et al., 2011). Evidence from China likewise shows that relational exchange and generalized trust in strangers are related but conceptually distinct (Nee et al., 2018). The CFPS trust battery is well suited to this distinction because it separately records trust in parents, neighbors, people met for the first time, doctors, and local government cadres.

This multidimensionality is particularly relevant in China. Commercial insurance operates alongside extensive public social-insurance arrangements, while household insurance participation also depends on market development, information access, and culturally embedded financial behavior. Research on the Chinese insurance market finds that cultural and demand-side factors are important for insurance consumption (Zhong et al., 2015). Trust in strangers may facilitate impersonal exchange with unfamiliar agents and firms, whereas trust in local cadres captures confidence in public institutions and may be related to expectations about public protection. The two measures can, therefore, have different, even opposing, associations with private commercial insurance.

The present paper uses six CFPS waves—2012, 2014, 2016, 2018, 2020, and 2022—to examine these issues (Xie & Hu, 2014; Xie & Lu, 2015). The principal analytical sample contains 47,006 respondent-wave observations from 15,176 respondents. Commercial-insurance participation is measured from household commercial-insurance expenditure, while trust is reported by the individual respondent. The unit of analysis is consequently a respondent-anchored household-wave observation rather than a direct observation of an individual policyholder's purchase decision.

The empirical analysis proceeds in complementary stages. Pooled linear probability and Probit models describe the conventional association. Respondent fixed-effects linear probability models ask whether changes in trust within the same respondent are associated with changes in household participation. Conditional fixed-effects Logit provides a nonlinear robustness check among respondents whose participation status changes. A correlated random-effects (Mundlak) specification separates the within-person association from the total association associated with persistent between-person differences. City-by-wave fixed effects account for local conditions that change over time. Additional models examine unconditional commercial-insurance expenditure and spending among repeated positive spenders.

Three findings stand out. First, pooled models show a positive association between the aggregate trust index and commercial-insurance participation. Second, this association becomes small and statistically insignificant in respondent fixed-effects models; the five trust dimensions are also jointly insignificant within respondents. Conditional Logit and city-by-wave fixed-effects estimates lead to the same substantive conclusion. Third, the correlated random-effects decomposition shows that the pooled association is concentrated mainly in persistent differences between respondents. Trust in strangers has a positive total between-person association, while trust in local cadres has a negative one.

The paper, therefore, makes three contributions. First, it clarifies what the commonly reported trust–insurance association represents in longitudinal data: the association is primarily between respondents rather than a systematic relationship between short-run changes in trust and changes in household insurance participation. Second, it treats trust as multidimensional rather than interchangeable across social objects. Third, it brings together participation, expenditure, nonlinear fixed-effects, correlated random-effects, and local-time fixed-effects specifications within a ten-year CFPS panel. The paper does not claim a causal effect of trust; its contribution is to sharpen the interpretation of the observed association.

The remainder of the paper proceeds as follows. Section 2 develops the conceptual framework and China-specific context. Section 3 describes the CFPS data, sample construction, and variables. Section 4 presents the empirical strategy. Section 5 reports the results. Section 6 discusses interpretation, implications, and limitations. Section 7 concludes.

2. Conceptual Framework and Related Literature

2.1. Trust and Participation in Formal Financial Markets

Trust becomes economically relevant when one party must rely on another party's future conduct. Financial contracts have precisely this feature: households transfer resources today in return for a promise of future performance. The value of the transaction, therefore, depends not only on prices and expected returns but also on beliefs about counterparties and the institutions that support the contract.

Trust can reduce perceived opportunism and the non-monetary costs of acquiring information, monitoring counterparties, and enforcing agreements. Guiso et al. (2004) show that social capital is associated with greater use of formal financial instruments and institutional credit. Guiso et al. (2008) similarly find that lower trust is associated with

lower stock-market participation. These studies motivate a general connection between trust and willingness to enter impersonal financial transactions.

Commercial insurance makes this connection especially clear. A household pays a premium before knowing whether an insured event will occur and relies on the insurer to recognize and settle a valid future claim. Ambiguity about contract nonperformance can, therefore, lower insurance demand (Peter & Ying, 2020). In the model of Gennaioli et al. (2022), policyholders may submit invalid claims and insurers may deny valid ones; trust and honesty influence contract design, disputes, and payments when formal enforcement is costly.

2.2. Trust Is Multidimensional

The term “social trust” can obscure important distinctions. Particularized trust is directed toward close or familiar others; generalized trust extends to unfamiliar people; and institutional or professional trust concerns actors whose authority or expertise derives from formal roles. The radius of trust is, therefore, central to interpretation (Delhey et al., 2011). In China, relational exchange can spill over into generalized trust, but trust in known partners and trust in anonymous others remain conceptually distinct (Nee et al., 2018).

The CFPS measures trust in several specific objects. Trust in parents captures close-family or particularized trust. Trust in neighbors captures community-level trust. Trust in people met for the first time is the closest measure of generalized interpersonal trust. Trust in doctors reflects confidence in professional service providers. Trust in cadres, defined in the questionnaire as local government officials, reflects institutional or governmental trust (China Family Panel Studies, 2022a). These measures should not be expected to have identical relationships with commercial insurance.

The mechanisms can differ in sign. Family and neighborhood trust may facilitate information sharing and informal risk support, but informal support may also substitute for formal protection. Trust in unfamiliar people may lower perceived transaction risk when households deal with agents, insurers, underwriters, or claims personnel outside their existing networks. Trust in doctors may be related to confidence in formal professional services. Trust in local cadres can plausibly raise confidence in regulation and contract enforcement, but it may also be associated with greater confidence in public protection. An aggregate index can conceal these offsetting relationships.

2.3. The Chinese Institutional Context

China provides a useful setting because commercial insurance has expanded rapidly while public social-insurance programmes, informal family support, and private market protection coexist. Commercial insurance is, therefore, not chosen in an institutional vacuum. Households may evaluate private coverage against existing public protection, expected family support, access to agents and digital channels, and their ability to understand complex contracts.

Demand-side and cultural factors have long been important in the Chinese insurance market. Zhong et al. (2015) show that cultural factors help explain variation in insurance consumption in China. More recent household evidence emphasizes financial literacy and product-specific trust (Guo et al., 2024). Digital access can also reduce information frictions: online payment is associated with commercial-insurance purchasing partly through information, social interaction, and financial literacy (Gao et al., 2025). These findings complement earlier CFPS evidence linking Internet use and insurance-market development to commercial-insurance participation (Li et al., 2021; Yang et al., 2019).

Social networks are also relevant. In a randomized study of rural China, Cai et al. (2015) show that insurance information transmitted through social networks affects take-up.

This result is important for the present paper because it shows that household decisions about unfamiliar insurance products can be embedded in social relationships even when the final contract is formal.

The distinction between generalized and institutional trust is especially important. Cao et al. (2025) report that interpersonal and institutional trust are associated with commercial-insurance participation from an incomplete-contract perspective. The present study extends that discussion by asking whether those associations arise from changes in trust within respondents or from persistent differences between respondents.

2.4. Conceptual Framework

Figure 1 summarizes the framework. The left side separates the five trust objects rather than treating them as interchangeable. The middle identifies channels through which trust may be associated with insurance decisions: confidence in counterparties, information and transaction costs, informal risk sharing, and confidence in public or professional institutions. The right side distinguishes participation from expenditure outcomes. Persistent respondent characteristics can generate between-person associations, while changes in trust and household circumstances can generate within-person associations. The empirical strategy is designed to separate these two sources of variation.

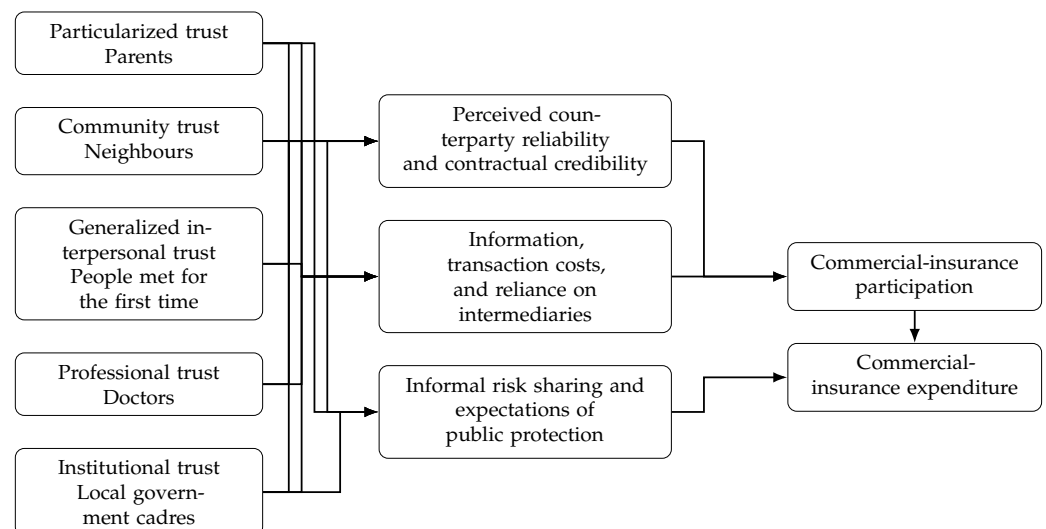


Figure 1. Conceptual Framework Linking Trust Dimensions to Commercial-Insurance Outcomes. *Note:* The figure organizes the hypothesized channels; it does not assert causal identification. The empirical analysis separately examines within-person changes and persistent between-person differences in trust.

2.5. Related Evidence and Empirical Expectations

Evidence from insurance markets supports the relevance of non-price frictions. In India, lack of trust, liquidity constraints, and limited product salience restrict rainfall-insurance demand (Cole et al., 2013). In China, social networks, Internet use, market development, financial literacy, and digital access are all associated with insurance participation (Cai et al., 2015; Gao et al., 2025; Guo et al., 2024; Li et al., 2021; Yang et al., 2019). These studies establish a strong reason to examine trust, but they do not by themselves distinguish within-person change from persistent between-person differences.

The framework yields three empirical expectations without imposing a causal interpretation.

H1. Pooled trust–participation association. Higher trust is associated with greater household commercial-insurance participation in pooled data.

H2. Within-between distinction. *The pooled association may reflect either (i) changes in trust within the same respondent that coincide with changes in household insurance participation or (ii) persistent differences between respondents with different average trust profiles. The fixed-effects and correlated random-effects models distinguish these components.*

H3. Heterogeneity across trust dimensions. *The direction and magnitude of the association differ across particularized, community, generalized interpersonal, professional, and governmental trust.*

H3 does not predict a common sign. Generalized trust may facilitate impersonal market exchange, whereas family or community trust may complement or substitute for formal insurance through informal support. Institutional trust may support confidence in regulation but may also correlate with greater reliance on public protection. The object of trust is, therefore, part of the substantive question rather than a measurement detail.

3. Data and Variable Construction

3.1. Data Source and Choice of Survey Waves

The empirical analysis uses the China Family Panel Studies (CFPS), a large-scale longitudinal survey conducted by the Institute of Social Science Survey at Peking University. The CFPS collects information at the individual, household, and community levels and follows respondents over time (Xie & Hu, 2014). Its multistage sampling design and longitudinal structure are described by Xie and Lu (2015).

The study uses six biennial waves: 2012, 2014, 2016, 2018, 2020, and 2022. The choice to begin in 2012 is a measurement-consistency decision, not a claim that the 2010 baseline contains no relevant trust or insurance questions. CFPS documentation notes that the 2010 household-expenditure module was comparatively aggregated, that the 2012 questionnaire substantially itemized the expenditure categories, and that the 2014 design refined the 2012 structure (China Family Panel Studies, 2022b). Because the principal insurance measures in this paper are constructed from household commercial-insurance expenditure, the analysis begins with the 2012 expenditure design and harmonizes subsequent waves to it.

The analytical data window was frozen at the 2022 wave. The 2024 and 2026 survey rounds are, therefore, outside the dataset used for this study and are not selectively omitted from an otherwise harmonized panel. Extending the study beyond 2022 would require a new wave-specific harmonization of questionnaire items, household expenditure measures, identifiers, and sample definitions. The analysis retains the 2012–2022 design so that the reported estimates, tables, and longitudinal sample remain internally comparable.

3.2. Construction of the Analytical Sample

For each wave, respondent-level information is linked to household economic information. The individual component supplies trust assessments and respondent characteristics, whereas the household component supplies commercial-insurance expenditure and household characteristics. The resulting record is, therefore, best described as a *respondent-anchored household-wave observation*: trust is reported by an individual respondent, while the insurance outcome is measured for that respondent's household.

The merged pre-cleaning file contains 64,865 rows. Ninety-five records from 2012 lack the permanent respondent identifier (pid) and cannot be linked longitudinally; removing them yields 64,770 respondent-wave observations for 28,965 identifiable respondents. Among records with a valid pid, no respondent-year pair appears more than once.

The study does not impute missing analytical variables after harmonization. The common complete-case sample requires valid commercial-insurance information, all five trust measures, household size, education, marital status, rural residence, and the other variables used in the common specification. This leaves 58,280 observations. The principal

fixed-effects analysis additionally requires at least two complete observations for the same respondent, yielding 47,006 observations from 15,176 respondents.

The largest sources of missingness in the harmonized panel are the trust items (approximately 3.6–4.0 percent per item), total household expenditure (3.2 percent), years of education (1.7 percent), rural residence (1.3 percent), and commercial-insurance expenditure (about 1.0 percent). Missingness in household size, harmonized age, sex, and marital status is smaller. Because different outcomes do not require exactly the same inputs, Appendix A Table A1 also reports a participation-specific robustness sample that does not condition on total household expenditure, age, or sex.

The panel is unbalanced. Of the 28,965 identified respondents, 12,293 appear in one wave, 6485 in two, 4495 in three, 3091 in four, 1948 in five, and 653 in all six waves. Restricting the analysis to a balanced six-wave panel would discard most respondents and create a selected sample of unusually persistent survey participants. Fixed-effects estimation instead uses all respondents with the repeated observations required by the relevant specification.

Table 1 summarizes the sample and Figure 2 displays the principal screening steps.

Table 1. Sample and Panel Structure.

<i>Panel A: Sample construction</i>		
Item	Number	
Merged pre-cleaning rows	64,865	
Rows without permanent respondent identifier	95	
Identifiable respondent-wave observations	64,770	
Unique identifiable respondents	28,965	
Common complete-case observations	58,280	
Main estimation observations	47,006	
Respondents in main estimation sample	15,176	
<i>Panel B: Distribution by number of observed waves</i>		
Number of waves	Respondents	Percent
1	12,293	42.44
2	6485	22.39
3	4495	15.52
4	3091	10.67
5	1948	6.73
6	653	2.25
Total	28,965	100.00

Notes: The study combines six CFPS waves from 2012 through 2022. The permanent respondent identifier, pid, links observations across waves. The main estimation sample requires at least two complete respondent-wave observations.

3.3. Commercial-Insurance Outcomes

The CFPS household economic questionnaire asks about expenditure on commercial insurance during the preceding 12 months. In the 2022 questionnaire, the item explicitly lists commercial medical insurance, automobile insurance, property insurance, and commercial life insurance as examples (China Family Panel Studies, 2022a). The primary participation variable equals one when the household reports positive commercial-insurance expenditure and zero when valid reported expenditure is zero. Thus, the measure is an expenditure-based indicator of household participation, not a direct indicator of individual policy ownership.

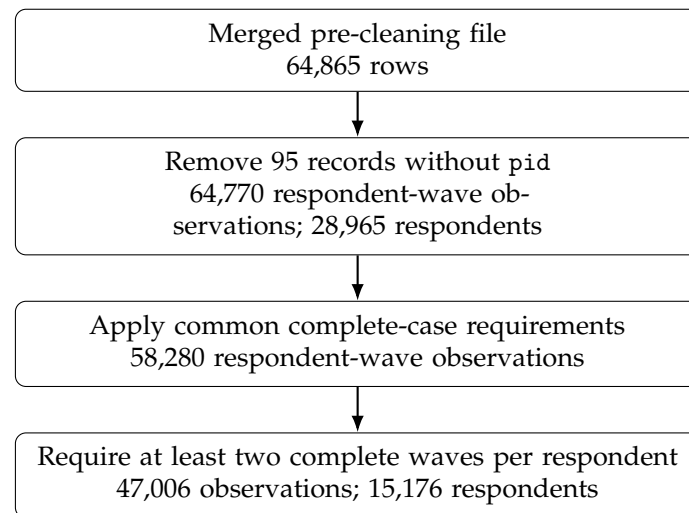


Figure 2. Construction of the Main Analytical Sample.

Because the expenditure measure is household-level, it cannot distinguish a respondent's own voluntary purchase from coverage arranged by another household member. The household expenditure item records whether the household paid for commercial insurance but does not identify which household member initiated the purchase, selected the policy, or was covered by every component of the expenditure. We consequently interpret the outcome at the household level and avoid attributing the purchase decision solely to the respondent.

The analysis uses three outcome concepts. First, *participation* is the binary positive-expenditure indicator described above. Second, *unconditional expenditure* is

$$E_{it}^U = \ln(1 + \text{real commercial-insurance expenditure}_{it}), \quad (1)$$

which retains zero expenditures and, therefore, reflects both participation and the amount spent. Third, *conditional expenditure* is

$$E_{it}^P = \ln(\text{real commercial-insurance expenditure}_{it}), \quad \text{for expenditure}_{it} > 0, \quad (2)$$

which describes the intensive margin among positive spenders. The conditional expenditure model is restricted to respondents whose households report positive expenditure in at least two waves, producing 9132 observations from 3523 respondents.

Nominal expenditure is converted to constant 2022 RMB using survey-year price deflators. The main pooled, respondent fixed-effects, correlated random-effects, city-by-wave fixed-effects, and unconditional expenditure models use the 47,006-observation common analytical sample. The conditional fixed-effects Logit model uses the subset of respondents whose binary participation outcome changes over time, as explained in Section 4.2.

3.4. Trust Measures

The CFPS trust battery asks respondents to rate trust in several groups on an 11-point scale. The 2022 questionnaire introduces the battery by setting 0 to “very distrustful” and 10 to “very trustworthy” and then asks how much the respondent trusts each listed group (China Family Panel Studies, 2022a). The five harmonized measures used in this study correspond to:

1. parents;
2. neighborhood/neighbors;

3. people met for the first time;
4. doctors; and
5. cadres, which the CFPS defines as local government officials.

To keep the terminology conceptually precise, we refer to these measures as *particularized family trust*, *community trust*, *generalized interpersonal trust*, *professional trust*, and *governmental or institutional trust*, respectively. “Social trust” is used only as an umbrella term for this multidimensional trust profile, not as a claim that the five items measure one homogeneous latent construct.

The aggregate trust index is the unweighted arithmetic mean of the five items:

$$T_{it}^A = \frac{T_{it}^{parent} + T_{it}^{neighbor} + T_{it}^{stranger} + T_{it}^{doctor} + T_{it}^{cadre}}{5}. \quad (3)$$

where i indexes respondents and t indexes survey waves. The terms T_{it}^{parent} , $T_{it}^{neighbor}$, $T_{it}^{stranger}$, T_{it}^{doctor} , and T_{it}^{cadre} denote respondent i 's reported trust in parents, neighbors, people met for the first time, doctors, and local government cadres, respectively, in survey wave t . Each component is measured on the 0–10 CFPS trust scale, and T_{it}^A denotes their unweighted arithmetic mean for respondent i in wave t .

The aggregate index is reported for comparability with a broad trust interpretation, while the dimension-specific specifications receive separate substantive interpretation. The CFPS also asks about trust in Americans. That item is not included in the index because it is a nationality-specific out-group attitude rather than one of the family, community, generalized-interpersonal, professional, or domestic-institutional trust domains represented in the conceptual framework. The exclusion is, therefore, conceptual rather than data-driven.

These measures do not directly ask about trust in insurance companies, agents, regulators, or claims-settlement procedures. They capture broader interpersonal and institutional orientations. Appendix A Table A2 provides the questionnaire wording and analytical interpretation of each measure.

3.5. Control Variables

The baseline regressions use a parsimonious set of variables that can be harmonized consistently across the six waves: household size, years of education, marital status, and rural residence. Pooled models additionally include respondent age and sex. Household size captures the number of people potentially requiring financial protection; education is related to the capacity to evaluate financial products; marital status reflects family responsibilities; and rural residence captures broad differences in access to financial and public services.

The control set is not intended to constitute a complete structural model of insurance demand. The paper's empirical objective is to separate within-person from between-person associations using a common six-wave specification. Respondent fixed effects absorb all stable respondent characteristics, including the time-invariant component of family background, long-run socioeconomic position, financial sophistication, and risk preferences. Survey-wave fixed effects absorb nationwide changes common to respondents in a given wave.

Income, wealth, and health are nevertheless relevant correlates of insurance participation. Consistently harmonized income measures in the analytical file are available only from 2016 onward, and a comparable six-wave household wealth measure is not available in the harmonized dataset used for the paper. Adding those variables to the baseline would, therefore, change both the study period and the estimation sample. This is particularly

undesirable for a paper whose main comparison requires the same longitudinal window across pooled, fixed-effects, and within-between specifications. The omission does not imply that current income or wealth is unimportant for insurance demand; time-varying economic circumstances remain a limitation of the analysis.

Self-rated health is available much more consistently. As an additional sensitivity check, we re-estimate the principal respondent fixed-effects models with self-rated health added and with a participation-specific sample that does not require nonmissing total household expenditure, age, or sex. The robustness sample contains 48,227 observations from 15,520 respondents. The aggregate trust coefficient remains small and statistically insignificant ($\beta = 0.0005$, $p = 0.775$); none of the five trust dimensions is individually significant, and they are jointly insignificant ($p = 0.736$). Full estimates are reported in Appendix A Table A1.

3.6. Descriptive Patterns

Table 2 reports descriptive statistics for the insurance outcomes, trust measures, and control variables. It also decomposes the variation in the main variables into overall, between-respondent, and within-respondent components. The trust measures display meaningful within-person variation, although the between-person component is generally larger.

Table 2. Descriptive Statistics and Within–Between Variation.

Variable	Mean	Standard Deviation		
		Overall	Between	Within
Commercial-insurance participation	0.269	0.444	0.343	0.290
Real insurance expenditure (2022 RMB)	1789.26	5959.48	4943.13	3686.28
Aggregate trust index	5.998	1.364	1.084	0.855
Trust in parents	9.316	1.460	1.083	1.020
Trust in neighbors	6.647	2.166	1.674	1.428
Trust in strangers	2.053	2.159	1.642	1.438
Trust in doctors	6.796	2.362	1.832	1.537
Trust in local leaders	5.177	2.674	2.094	1.713
Household size	3.687	1.818	1.688	0.764
Years of education	7.350	4.790	4.795	0.674
Respondent age	51.102	13.792	13.948	2.633
Married	0.855	0.352	0.326	0.137
Rural residence	0.741	0.438	0.405	0.171

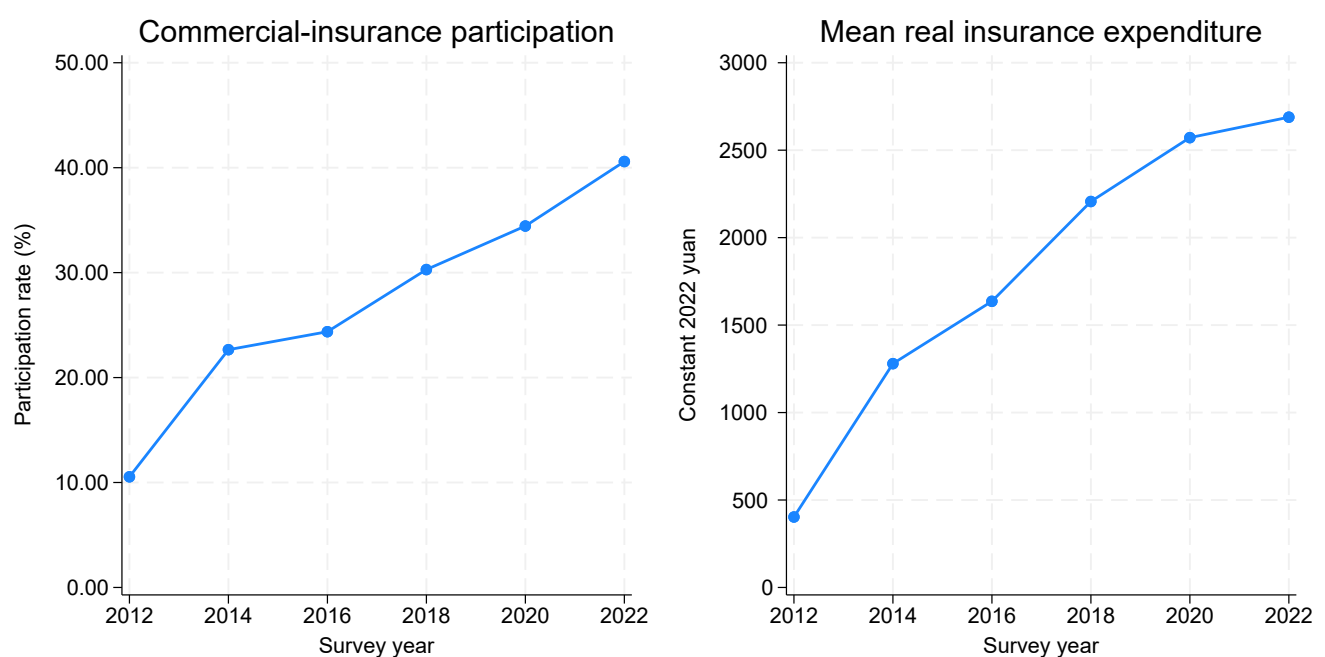
Notes: The sample contains 47,006 respondent-wave observations for 15,176 respondents. Real insurance expenditure is expressed in constant 2022 RMB and includes zero expenditures. Trust measures range from 0 to 10. Married and rural residence are indicator variables. The overall standard deviation uses all respondent-wave observations. The between standard deviation measures variation across respondents in their person-specific means, while the within standard deviation measures variation around each respondent's own mean over time. Because the panel is unbalanced, overall statistics are weighted by the number of respondent-wave observations, whereas between statistics assign equal weight to each respondent. Consequently, a between standard deviation may slightly exceed the overall standard deviation.

Table 3 and Figure 3 show a substantial increase in commercial-insurance participation during the study period. The participation rate rises from approximately 10.5 percent in 2012 to 40.6 percent in 2022. Mean real commercial-insurance expenditure also increases considerably over the same period.

Table 3. Insurance Outcomes and Trust by Survey Wave.

Variable	2012	2014	2016	2018	2020	2022
<i>Panel A: Insurance outcomes</i>						
Commercial-insurance participation (%)	10.54	22.66	24.37	30.29	34.44	40.59
Real insurance expenditure (2022 RMB)	402.88	1279.67	1635.98	2206.65	2571.91	2688.97
Observations	5975	9357	9643	9293	6916	5822
<i>Panel B: Trust measures</i>						
Aggregate trust index	5.806	5.926	5.928	5.996	6.225	6.159
Trust in parents	9.071	9.405	9.404	9.285	9.319	9.320
Trust in neighbors	6.377	6.608	6.584	6.763	6.832	6.689
Trust in strangers	2.061	1.779	1.834	2.114	2.254	2.514
Trust in doctors	6.603	6.866	6.784	6.690	7.014	6.811
Trust in local leaders	4.915	4.971	5.034	5.127	5.706	5.462

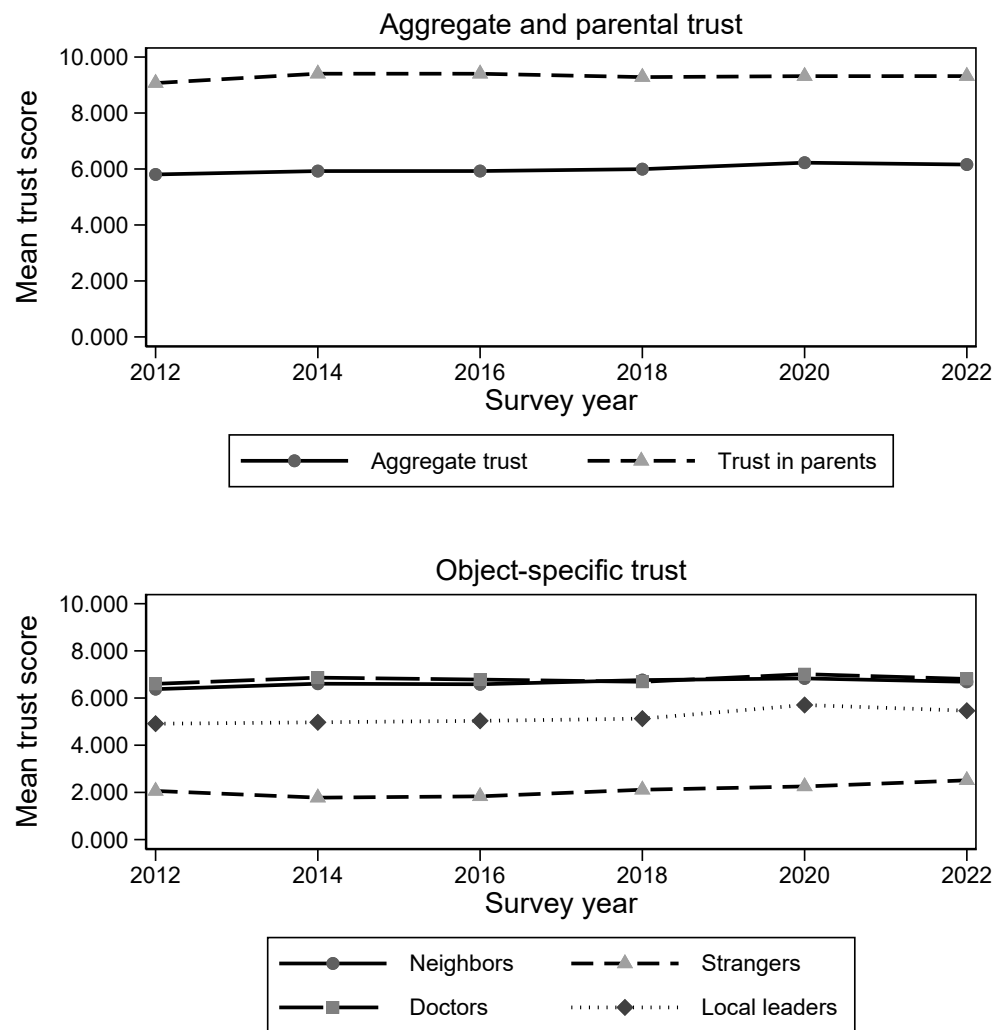
Notes: The table is based on the principal estimation sample of 47,006 respondent-wave observations. Commercial-insurance participation is the percentage of observations reporting positive insurance expenditure. Mean insurance expenditure is expressed in constant 2022 RMB and includes zero expenditures. Trust measures range from 0 to 10, with higher values indicating greater trust.



Real expenditure is expressed in constant 2022 prices. The sample contains 47,006 respondent-wave observations.

Figure 3. Commercial-Insurance Outcomes by Survey Wave.

Figure 4 reports the mean trust measures by survey wave. In contrast to the pronounced expansion in insurance participation, the trust measures change relatively modestly and do not follow a common trend. This descriptive contrast suggests that the growth of household commercial-insurance participation is unlikely to be explained primarily by changes in trust. The regression analysis, therefore, examines whether the associations observed in pooled data remain after controlling for persistent respondent characteristics and common changes over time.



Means are calculated using the main estimation sample of 47,006 respondent-wave observations. Trust measures are recorded on a 0–10 scale.

Figure 4. Trust Measures by Survey Wave.

4. Empirical Strategy

4.1. Baseline Participation Models

The empirical analysis begins with the pooled relationship between trust and household commercial-insurance participation. Let Y_{it} denote the insurance-participation indicator for the household associated with respondent i in survey wave t . The baseline linear probability model (LPM) is written as

$$Y_{it} = \alpha + \mathbf{T}_{it}'\boldsymbol{\beta} + \mathbf{X}_{it}'\boldsymbol{\gamma} + \lambda_t + \varepsilon_{it}, \quad (4)$$

where $\mathbf{T}_{it}$ denotes either the aggregate trust index or the vector of five object-specific trust measures, $\mathbf{X}_{it}$ contains the observed control variables, and λ_t represents survey-wave fixed effects. The error term is denoted by ε_{it} .

Two versions of Equation (4) are estimated. The first includes the aggregate trust index as the principal explanatory variable. The second replaces the aggregate index with trust in parents, neighbors, strangers, doctors, and local government leaders. This arrangement permits a comparison between the overall trust association and the potentially different associations across the individual trust dimensions.

The pooled models include household size, education, respondent age, marital status, sex, and rural residence. Survey-wave fixed effects absorb national developments common

to respondents in a given wave, including macroeconomic conditions, regulatory changes, and the general expansion of the commercial-insurance market.

Previous CFPS-based insurance studies have commonly examined household participation using cross-sectional or pooled regression specifications. Yang et al. (2019), for example, study Internet use and household commercial-insurance purchases, while Li et al. (2021) examine rural commercial health-insurance participation using household and provincial insurance-market characteristics. Following this literature, the pooled specifications provide a useful benchmark. However, they combine variation across respondents with variation within the same respondent over time. The central purpose of the later models is to separate these two sources of variation.

The linear probability model is convenient because its coefficients can be interpreted directly as changes in participation probability. It also places the pooled and respondent fixed-effects estimates on the same scale. Since the dependent variable is binary, Probit models are estimated as a functional-form check:

$$\Pr(Y_{it} = 1 \mid \mathbf{T}_{it}, \mathbf{X}_{it}, \lambda_t) = \Phi(\alpha + \mathbf{T}_{it}'\boldsymbol{\beta} + \mathbf{X}_{it}'\boldsymbol{\gamma} + \lambda_t), \quad (5)$$

where $\Phi(\cdot)$ is the standard normal cumulative distribution function. The Probit coefficient itself is expressed on a latent-index scale, so the paper reports average marginal effects (AMEs). For a continuous variable, an AME is the sample average of the change in predicted participation probability associated with a one-unit change in that variable, holding the remaining covariates at their observed values. This places the Probit results on a probability scale that is easier to compare with the LPM estimates (Wooldridge, 2010).

The pooled estimates are descriptive conditional associations. In particular, they do not establish whether insurance participation differs because trust changes within a given respondent or because respondents with persistently different trust profiles also differ in other stable characteristics.

4.2. Respondent Fixed-Effects Models

The principal longitudinal specification introduces respondent fixed effects:

$$Y_{it} = \alpha_i + \mathbf{T}_{it}'\boldsymbol{\beta}_W + \mathbf{X}_{it}'\boldsymbol{\gamma} + \lambda_t + \varepsilon_{it}, \quad (6)$$

where α_i absorbs all observed and unobserved respondent characteristics that remain constant over the study period. The coefficient vector $\boldsymbol{\beta}_W$ is identified from changes in trust within the same respondent over time. The specification, therefore, asks whether the household associated with a respondent is more likely to participate in commercial insurance during waves in which that respondent reports higher trust than during waves in which the same respondent reports lower trust.

Respondent fixed effects remove persistent characteristics that may be correlated with both trust and insurance behavior, such as stable personality traits, long-standing risk preferences, family background, and other time-invariant influences. The fixed-effects estimator is, therefore, more demanding than the pooled model because persistent differences in trust across respondents do not contribute to the identification of $\boldsymbol{\beta}_W$ (Wooldridge, 2010).

The fixed-effects models include household size, education, marital status, and rural residence as time-varying controls. Sex is time invariant and is absorbed by the respondent fixed effects. Age is not entered separately because, for a given respondent, it changes mechanically with calendar time and is collinear with the full set of survey-wave indicators.

The fixed-effects linear probability model is the main longitudinal specification. A conditional fixed-effects Logit model is also estimated as a nonlinear robustness check:

$$\Pr(Y_{it} = 1 \mid \alpha_i, \mathbf{T}_{it}, \mathbf{X}_{it}, \lambda_t) = \Lambda(\alpha_i + \mathbf{T}_{it}'\boldsymbol{\beta}_L + \mathbf{X}_{it}'\boldsymbol{\gamma} + \lambda_t), \quad (7)$$

where $\Lambda(\cdot)$ denotes the logistic cumulative distribution function. The conditional likelihood removes the respondent-specific intercept without estimating a separate fixed-effect parameter for every respondent (Chamberlain, 1980).

Only respondents whose insurance-participation status changes during the observed period contribute to the conditional Logit estimates. This is a property of the conditional likelihood rather than an additional discretionary sample-screening rule: respondents whose binary outcome is always zero or always one provide no within-person outcome variation for the Logit coefficient. In the 15,176-respondent main longitudinal sample, 8125 respondents never report positive expenditure, 1571 always report positive expenditure, and 5480 change participation status. The conditional Logit, therefore, uses 18,597 observations from the 5480 changers. Its estimates apply to this changing-status group and are not mechanically generalizable to persistent participants or persistent non-participants. Since conditional Logit coefficients are expressed in log-odds units, their magnitudes are not directly comparable with LPM coefficients. The broader-sample fixed-effects LPM remains the principal within-person specification, while conditional Logit serves as a nonlinear robustness check.

4.3. Correlated Random-Effects Decomposition

Respondent fixed effects identify the within-person association, but they do not separately quantify the relationship arising from persistent differences in trust across respondents. We, therefore, estimate a correlated random-effects specification based on the Mundlak approach (Mundlak, 1978).

The respondent-specific component is parameterized as a function of the respondent means of the time-varying regressors:

$$\alpha_i = \alpha + \bar{\mathbf{T}}_i'\boldsymbol{\pi} + \bar{\mathbf{X}}_i'\boldsymbol{\delta} + c_i, \quad (8)$$

where $\bar{\mathbf{T}}_i$ and $\bar{\mathbf{X}}_i$ are respondent-specific means calculated over the available survey waves. Conditional on these means, the remaining component c_i is treated as uncorrelated with the included regressors.

Substituting Equation (8) into the participation equation gives

$$Y_{it} = \alpha + \mathbf{T}_{it}'\boldsymbol{\beta}_W + \bar{\mathbf{T}}_i'\boldsymbol{\pi} + \mathbf{X}_{it}'\boldsymbol{\gamma} + \bar{\mathbf{X}}_i'\boldsymbol{\delta} + \lambda_t + c_i + \varepsilon_{it}. \quad (9)$$

In this parameterisation, the coefficient on the contemporaneous trust variable, $\boldsymbol{\beta}_W$, represents the within-respondent association. The coefficient on the respondent mean, $\boldsymbol{\pi}$, is the adjustment that distinguishes the between-respondent relationship from the within-respondent relationship. The total between association is calculated as

$$\boldsymbol{\beta}_B = \boldsymbol{\beta}_W + \boldsymbol{\pi}. \quad (10)$$

This decomposition is central to the paper. A positive pooled association may be observed even when changes in trust within the same respondent have little relationship with changes in insurance participation. Such a result would indicate that respondents with persistently higher trust are more likely to be associated with insured households, but that an increase in trust for a particular respondent does not necessarily correspond to an increase in that household's insurance participation.

The aggregate trust index and the five trust dimensions are examined in separate correlated random-effects specifications. Joint tests are reported for the within coefficients, the respondent-mean terms, and the total between associations.

4.4. City-by-Wave Fixed Effects

The respondent fixed-effects models control for time-invariant individual heterogeneity, while the survey-wave indicators control for national changes over time. Nevertheless, insurance-market conditions and economic circumstances may evolve differently across cities. Cities may differ in income growth, healthcare infrastructure, insurance distribution networks, product availability, and the implementation of national policies.

To account for these local time-varying factors, an additional specification includes city-by-wave fixed effects:

$$Y_{ict} = \alpha_i + \mathbf{T}'_{it}\boldsymbol{\beta} + \mathbf{X}'_{it}\boldsymbol{\gamma} + \delta_{ct} + \varepsilon_{ict}, \quad (11)$$

where δ_{ct} denotes a fixed effect for city c in survey wave t . These fixed effects absorb all observed and unobserved conditions shared by respondents living in the same city in a particular wave.

Identification in Equation (11) comes from differences in changes in trust and insurance participation among respondents observed within the same city-wave environment, after respondent-specific fixed characteristics have been removed. This provides a demanding robustness check against the possibility that local economic or insurance-market shocks generate the estimated trust relationship.

4.5. Expenditure Specifications

The participation models are supplemented by two respondent fixed-effects expenditure specifications corresponding to the outcomes defined in Equations (1) and (2). For the unconditional outcome E_{it}^U , the estimating equation is

$$E_{it}^U = \alpha_i + \mathbf{T}'_{it}\boldsymbol{\beta}_U + \mathbf{X}'_{it}\boldsymbol{\gamma}_U + \lambda_t + u_{it}, \quad (12)$$

where i indexes respondents, t indexes survey waves, α_i denotes respondent fixed effects, λ_t denotes wave fixed effects, and u_{it} is the idiosyncratic error. Because $E_{it}^U = \ln(1 + \text{real expenditure})$, zero expenditures remain in the sample. The specification, therefore, combines changes in participation with changes in spending among purchasers.

For the positive-expenditure outcome E_{it}^P , the analogous model is

$$E_{it}^P = \alpha_i + \mathbf{T}'_{it}\boldsymbol{\beta}_P + \mathbf{X}'_{it}\boldsymbol{\gamma}_P + \lambda_t + v_{it}, \quad \text{for positive expenditure observations,} \quad (13)$$

where v_{it} is the idiosyncratic error. This model is estimated only for respondents with positive commercial-insurance expenditure in at least two waves. It, therefore, describes the intensive margin among repeated positive spenders rather than the full household sample.

Both expenditure models are estimated separately using the aggregate trust index and the five trust dimensions. Respondent and survey-wave fixed effects are included together with household size, education, marital status, and rural residence. Coefficients in the log-based expenditure models are interpreted as associations with transformed real expenditure, not as participation-probability effects.

4.6. Statistical Inference and Interpretation

Standard errors are clustered at the respondent level in all specifications. This permits the disturbances to be heteroskedastic and serially correlated across observations belonging to the same respondent (Arellano, 1987). Such adjustment is important because respondents contribute repeated observations to the panel.

For models containing the five trust dimensions, the paper reports both the individual coefficients and a joint test of the null hypothesis

$$H_0 : \beta_{\text{parent}} = \beta_{\text{neighbor}} = \beta_{\text{stranger}} = \beta_{\text{doctor}} = \beta_{\text{leader}} = 0. \quad (14)$$

The joint test provides an assessment of whether the trust dimensions are collectively related to insurance behavior rather than relying on the significance of isolated coefficients.

Finally, all estimates are interpreted as conditional associations. Respondent fixed effects, survey-wave effects, city-by-wave effects, and the correlated random-effects decomposition address several important sources of confounding, but they do not provide an exogenous source of variation in trust. The purpose of the empirical design is, therefore, to determine whether the pooled trust–insurance relationship reflects changes within respondents or persistent differences between respondents, rather than to claim a causal effect of trust on commercial-insurance demand.

5. Empirical Results

The descriptive evidence presented in Section 3 shows a substantial expansion in commercial-insurance participation over the sample period, alongside comparatively modest changes in the trust measures. This section turns to the regression results and examines whether the pooled association between trust and insurance participation reflects changes within respondents or persistent differences between respondents.

5.1. Pooled Estimates of Insurance Participation

Table 4 presents the pooled estimates of commercial-insurance participation. Columns (1) and (2) report linear probability models, while columns (3) and (4) report average marginal effects from Probit models.

The aggregate trust index is positively associated with commercial-insurance participation. In column (1), a one-point increase in aggregate trust is associated with a 0.0060 increase in the probability of participation, equivalent to 0.60 percentage points. The corresponding Probit marginal effect in column (3) is 0.0046, or 0.46 percentage points. Both estimates are statistically significant at the 1 percent level.

The estimates based on the separate trust dimensions reveal considerable variation across trust objects. Trust in parents, neighbors, and strangers is positively associated with insurance participation in both the LPM and Probit specifications. The largest coefficient is obtained for trust in strangers. In column (2), a one-point increase in stranger trust is associated with a 0.94 percentage-point increase in participation, while the corresponding Probit marginal effect is 0.79 percentage points.

By contrast, trust in doctors and trust in local leaders are negatively associated with participation. In the LPM specification, a one-point increase in doctor trust is associated with a 0.23 percentage-point reduction in participation, while a one-point increase in trust in local leaders is associated with a 0.19 percentage-point reduction. The Probit estimates are similar in sign and magnitude. The five trust dimensions are jointly significant in both specifications, with p -values below 0.01.

The positive pooled relationship between trust and commercial-insurance participation is broadly consistent with earlier CFPS-based studies showing that household

characteristics and access to information are significantly associated with commercial-insurance purchases (Li et al., 2021; Yang et al., 2019). However, the pooled specifications combine persistent differences across respondents with changes occurring within the same respondent over time. The fixed-effects and correlated random-effects results reported below examine these two sources of variation separately.

Among the control variables, household size, education, and marital status are positively associated with participation. Age, male sex, and rural residence are negatively associated with participation. These relationships are broadly stable across the LPM and Probit specifications.

Table 4. Pooled Estimates of Commercial-Insurance Participation.

	Linear Probability Model		Probit Average Marginal Effects	
	(1) Aggregate Trust	(2) Trust Dimensions	(3) Aggregate Trust	(4) Trust Dimensions
Aggregate trust index	0.0060 *** (0.0016)		0.0046 *** (0.0016)	
Trust in parents		0.0040 *** (0.0015)		0.0047 *** (0.0018)
Trust in neighbors		0.0024 ** (0.0011)		0.0028 ** (0.0011)
Trust in strangers		0.0094 *** (0.0010)		0.0079 *** (0.0010)
Trust in doctors		−0.0023 ** (0.0010)		−0.0023 ** (0.0011)
Trust in local leaders		−0.0019 ** (0.0009)		−0.0026 *** (0.0009)
Household size	0.0213 *** (0.0014)	0.0216 *** (0.0014)	0.0223 *** (0.0013)	0.0227 *** (0.0013)
Years of education	0.0148 *** (0.0006)	0.0144 *** (0.0006)	0.0150 *** (0.0006)	0.0145 *** (0.0006)
Respondent age	−0.0053 *** (0.0002)	−0.0051 *** (0.0002)	−0.0055 *** (0.0002)	−0.0053 *** (0.0002)
Married	0.0653 *** (0.0065)	0.0648 *** (0.0065)	0.0810 *** (0.0070)	0.0802 *** (0.0070)
Male	−0.0137 *** (0.0051)	−0.0189 *** (0.0052)	−0.0107 ** (0.0051)	−0.0157 *** (0.0051)
Rural residence	−0.0810 *** (0.0062)	−0.0763 *** (0.0062)	−0.0782 *** (0.0062)	−0.0735 *** (0.0062)
Wave fixed effects	Yes	Yes	Yes	Yes
SE clustered by respondent	Yes	Yes	Yes	Yes
Observations	47,006	47,006	47,006	47,006
Respondents	15,176	15,176	15,176	15,176
Joint trust-test <i>p</i> -value	0.0002	<0.0001	0.0056	<0.0001
<i>R</i> ²	0.1393	0.1413		
Pseudo- <i>R</i> ²			0.1325	0.1343

Notes: The dependent variable equals one when the household reports positive commercial-insurance expenditure and zero otherwise. Columns (1) and (2) report pooled linear probability estimates. Columns (3) and (4) report average marginal effects from pooled Probit models. All specifications include survey-wave fixed effects. Standard errors clustered at the respondent level are reported in parentheses. Trust variables range from 0 to 10. Male, married, and rural residence are indicator variables. The joint-test row reports the *p*-value for the null hypothesis that the included trust coefficients are jointly equal to zero. *R*² is the conventional LPM coefficient of determination. Pseudo-*R*² is the likelihood-based fit statistic reported for the Probit model; it is not interpreted as the fraction of variance explained and is not directly comparable with the LPM *R*². *** *p* < 0.01 and ** *p* < 0.05.

5.2. Respondent Fixed-Effects Estimates

Table 5 reports the respondent fixed-effects results. Columns (1) and (2) present fixed-effects linear probability models, while columns (3) and (4) present conditional fixed-effects Logit estimates.

Table 5. Respondent Fixed-Effects Estimates of Commercial-Insurance Participation.

	Fixed-Effects LPM		Conditional Fixed-Effects Logit	
	(1) Aggregate	(2) Dimensions	(3) Aggregate	(4) Dimensions
Aggregate trust index	0.0007 (0.0018)		0.0200 (0.0175)	
Trust in parents		0.0026 * (0.0015)		0.0218 (0.0160)
Trust in neighbors		−0.0004 (0.0011)		0.0052 (0.0109)
Trust in strangers		0.0004 (0.0011)		0.0017 (0.0103)
Trust in doctors		0.0005 (0.0011)		0.0103 (0.0103)
Trust in local leaders		−0.0008 (0.0010)		−0.0067 (0.0094)
Household size	0.0245 *** (0.0023)	0.0245 *** (0.0023)	0.1712 *** (0.0187)	0.1714 *** (0.0187)
Years of education	0.0052 * (0.0027)	0.0052 * (0.0027)	0.0210 (0.0210)	0.0214 (0.0210)
Married	0.0762 *** (0.0121)	0.0760 *** (0.0121)	0.4385 *** (0.1020)	0.4363 *** (0.1022)
Rural residence	−0.0126 (0.0104)	−0.0123 (0.0104)	−0.1031 (0.0830)	−0.1007 (0.0830)
Time-varying controls	Yes	Yes	Yes	Yes
Respondent fixed effects	Yes	Yes	Yes	Yes
Wave fixed effects	Yes	Yes	Yes	Yes
SE clustered by respondent	Yes	Yes	Yes	Yes
Observations	47,006	47,006	18,597	18,597
Respondents	15,176	15,176	5480	5480
Trust-test p -value	0.6947	0.5940	0.2534	0.5442
Within R^2	0.0457	0.0458		
Pseudo- R^2			0.1047	0.1049

Notes: The dependent variable equals one when the household reports positive commercial-insurance expenditure and zero otherwise. Columns (1) and (2) report respondent fixed-effects linear probability estimates. Columns (3) and (4) report conditional fixed-effects Logit coefficients and retain only respondents whose insurance-participation status changes over time. All specifications include household size, years of education, marital status, rural residence, and survey-wave fixed effects. Standard errors clustered at the respondent level are reported in parentheses. The trust-test row reports the p -value for aggregate trust in columns (1) and (3), and for the joint significance of the five trust dimensions in columns (2) and (4). Logit and LPM coefficient magnitudes are not directly comparable. The within R^2 summarizes fit after removing respondent means in the LPM; the Logit pseudo- R^2 is likelihood based and is not directly comparable with the LPM R^2 . *** $p < 0.01$ and * $p < 0.10$.

Once persistent respondent characteristics are absorbed, the aggregate trust coefficient falls sharply. In column (1), the coefficient is 0.0007, compared with 0.0060 in the corresponding pooled model. It is statistically insignificant, with a p -value of 0.6947. Thus, the data provide no evidence that an increase in aggregate trust within the same respondent is associated with a corresponding increase in that respondent's household insurance participation.

The same pattern appears when the five trust dimensions are entered simultaneously. Trust in parents has a positive coefficient of 0.0026 and is significant only at the 10 percent level. The coefficients for trust in neighbors, strangers, doctors, and local leaders are all

small and statistically insignificant. More importantly, the five trust coefficients are jointly insignificant, with a p -value of 0.5940.

The conditional fixed-effects Logit estimates lead to the same substantive conclusion. The aggregate trust coefficient is statistically insignificant in column (3), and none of the five individual trust coefficients is significant in column (4). The joint test for the five trust dimensions produces a p -value of 0.5442. Since the conditional Logit model is identified only from respondents whose insurance status changes over time, its sample is smaller, containing 18,597 observations from 5480 respondents.

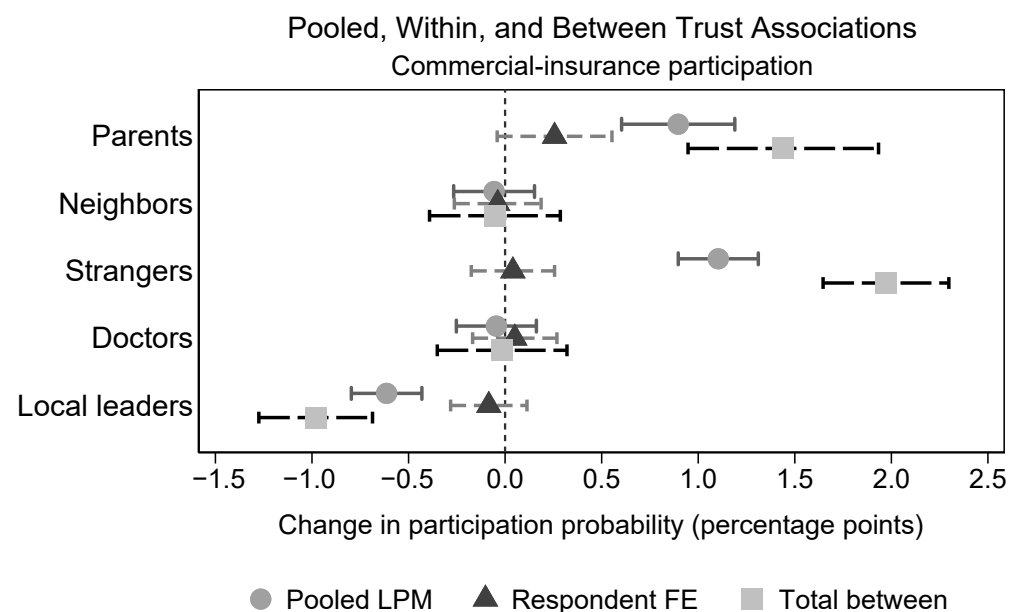
The similarity of the LPM and conditional Logit results indicates that the null within-respondent relationship is not a consequence of using a linear model for a binary outcome. Across both estimators, changes in trust within a respondent are not systematically associated with changes in insurance participation.

The time-varying controls show more consistent relationships. In the fixed-effects LPM, increases in household size and changes into marriage are positively associated with participation. Education is positive but only marginally significant, while changes in rural residence are not statistically significant.

As an additional robustness check, the principal fixed-effects models are re-estimated after adding self-rated health and using a participation-specific sample that does not require nonmissing total household expenditure, age, or sex. The resulting sample contains 48,227 observations from 15,520 respondents. The aggregate trust coefficient remains close to zero and statistically insignificant ($\beta = 0.0005$, $p = 0.775$). In the dimension-specific model, none of the five trust coefficients is individually significant and the joint test yields $p = 0.736$. These estimates, reported in Appendix A Table A1, show that the principal within-person conclusion is not driven by excluding self-rated health or by the more restrictive common estimation sample.

5.3. Within–Between Decomposition

Table 6 presents the correlated random-effects decomposition. The first column reports the within-respondent association, the second reports the respondent-mean adjustment, and the third reports the total between-respondent association. Figure 5 provides a visual comparison of the pooled, within, and total between estimates.



95% confidence intervals; standard errors clustered by respondent.

Figure 5. Pooled-, Within-, and Between-Trust Associations.

Table 6. Correlated Random-Effects Decomposition of Commercial-Insurance Participation.

	Within Association	Respondent-Mean Adjustment	Total Between Association
<i>Panel A. Aggregate trust</i>			
Aggregate trust index	0.0007 (0.0018)	0.0039 (0.0029)	0.0046 ** (0.0023)
<i>Panel B. Trust dimensions</i>			
Trust in parents	0.0026 * (0.0015)	0.0118 *** (0.0029)	0.0144 *** (0.0025)
Trust in neighbors	−0.0004 (0.0011)	−0.0001 (0.0021)	−0.0005 (0.0017)
Trust in strangers	0.0004 (0.0011)	0.0193 *** (0.0020)	0.0197 *** (0.0017)
Trust in doctors	0.0005 (0.0011)	−0.0007 (0.0020)	−0.0002 (0.0017)
Trust in local leaders	−0.0008 (0.0010)	−0.0090 *** (0.0018)	−0.0098 *** (0.0015)
<i>Panel C. Model diagnostics</i>			
	Aggregate model	Trust-dimensions model	
Observations	47,006	47,006	
Respondents	15,176	15,176	
Within-trust test <i>p</i> -value	0.6947	0.5942	
Respondent-mean trust test <i>p</i> -value	0.1842	<0.0001	
Total-between test <i>p</i> -value	0.0491	<0.0001	
Mundlak χ^2	88.15	204.77	
Mundlak test <i>p</i> -value	<0.0001	<0.0001	
Within R^2	0.0457	0.0458	
Between R^2	0.1726	0.1825	
Overall R^2	0.1181	0.1244	

Notes: The dependent variable equals one when the household reports positive commercial-insurance expenditure and zero otherwise. The estimates are from correlated random-effects linear probability models. The within association measures the relationship between a respondent's deviation from their own long-run mean trust and insurance participation. The respondent-mean adjustment is the coefficient on the respondent-specific mean of the corresponding trust variable. The total between association equals the sum of the within coefficient and the respondent-mean adjustment. The aggregate model includes the aggregate trust index, while the trust-dimensions model includes all five trust measures simultaneously. All specifications include household size, years of education, marital status, rural residence, survey-wave fixed effects, and the respondent means of the included time-varying regressors. Standard errors clustered at the respondent level are reported in parentheses. For the aggregate model, the reported test *p*-values correspond to the individual aggregate-trust terms. For the trust-dimensions model, they report joint tests of the five within coefficients, the five respondent-mean adjustments, and the five total between associations. The Mundlak test evaluates the null hypothesis that the regressors are uncorrelated with the unobserved respondent-specific effects. *** $p < 0.01$, ** $p < 0.05$, and * $p < 0.10$.

For the aggregate trust index, the within coefficient is 0.0007 and remains statistically insignificant. The respondent-mean adjustment is positive but also insignificant. However, the total between association is 0.0046 and is significant at the 5 percent level. This estimate indicates that respondents with a one-point higher long-run average trust score have, on average, a 0.46 percentage-point higher probability of being associated with an insured household, conditional on the included covariates.

The decomposition is more informative when the trust dimensions are examined separately. The five within coefficients are jointly insignificant, with a *p*-value of 0.5942, which is consistent with the fixed-effects results in Table 5. In contrast, the respondent-mean terms and the total between associations are both jointly significant at the 1 percent level ($p < 0.01$).

Three trust dimensions account for most of the between-respondent pattern. The total between coefficient for trust in parents is 0.0144, implying that a one-point difference in average parental trust is associated with a 1.44 percentage-point difference in participation. The corresponding coefficient for trust in strangers is 0.0197, the largest estimate among the five dimensions. Thus, respondents with persistently higher generalized trust are substantially more likely to be associated with households participating in commercial insurance.

Trust in local leaders displays the opposite pattern. Its total between coefficient is -0.0098 , indicating that respondents with a one-point higher average level of trust in local leaders have, on average, a 0.98 percentage-point lower probability of commercial-insurance participation. Trust in neighbors and trust in doctors have small and statistically insignificant total between associations.

The Mundlak tests reject the null that the respondent means are jointly unrelated to the unobserved respondent-specific component. This result indicates that the conventional random-effects assumption is not supported by the data and that persistent respondent characteristics are correlated with the included regressors.

Taken together, the decomposition shows that the pooled trust–insurance relationship is primarily a between-respondent relationship. Respondents with different long-run trust profiles also differ systematically in insurance participation, but changes in trust within the same respondent are not accompanied by systematic changes in participation. The contrasting positive association for stranger trust and negative association for local-leader trust further indicates that the relationship depends on the object of trust rather than reflecting a uniform association for trust in general. The possible explanations for this asymmetry are considered in Section 6.

5.4. City-by-Wave Fixed-Effects Estimates

Table 7 examines whether the within-respondent results are sensitive to local conditions that vary over time. These models include respondent fixed effects together with city-by-wave fixed effects, thereby absorbing all common shocks experienced by respondents living in the same city in a particular survey wave.

The aggregate trust coefficient is 0.0009 and remains statistically insignificant, with a p -value of 0.6101. In the model containing the five trust dimensions, none of the individual coefficients is statistically significant. The joint test produces a p -value of 0.6671.

The estimation sample contains 47,004 observations from 15,175 respondents, which is nearly identical to the principal fixed-effects sample. The results, therefore, do not appear to be driven by a change in sample composition. More importantly, the absence of a systematic within-respondent association remains after controlling for city-specific changes in insurance-market conditions, local economic performance, public services, and other common local shocks.

5.5. Commercial-Insurance Expenditure

Table 8 reports the fixed-effects results for unconditional commercial-insurance expenditure, measured as the logarithm of one plus real expenditure. Zero-expenditure observations are retained in this specification.

The aggregate trust coefficient is 0.0026 and is statistically insignificant, with a p -value of 0.8515. When the five trust dimensions are included simultaneously, their joint p -value is 0.4331. Trust in parents has a positive coefficient of 0.0219 and is significant at the 10 percent level, but the other trust dimensions are statistically insignificant. These results provide little evidence that within-respondent changes in trust are systematically related to changes in unconditional commercial-insurance expenditure.

Table 7. Respondent Fixed-Effects Estimates with City-by-Wave Fixed Effects.

	(1) Aggregate Trust	(2) Trust Dimensions
Aggregate trust index	0.0009 (0.0018)	
Trust in parents		0.0021 (0.0015)
Trust in neighbors		−0.0003 (0.0011)
Trust in strangers		0.0009 (0.0011)
Trust in doctors		0.0005 (0.0011)
Trust in local leaders		−0.0009 (0.0010)
Household size	0.0242 *** (0.0023)	0.0242 *** (0.0023)
Years of education	0.0057 ** (0.0026)	0.0057 ** (0.0026)
Married	0.0699 *** (0.0121)	0.0696 *** (0.0121)
Rural residence	−0.0130 (0.0111)	−0.0128 (0.0111)
Time-varying controls	Yes	Yes
Respondent fixed effects	Yes	Yes
City-by-wave fixed effects	Yes	Yes
SE clustered by respondent	Yes	Yes
Observations	47,004	47,004
Respondents	15,175	15,175
City-by-wave groups	730	730
Trust-test p -value	0.6101	0.6671
Within R^2	0.0062	0.0063
Overall R^2	0.6099	0.6099
Adjusted R^2	0.4103	0.4103

Notes: The dependent variable equals one when the household reports positive commercial-insurance expenditure and zero otherwise. Both columns report linear probability estimates with respondent and city-by-wave fixed effects. Column (1) includes the aggregate trust index, while column (2) includes the five trust dimensions simultaneously. The time-varying controls are household size, years of education, marital status, and rural residence. City-by-wave fixed effects absorb common survey-wave effects and all city-specific shocks in each wave. Standard errors clustered at the respondent level are reported in parentheses. The trust-test row reports the p -value for the aggregate trust coefficient in column (1) and the joint significance test of the five trust coefficients in column (2). *** $p < 0.01$ and ** $p < 0.05$.

Table 9 restricts the analysis to respondents reporting positive commercial-insurance expenditure in at least two survey waves. The dependent variable is the natural logarithm of real expenditure, so these estimates describe the intensive margin among repeated purchasers.

The aggregate trust coefficient is negative but statistically insignificant. The five trust dimensions are jointly insignificant, with a p -value of 0.2869. Trust in parents is the only individually significant trust measure. Its coefficient of 0.0333 implies that a one-point increase in parental trust is associated with approximately a 3.4 percent increase in real insurance expenditure among positive spenders. The remaining trust coefficients are small and statistically insignificant.

The parental-trust estimate should be interpreted cautiously. It is obtained from a smaller selected sample of 9132 observations from 3523 respondents, and the five

trust dimensions are not jointly significant. It is, therefore, treated as a suggestive secondary result rather than evidence of a general relationship between changes in trust and insurance spending.

Overall, the expenditure results reinforce the findings from the participation models. Trust is significantly associated with insurance behavior in pooled data, but there is little evidence of a systematic relationship between changes in trust and changes in either insurance participation or expenditure within the same respondent. The principal empirical relationship is instead located in persistent differences across respondents.

Table 8. Respondent Fixed-Effects Estimates of Commercial-Insurance Expenditure.

	(1) Aggregate Trust	(2) Trust Dimensions
Aggregate trust index	0.0026 (0.0139)	
Trust in parents		0.0219 * (0.0113)
Trust in neighbors		−0.0050 (0.0089)
Trust in strangers		0.0000 (0.0085)
Trust in doctors		0.0052 (0.0087)
Trust in local leaders		−0.0072 (0.0078)
Household size	0.2255 *** (0.0179)	0.2257 *** (0.0179)
Years of education	0.0528 ** (0.0209)	0.0529 ** (0.0209)
Married	0.6551 *** (0.0974)	0.6534 *** (0.0974)
Rural residence	−0.1027 (0.0844)	−0.1008 (0.0844)
Time-varying controls	Yes	Yes
Respondent fixed effects	Yes	Yes
Wave fixed effects	Yes	Yes
SE clustered by respondent	Yes	Yes
Observations	47,006	47,006
Respondents	15,176	15,176
Trust-test <i>p</i> -value	0.8515	0.4331
Within <i>R</i> ²	0.0556	0.0557

Notes: The dependent variable is $\ln(1 + \text{real commercial-insurance expenditure})$, where expenditure is expressed in constant 2022 prices. Observations with zero commercial-insurance expenditure are retained. Column (1) includes the aggregate trust index, while column (2) includes the five trust dimensions simultaneously. The time-varying controls are household size, years of education, marital status, and rural residence. All specifications include respondent and survey-wave fixed effects. Standard errors clustered at the respondent level are reported in parentheses. The trust-test row reports the *p*-value for the aggregate trust coefficient in column (1) and the joint significance test of the five trust coefficients in column (2). Because the dependent variable includes an added one before taking logarithms, coefficients describe changes in $\ln(1 + \text{expenditure})$ and should not be interpreted mechanically as exact percentage changes in expenditure. *** $p < 0.01$, ** $p < 0.05$, and * $p < 0.10$.

Table 9. Respondent Fixed-Effects Estimates of Commercial-Insurance Expenditure Among Positive Spenders.

	(1) Aggregate Trust	(2) Trust Dimensions
Aggregate trust index	−0.0067 (0.0148)	
Trust in parents		0.0333 ** (0.0153)
Trust in neighbors		−0.0071 (0.0090)
Trust in strangers		−0.0072 (0.0087)
Trust in doctors		−0.0009 (0.0086)
Trust in local leaders		−0.0026 (0.0078)
Household size	0.1057 *** (0.0169)	0.1065 *** (0.0169)
Years of education	0.0336 ** (0.0151)	0.0339 ** (0.0152)
Married	0.0349 (0.0926)	0.0339 (0.0923)
Rural residence	−0.0343 (0.0486)	−0.0336 (0.0486)
Positive expenditure only	Yes	Yes
Time-varying controls	Yes	Yes
Respondent fixed effects	Yes	Yes
Wave fixed effects	Yes	Yes
SE clustered by respondent	Yes	Yes
Observations	9132	9132
Respondents	3523	3523
Trust-test p -value	0.6506	0.2869
Within R^2	0.0734	0.0746
Between R^2	0.0475	0.0515
Overall R^2	0.0566	0.0594

Notes: The dependent variable is the natural logarithm of real commercial-insurance expenditure. Expenditure is expressed in constant 2022 prices. The estimation sample is restricted to respondents with positive commercial-insurance expenditure in at least two survey waves. The estimates, therefore, describe conditional intensive-margin associations among positive spenders. Column (1) includes the aggregate trust index, while column (2) includes the five trust dimensions simultaneously. The time-varying controls are household size, years of education, marital status, and rural residence. All specifications include respondent and survey-wave fixed effects. Standard errors clustered at the respondent level are reported in parentheses. The trust-test row reports the p -value for the aggregate trust coefficient in column (1) and the joint significance test of the five trust coefficients in column (2). For a coefficient β , the exact percentage difference in expenditure is $100[\exp(\beta) - 1]$. *** $p < 0.01$ and ** $p < 0.05$.

6. Discussion

6.1. What the Within–Between Distinction Adds

The central result is not that trust is unrelated to commercial insurance. Pooled models show a clear association. The contribution is that the association looks different once the panel structure is used to separate changes within the same respondent from persistent differences between respondents. The aggregate trust coefficient becomes small and statistically insignificant in the respondent fixed-effects model, and the five trust dimensions are jointly insignificant. The correlated random-effects decomposition then shows that much of the pooled relationship is located in the between-person component.

This distinction changes the interpretation of earlier pooled evidence. A pooled coefficient answers whether higher-trust respondents are more likely to be associated with participating households. It does not by itself answer whether a respondent's household becomes more likely to participate when that same respondent reports more trust than before. The present results provide evidence for the first statement but little evidence for the second during the 2012–2022 observation window.

The distinction also explains why the paper uses several complementary estimators rather than treating them as unrelated robustness exercises. Probit average marginal effects check whether the pooled findings depend on the linear probability functional form. Respondent fixed-effects LPM estimates the within-person association on a probability scale using the broader longitudinal sample. Conditional fixed-effects Logit checks the binary-outcome functional form among participation changers. The correlated random-effects model quantifies the within and between components directly. City-by-wave fixed effects address changing local environments. Finally, the expenditure specifications distinguish participation-inclusive spending from the intensive margin among repeated positive spenders. Taken together, these models test different parts of the interpretation rather than repeatedly estimating the same specification.

6.2. *Why the Object of Trust Matters*

The results also show why “social trust” should not be treated as a single homogeneous construct. Trust in people met for the first time has the largest positive total between-person association, whereas trust in local cadres has a negative total between-person association. The signs are, therefore, different for generalized interpersonal trust and local governmental trust.

The positive stranger-trust association is consistent with the idea that generalized trust facilitates impersonal exchange. Commercial-insurance transactions often require households to rely on unfamiliar agents, firms, underwriters, and claims personnel. The broader trust literature emphasizes that the radius of trust matters because confidence in close in-groups is not equivalent to confidence in unfamiliar others (Delhey et al., 2011). Chinese evidence likewise distinguishes relational exchange from generalized trust in strangers (Nee et al., 2018). The CFPS stranger item is, therefore, substantively closer to generalized interpersonal trust than the family or neighborhood measures.

The negative association with trust in local cadres points to a different institutional relationship. One possible interpretation is that confidence in public institutions and reliance on private protection are partly related to different expectations about who will provide security. Respondents with greater confidence in local government may expect more from public or community arrangements, while those with lower confidence may rely more heavily on private protection. This interpretation is plausible in a setting where public social insurance, informal support, and commercial insurance coexist, but the coefficient does not directly measure expectations about social-insurance benefits. It should, therefore, be treated as an institutional pattern requiring further investigation, not as evidence that distrust in government produces private-insurance purchases.

This multidimensional interpretation is consistent with recent Chinese research showing that interpersonal and institutional trust can enter commercial-insurance decisions differently (Cao et al., 2025). It also fits evidence that cultural and demand-side factors matter in the Chinese insurance market (Zhong et al., 2015). The practical implication is that a single aggregate trust score can conceal substantively different relationships.

6.3. Controls, Sample Definition, and Additional Robustness

Omitted household circumstances remain relevant because income, wealth, health, and other conditions are related to insurance demand. The baseline control set is deliberately parsimonious so that the same variables can be harmonized across all six waves. It is not intended as an exhaustive insurance-demand equation. Respondent fixed effects absorb stable respondent differences, while wave effects absorb common national changes, but neither removes every time-varying household shock.

The additional health-adjusted robustness check provides some evidence on this concern without changing the paper's central design. Adding self-rated health and using a less restrictive participation-specific sample increases the longitudinal sample to 48,227 observations from 15,520 respondents. The aggregate trust coefficient remains statistically insignificant, and the five trust dimensions are jointly insignificant. Thus, the principal within-person conclusion does not depend on excluding self-rated health or on requiring complete total-household-expenditure information for the participation model.

Income and wealth are more difficult to treat symmetrically across the full panel. The harmonized analytical file contains comparable income measures only from 2016 onward and does not contain a six-wave wealth measure suitable for a common specification. Adding those variables would change the time period and the respondent composition rather than simply add controls to the existing six-wave analysis. The paper, therefore, retains the common specification and states explicitly that unobserved time-varying economic circumstances may remain associated with both trust and insurance behavior.

6.4. Implications for China's Commercial-Insurance Market

The findings argue against a generic recommendation to "increase social trust." The more direct implication is to reduce the specific information and contractual frictions that make insurance decisions depend on prior confidence in unfamiliar counterparties. Clear product descriptions, standardized disclosure of exclusions and waiting periods, predictable claims procedures, and accessible complaint-resolution channels can make contract performance easier to evaluate.

Information and financial capability are also relevant. Chinese household evidence links commercial-insurance engagement to financial literacy and insurance-specific trust (Guo et al., 2024), while digital payment and information access are associated with commercial-insurance purchasing (Gao et al., 2025). These results, together with the positive association for generalized stranger trust, suggest that insurers and regulators should make product information easier to compare across providers and should complement digital distribution with explanations that are understandable to households with limited insurance experience.

Trusted intermediaries can also matter. Cai et al. (2015) show that social networks can transmit insurance information in rural China. This does not imply that informal networks should replace regulated distribution. Rather, consumer education and community-based communication can be used to explain formal products while standardized disclosures, agent accountability, and claims transparency preserve the integrity of the contract itself.

The negative between-person association for trust in local cadres additionally suggests that communication about the respective roles of public and commercial protection should be clear. Households need to understand which risks are covered by public programmes and where commercial insurance provides supplementary protection. The present estimates do not establish substitution between public and private insurance, but they indicate that institutional confidence and private-market participation should not automatically be treated as the same trust mechanism.

6.5. Limitations

Several limitations bound the interpretation. First, the paper estimates associations and does not use an exogenous source of variation in trust. The fixed-effects design removes stable respondent heterogeneity, but time-varying economic, health, employment, or family shocks may remain.

Second, the trust battery is broad. It measures trust in social and institutional objects rather than trust in insurance companies, agents, regulators, or claims procedures. Direct insurance-specific trust measures could yield different within-person relationships.

Third, trust is measured for an individual respondent, whereas insurance participation and expenditure are household-level outcomes. The CFPS expenditure item does not identify which household member selected the policy, initiated the purchase, or was covered. The study, therefore, cannot distinguish the respondent's voluntary purchase from insurance arranged by another household member.

Fourth, the panel is unbalanced and fixed-effects estimates depend on respondents with repeated usable observations. Conditional fixed-effects Logit is narrower still because only respondents whose binary participation status changes contribute to its likelihood. The paper treats that estimator as a nonlinear robustness check rather than as the sole within-person result.

Fifth, consistently harmonized six-wave income and wealth measures are not available in the analytical file. Although respondent and wave fixed effects address stable and common components of socioeconomic variation, time-varying household resources remain an omitted dimension. The health-adjusted robustness check reduces, but does not eliminate, this concern.

Finally, the household expenditure measure combines several commercial-insurance products. Life, health, automobile, property, and pension-related insurance may involve different risks, purchase processes, and trust mechanisms. Product-level panel data would allow a more precise assessment.

7. Conclusions

This paper reassesses the relationship between trust and household commercial-insurance participation in China by separating two questions that pooled regressions combine. The first asks whether respondents who are persistently more trusting than others are also more likely to belong to households that participate in commercial insurance. The second asks whether changes in trust for the same respondent are accompanied by changes in that household's participation over time.

The evidence gives a consistent answer. Trust is positively associated with commercial-insurance participation in pooled data, but the aggregate within-person association is small and statistically insignificant once respondent fixed effects are introduced. Nonlinear fixed-effects estimates, city-by-wave fixed effects, expenditure specifications, and the additional health-adjusted robustness check lead to the same broad conclusion. The correlated random-effects decomposition shows that the conventional pooled relationship is located mainly in persistent differences between respondents.

The paper's methodological contribution is, therefore, interpretive rather than causal. Longitudinal data reveal that a statistically significant pooled trust coefficient need not describe behavioral change within the same person. This distinction is useful for household-finance research more generally whenever explanatory variables contain both stable cross-person differences and smaller within-person movements.

The substantive contribution is equally important. Trust in unfamiliar people and trust in local government cadres are associated with commercial-insurance participation in different directions. Generalized interpersonal trust, community or family trust, profes-

sional trust, and institutional trust should, therefore, not be combined mechanically under a single interpretation. The object of trust matters.

For insurers and policymakers, the results favor targeted institutional responses over generic trust-building messages. Product transparency, comprehensible disclosure, reliable claims handling, accessible complaint resolution, responsible intermediation, and clear communication about the complementary roles of public and commercial protection address frictions that households face when entering long-term insurance contracts. Future work with product-specific insurance data, direct measures of insurer trust, and consistently harmonized household economic controls can test these mechanisms more directly.

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Abbreviations

The following abbreviations are used in this manuscript:

CFPS	China Family Panel Studies
CRE	Correlated random effects
FE	Fixed effects
LPM	Linear probability model
RMB	Renminbi

Appendix A. Additional Robustness and Measurement Documentation

Table A1. Health-Adjusted Fixed-Effects Robustness Check.

	(1) Aggregate Trust	(2) Trust Dimensions
Aggregate trust index	0.000508 (0.001773)	
Trust in parents		0.001874 (0.001484)
Trust in neighbors		−0.000285 (0.001130)
Trust in strangers		0.000418 (0.001081)
Trust in doctors		0.000677 (0.001095)
Trust in local leaders		−0.000962 (0.000993)
Self-rated health	−0.003195 (0.002200)	−0.003182 (0.002199)

Table A1. *Cont.*

	(1) Aggregate Trust	(2) Trust Dimensions
Other controls	Yes	Yes
Respondent fixed effects	Yes	Yes
Wave fixed effects	Yes	Yes
SE clustered by respondent	Yes	Yes
Observations	48,227	48,227
Respondents	15,520	15,520
Trust-test <i>p</i> -value	0.775	0.736

Notes: The dependent variable is commercial-insurance participation. Both columns include household size, years of education, marital status, rural residence, self-rated health, respondent fixed effects, and wave fixed effects. Standard errors clustered by respondent are in parentheses. The sample is participation-specific and does not require nonmissing total household expenditure, age, or sex. The trust-test row reports the *p*-value for aggregate trust in column (1) and the joint test of the five trust dimensions in column (2). No trust coefficient is statistically significant at conventional levels.

Table A2. CFPS Trust Items and Analytical Interpretation.

Analytical Variable	Abridged Item Content	Interpretation Used in This Paper
Trust in parents	Trust rating: parents	Particularized family trust
Trust in neighbors	Trust rating: neighborhood	Community trust
Trust in strangers	Trust rating: people met for the first time	Generalized interpersonal trust
Trust in local leaders	Trust rating: cadres	Governmental/institutional trust; CFPS defines a cadre here as a local government official
Trust in doctors	Trust rating: doctors	Professional trust

Notes: The CFPS trust battery sets 0 to “very distrustful” and 10 to “very trustworthy.” The item content is abridged from the English CFPS 2022 Full Questionnaires and corresponds to the harmonized trust objects used across the study waves (China Family Panel Studies, 2022a). The aggregate trust index is the arithmetic mean of these five items. The separate CFPS item on trust in Americans is excluded because it is nationality-specific and falls outside the five trust domains used in the conceptual framework.

Table A3. Missingness in Key Variables Before the Common Complete-Case Restriction.

Variable	Missing Observations	Percent of 64,770
Commercial-insurance expenditure	621	0.96
Trust in parents	2610	4.03
Trust in neighbors	2356	3.64
Trust in strangers	2561	3.95
Trust in local leaders	2595	4.01
Trust in doctors	2389	3.69
Positive total household expenditure	2059	3.18
Years of education	1091	1.68
Rural residence	871	1.34
Marital status	589	0.91
Household size	56	0.09
Harmonized age	72	0.11
Sex	1	0.00

Notes: Counts refer to the 64,770 identifiable respondent-wave observations before the common complete-case restriction. “Positive total household expenditure” treats nonpositive values as unavailable for models requiring this denominator. The study does not impute these analytical variables after harmonization.

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