

Persistence of Provider Directory Inaccuracies After the No Surprises Act

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In managed care arrangements, which cover the vast majority of Americans today, consumers are highly incentivized to seek care solely from within their provider network.¹ To facilitate this, insurance carriers are mandated to publish consumer-facing online provider directories, which play a crucial role when consumers make choices about their health plan selections and particularly when they seek care. However, growing literature has identified substantial errors in provider directories ranging from incorrect contact information to inaccurate in-network designations across primary care,²⁻⁵ behavioral health, and medical and surgical subspecialties.⁶⁻⁹ Provider directory inaccuracies may contribute to delayed or forgone care and health inequities^{8,10,11} and can challenge existing network adequacy regulations.¹²⁻¹⁵

State and federal regulators have sought to remedy this situation by imposing requirements upon carriers to increase accuracy, although these vary widely in their scope and content.¹⁶⁻¹⁸ For example, a majority of states impose requirements on carriers to regularly update their provider directories.¹⁹ However, it is unclear whether existing regulations have had noticeable effects given high rates of inaccuracies even in states with the most stringent regulatory standards, such as California.^{6,7,20,21} At the federal level, the No Surprises Act (part of the Consolidated Appropriations Act of 2021), which went into effect in 2022, requires carriers to update and verify provider directories every 90 days at minimum and to develop a protocol for removing providers that cannot be verified.¹⁹ Although adequate enforcement has been identified as a substantial challenge, the effect of state and federal regulations on improving provider directory inaccuracies remains underexplored,^{14,19} and questions have emerged about the extent to which provider directory inaccuracies persist despite these policies. To answer this question, we fielded a secret shopper survey among carriers in the Pennsylvania Affordable Care Act (ACA) insurance marketplace. Specifically, we resurveyed providers (N=1802) from a broad set of specialties who were identified in a previous survey as inaccurately listed at least 403 days after the initial survey contact. We then determined whether the inaccuracies had been resolved (results not yet published).

ABSTRACT

OBJECTIVES: Provider directory inaccuracies have important implications for care navigation and access as well as ongoing regulatory efforts. We assessed the extent to which identified provider directory inaccuracies persisted across 7 specialties (cardiology, dermatology, endocrinology, gastroenterology, neurology, obstetrics-gynecology, primary care) and 5 carriers in the Pennsylvania Affordable Care Act insurance marketplace.

STUDY DESIGN: A secret shopper survey recontacted inaccurately listed providers (N=1802) between 403 and 574 days after they were identified in an earlier secret shopper survey.

METHODS: Descriptive analyses, with tests of proportion and *t* tests to assess whether differences across carriers, specialties, and geographic locations were statistically significant.

RESULTS: Of 1802 inaccurate provider listings, 451 (25.0%) had been removed at follow-up, 966 providers (53.6%) were successfully contacted, and 385 providers (21.4%) could not be reached. Of the recontacted providers, 240 (13.3%) were listed accurately at follow-up and 726 (40.3%) were listed with various inaccuracies, including 31.0% (n=558) with inaccurate contact information, 11.2% (n=201) listed under the wrong specialty, and 1.9% (n=34) erroneously listed as being in network despite being out of network. We found substantial differences across carriers and specialties but not by rurality. Inaccuracies also were less likely to persist in the state's 2 metropolitan areas. Among inaccurate provider listings, on average, 540 days (median, 544 days) had passed between the initial and subsequent contacts.

CONCLUSIONS: A large number of provider directory inaccuracies persist well beyond the 90-day expectation mandated by federal regulations, raising substantial concerns about compliance. These inaccuracies may impose substantial barriers to patient access and may render existing assessments of network adequacy ineffective.

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METHODS

Data

The original secret shopper survey was conducted from June 13 to November 28, 2022. We surveyed 5 of the 7 carriers serving the Pennsylvania ACA marketplace in 2022 (omitting the integrated health systems of Geisinger and UPMC Health Plan). Callers were randomly assigned to call providers in 7 specialties (cardiology, dermatology, endocrinology, gastroenterology, neurology, obstetrics-gynecology, and primary care), identified from the carriers' online directories. Callers searched providers in proximity to a "home address" assigned to them. These home addresses were randomly chosen from the entire state but distributed proportionally to enrollment in each ACA pricing region. Callers contacted providers at the number listed in the online provider directory and sought to find the next available appointment. During the calls, callers tried to verify the accuracy of the providers' contact information, network status, and specialty. Because the callers presented as consumers, phone calls were terminated once any inaccuracy was identified. No actual appointments were scheduled. The original survey identified a total of 2134 providers with at least 1 inaccuracy in the following categories: (1) contact information (eg, provider not working at the number listed, phone line being disconnected); (2) network status (ie, being listed as being in network when they were in fact out of network), and (3) medical specialty.

To assess whether these provider directory inaccuracies persisted over time, we sought to recontact these 2134 previously identified providers from December 11, 2023, to January 8, 2024 (see [eAppendix](#) [available at [ajmc.com](#)]). This subsequent secret shopper survey occurred between 403 and 574 days (mean, 541 days; median, 545 days) after the initial survey contact. Callers were randomly assigned a provider from the original list of 2134 identified providers and then searched the carriers' online directories for the assigned provider. If the providers were still listed, the caller attempted recontact (n = 1351). If the provider was removed (n = 451), callers moved on to the next randomly assigned provider. For the providers we were able to contact a second time, callers again tried to verify contact information, specialty, and network status. No actual appointments were scheduled. Overall, we were able to complete this process for 1802 randomly chosen providers from the list of 2134 original providers.

To assess differences based on the geographic location of providers, we relied on 2 measures. First, we utilized the list of rural zip codes provided by the Federal Office of Rural Health Policy to identify rural (n = 221) and nonrural (n = 1581) providers.²² Second, we also assessed differences based on ACA pricing regions. However, due to the limited number of observations, we combined the 2 metropolitan pricing regions of Pittsburgh (region 4) and Philadelphia (region 8) (n = 937) and compared them with the rest of the state (n = 865).

TAKEAWAY POINTS

Despite the No Surprises Act requiring carriers to update and verify provider directories at least every 90 days and to develop a protocol for removing providers that cannot be verified, we found that provider directory inaccuracies often persist over long periods, with substantial differences in the duration of inaccuracies by carrier and metropolitan status.

- ▶ On average, inaccuracies persisted for 40.3% (n = 726) of searched providers for at least 540 days.
- ▶ At follow-up, 25.0% (n = 451) of searched providers had been removed from carrier directories.
- ▶ At follow-up, 13.3% (n = 240) of searched providers were listed correctly.

These findings raise questions about the challenges of regulatory compliance and about implications for patient access to care.

Analyses

We performed descriptive analyses, utilizing tests of proportion to assess differences between carriers and specialties in whether inaccurate provider listings had been removed from the directory, whether inaccuracies persisted on follow-up contact, and whether a provider was subsequently listed accurately at follow-up. We used tests of proportion to compare 3 categories of identified inaccuracies (contact information issues, inaccurate specialty listings, provider was out of network) and *t* tests to compare differences in the number of days between the 2 survey contacts. We also assessed whether differences existed for our outcomes of interest based on the rurality of the providers or whether they were located in the combined metropolitan ACA pricing region described earlier. Finally, we estimated linear probability models to derive adjusted results as robustness checks that confirmed our findings (see [eAppendix](#)).

RESULTS

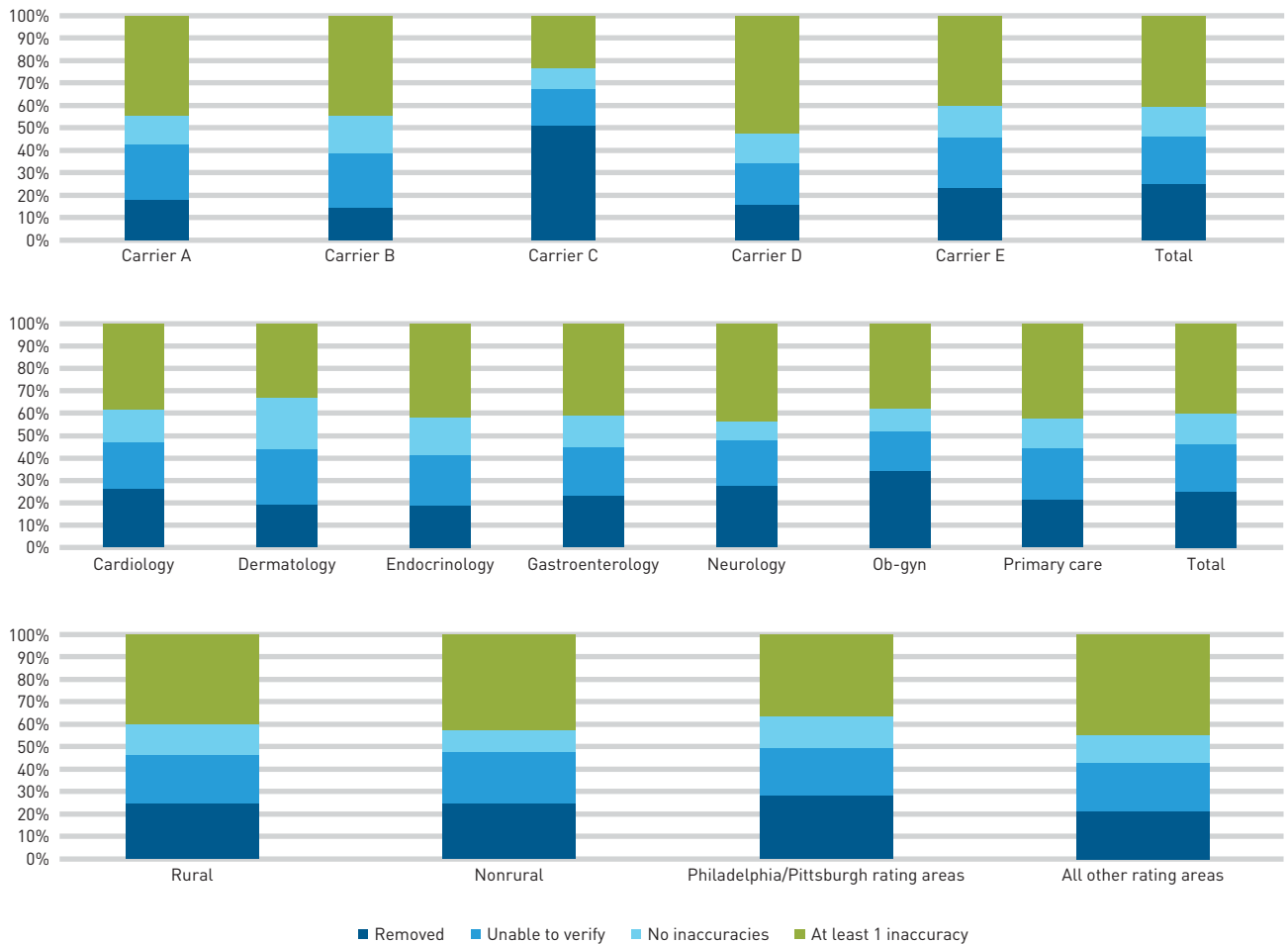
Of the 1802 inaccurate provider listings identified in the first survey, 451 providers (25.0%) had been removed from carrier directories, 240 providers (13.3%) were listed correctly, and 726 providers (40.3%) continued to have inaccurate directory information ([Figure 1](#)). Inaccurate contact information was the most prevalent listing error (n = 558; 31.0% of searched providers), followed by inaccuracies related to medical specialty (n = 201; 11.2%). Inaccuracies related to network status were less common, occurring for 1.9% of providers (n = 34). Among providers with persistent inaccuracies ([Figure 2](#)), the mean number of days between the 2 survey contacts was 539.8 days (median, 544 days). We were not able to reach and verify information for the remaining 385 providers (21.4%). Detailed information for all analyses is presented in the [eAppendix](#).

Differences Across Carriers

At the carrier level, we identified substantial differences in the removal rate of inaccurate provider listings ([Figure 1](#)), ranging from a low of 14.6% (n = 35; carrier B) to a high of 51.3% (n = 157; carrier C; $P < .001$ for difference). Inaccuracy rates ranged from 23.3% (n = 71; carrier C) to 52.4% (n = 130; carrier D; $P < .001$) of all searched providers. Inaccurate contact information ranged from 18.3% (n = 56; carrier C)

TRENDS FROM THE FIELD

FIGURE 1. Percentage of Providers Removed or Verified as Accurate or Inaccurate, by Carrier, Specialty, and Geography*



ACA, Affordable Care Act; ob-gyn, obstetrics-gynecology.

*Data based on an analysis of 1802 providers. Of these, 1349 were listed in online provider directories. Data collection was confined to the ACA market. Survey was conducted from December 11, 2023, to January 8, 2024. Specialties included were cardiology, dermatology, endocrinology, gastroenterology, neurology, ob-gyn, and primary care.

to 42.7% (n = 106; carrier D; $P < .001$) of all searched providers, and inaccuracies related to medical specialty ranged from 5.2% (n = 16; carrier C) to 14.2% (n = 46; carrier A; $P < .001$). Inaccuracies related to network status ranged from 1.2% (n = 4; carrier A) to 3.2% (n = 8; carrier D; $P < .099$). With regard to persistent inaccuracies, we did not identify statistically significant differences in the number of days between survey contacts (Figure 2).

Differences Across Specialties

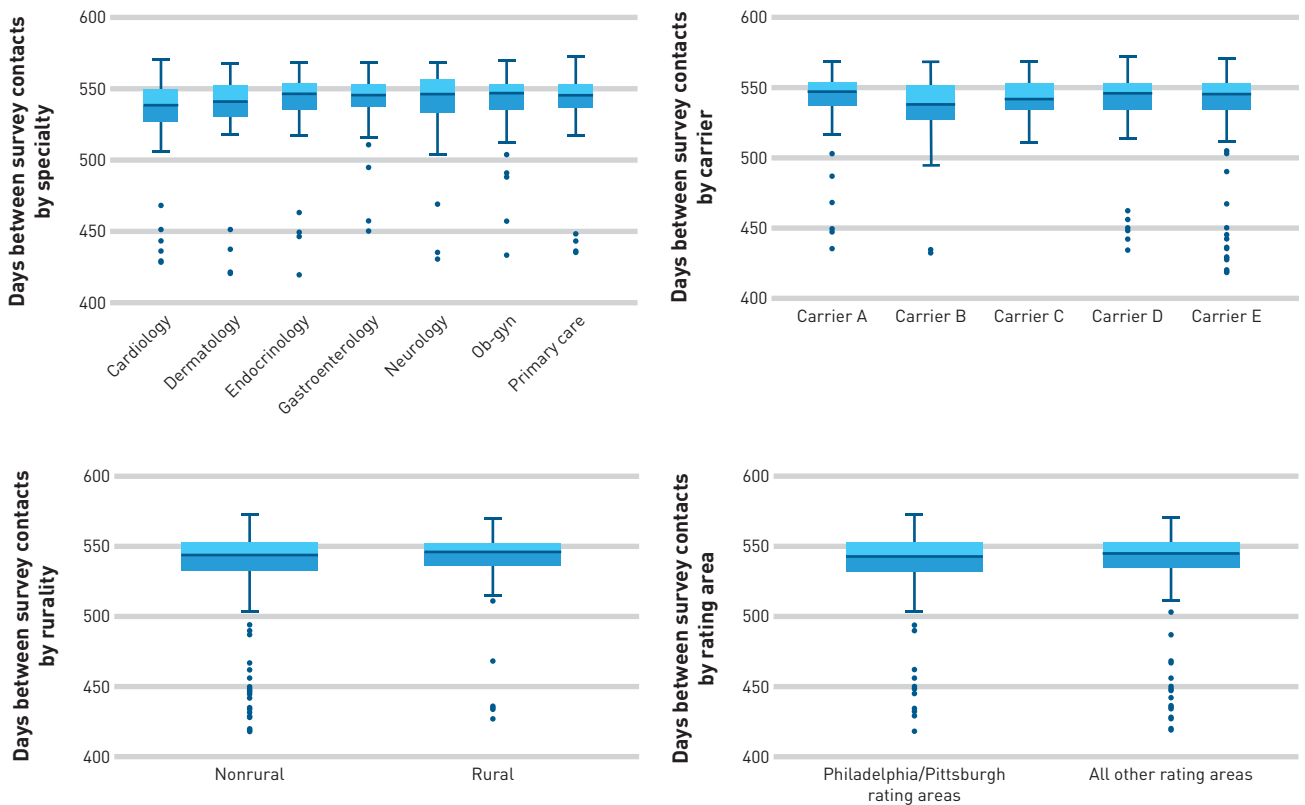
Differences across specialties, although consistently statistically significant, were less pronounced (Figure 1). Across the specialties, the rate of removal ranged from a low of 18.8% (n = 38) for endocrinologists to a high of 34.3% (n = 85) for obstetricians-gynecologists ($P < .001$) and inaccuracy rates ranged from 32.9% (n = 56) for dermatology to 43.5% (n = 178) for neurology ($P < .019$). Issues related to inaccurate

contact information ranged from 25.3% (n = 43) for dermatologists to 34.2% (n = 140) for neurologists ($P < .036$). Inaccurate specialty information ranged from 7.6% (n = 13) for dermatologists to 16.3% (n = 50) for primary care providers ($P < .008$). Finally, network status inaccuracies ranged from 0.9% (n = 2) for cardiology to 3.5% (n = 6) for dermatology ($P < .072$). We did not find consistent statistically significant differences in the number of days between survey contacts (Figure 2) for providers with persistent inaccuracies across all specialties, with the exception of differences between cardiology (533.2 days) and gastroenterology (541.9 days; $P < .016$), neurology (541.8 days; $P < .010$), and primary care (541.0; $P < .031$).

Differences Across Geographies

We did not find statistically significant differences across the 7 outcomes presented above based on rural practice location.

FIGURE 2. Number of Days Between Survey Contacts for Providers With Persistent Inaccuracies, by Carrier, Specialty, and Geography*



ACA, Affordable Care Act; ob-gyn, obstetrics-gynecology.

*Data based on an analysis of 1802 providers. Of these, 1349 were listed in online provider directories. Data collection was confined to the ACA market. Survey was conducted from December 11, 2023, to January 8, 2024. Specialties included were cardiology, dermatology, endocrinology, gastroenterology, neurology, ob-gyn, and primary care.

However, removal of inaccurate listings was more likely in the combined metropolitan areas compared with nonmetropolitan areas (28.5% vs 21.3%, respectively; $P < .001$). We also found overall inaccuracies to be lower in the metropolitan areas (36.1% vs 44.9%; $P < .001$). This also applied to contact information issues (27.5% vs 34.7%; $P < .002$) and inaccurate specialty designations (9.2% vs 13.3%; $P < .004$). However, we did not find any differences in the amount of time between survey contacts for providers with persistent inaccuracies based on rurality and ACA pricing region.

DISCUSSION

Our analyses showed that provider directory inaccuracies persist over extensive periods of time with 40% of searched providers continuing to exhibit inaccuracies after at least 540 days on average. Although 25% of listings had been removed, of those that remained, only 13% of previously identified inaccurate listings were fully corrected. These findings have important implications for current policy efforts to hold carriers accountable for the accuracy of their

provider directories. In particular, because the No Surprises Act mandates corrective action for provider directory inaccuracies within 90 days of identification as well as consistent verification efforts, our results highlight the challenges of both implementing and enforcing these regulatory actions effectively.

High rates of provider directory inaccuracies have been identified in prior studies,^{2,5,6,9,20} but we add to this literature not only by showing that the inaccuracies persist but also finding substantial variation at the carrier level. These findings indicate that carriers may take different approaches to network adequacy verification, with variation in staffing, resources, administrative capacity, and institutional knowledge that could affect the frequency and accuracy of these efforts. Our finding of geographic differences (eg, between the state's metropolitan areas and nonmetropolitan areas) in inaccuracies and corrective action may be explained by carriers prioritizing updates in areas with more claims or enrollees. Because directory accuracy relies on the willingness or ability of providers to respond to heavy administrative demands involved with verifying, maintaining, and updating their information,

TRENDS FROM THE FIELD

It is plausible that providers in metropolitan areas are more likely to be part of larger health systems that are better equipped to respond to these administrative demands. Future research should seek to further investigate these underlying drivers related to the maintenance of accurate provider network information and to identify best practices.

Limitations

Our analysis has several limitations. First, data are limited to one state and to selected specialties. However, Pennsylvania is a relatively large state with diverse regional markets that mirror those in other geographic regions, with several of the carriers having multistate or national presence. We also purposively sampled a diverse set of specialties to enhance generalizability. Second, we were unable to assess the exact time points that directory accuracies were addressed between our 2 survey attempts. Third, as noted earlier, because callers presented as consumers, phone calls were terminated once any inaccuracy was identified. As a result, it is possible that we underestimated the extent of inaccuracies in the provider directories. Moreover, we were unable to verify information for 385 of the 1351 providers we sought to recontact (28.5%) because we were not able to connect to medical staff. In these cases, the providers were returned to the randomized calling list for repeated attempts to reach them. Finally, although we identified directory inaccuracies through our secret shopper approach, the frequency with which carriers themselves may be conducting similar assessments is unclear, although the No Surprises Act mandates carriers to verify and update provider directories at least every 90 days.

CONCLUSION

Our findings that 40% of searched providers continued to have inaccurate listings for at least 540 days on average suggest that current approaches by regulators and carriers are highly inadequate to meet the demands of consumers related to accurate provider directories. However, differences across carriers suggest opportunities for leveraging administrative and technological resources to improve provider directory accuracy and responsiveness. In the meantime, the extent to which directory inaccuracies persisted suggests that current regulatory approaches, including network adequacy and provider directory policies, may not prove effective,^{14,19} particularly without accompanying enforcement mechanisms. ■

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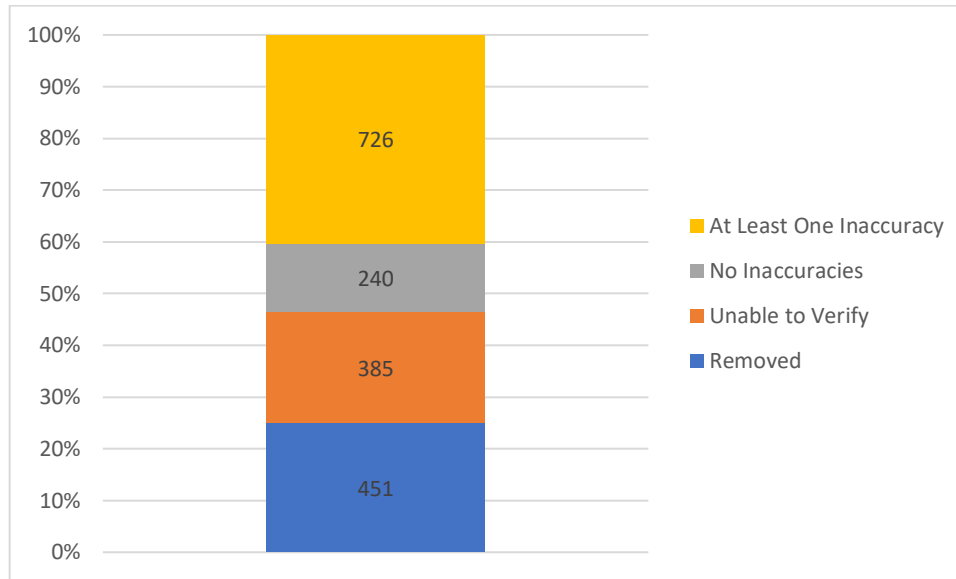
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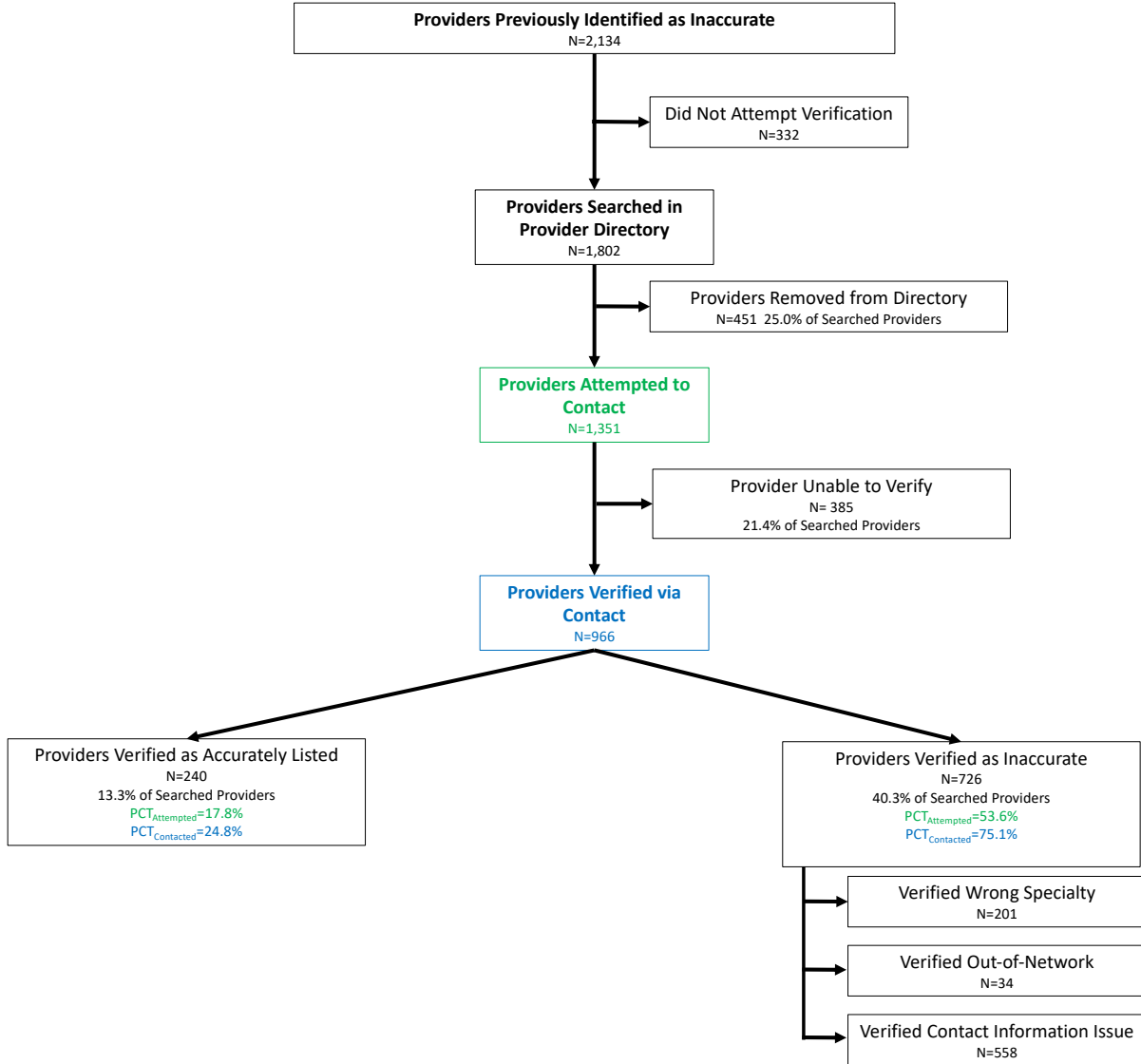
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eAppendix Exhibit 1: Count and Percentage of Providers Removed or Verified as Accurate or Inaccurate



Data based on a survey of 1,802 providers. Of these, 1,349 were listed in online provider directories. Data collection was confined to the ACA market. Survey was conducted from December 11, 2023, to January 8, 2024. Specialties included were cardiology, dermatology, endocrinology, gastroenterology, neurology, obstetrics-gynecology, and primary care.

eAppendix Exhibit 2: Data Collection Process and Results Overview



Notes: Data based on a survey of 1,802 providers. Of these, 1,349 were listed in online provider directories. Data collection was confined to the ACA market. Survey was conducted from December 11, 2023, to January 8, 2024. Specialties included were cardiology, dermatology, endocrinology, gastroenterology, neurology, obstetrics-gynecology, and primary care.

eAppendix Exhibit 3: Provider Verification Data, by Carrier

Carrier	Overall	Removed		Unable to Verify		No Inaccuracies		At Least One Inaccuracy		Contact Information Issue	Inaccurate Specialty	Out-of-Network
		N	Proportion	N	Proportion	N	Proportion	N	Proportion	N	N	N
Carrier A	325	59	0.18	80	0.25	41	0.13	145	0.45	107	46	4
Carrier B	240	35	0.15	58	0.24	40	0.17	107	0.45	87	23	3
Carrier C	306	157	0.51	49	0.16	29	0.09	71	0.23	56	16	8
Carrier D	248	40	0.16	45	0.18	33	0.13	130	0.52	106	28	8
Carrier E	683	160	0.23	153	0.22	97	0.14	273	0.40	202	88	11
Total	1802	451	0.25	385	0.21	240	0.13	726	0.40	558	201	34

Notes: Data based on a survey of 1,802 providers. Of these, 1,349 were listed in online provider directories. Data collection was confined to the ACA market. Survey was conducted from December 11, 2023, to January 8, 2024. Specialties included were cardiology, dermatology, endocrinology, gastroenterology, neurology, obstetrics-gynecology, and primary care.

eAppendix Exhibit 4: Provider Verification Data, by Carrier, Unadjusted and Adjusted Results

	Removed		Unable to Verify		No Inaccuracies		At Least on Inaccuracies		Contact Information Issue		Inaccurate Specialty		Out-of-Network	
	Unadjusted	Adjusted	Unadjusted	Adjusted	Unadjusted	Adjusted	Unadjusted	Adjusted	Unadjusted	Adjusted	Unadjusted	Adjusted	Unadjusted	Adjusted
Carrier C	51.3%	50.7%	16.0%	15.2%	9.5%	7.8%	23.2%	26.3%	18.3%	21.6%	5.2%	6.2%	2.6%	2.3%
Carrier A	18.2%	18.4%	24.6%	25.8%	12.6%	14.7%	44.6%	41.1%	32.9%	28.6%	14.2%	13.6%	1.2%	1.6%
Carrier E	23.4%	24.2%	22.4%	22.5%	14.2%	14.3%	40.0%	39.1%	29.6%	28.7%	12.9%	12.7%	1.6%	1.6%
Carrier B	14.6%	13.7%	24.2%	23.3%	16.7%	15.1%	44.6%	47.9%	36.3%	39.7%	9.6%	10.4%	1.3%	1.2%
Carrier D	16.1%	15.4%	18.1%	18.2%	13.3%	14.0%	52.4%	52.5%	42.7%	43.5%	11.3%	10.6%	3.2%	3.3%
X Total	25.0%	25.0%	21.4%	21.4%	13.3%	13.3%	40.3%	40.3%	31.0%	31.0%	11.2%	11.2%	1.9%	1.9%

Notes: Data based on a survey of 1,802 providers. Of these, 1,349 were listed in online provider directories. Data collection was confined to the ACA market. Survey was conducted from December 11, 2023, to January 8, 2024. Specialties included were cardiology, dermatology, endocrinology, gastroenterology, neurology, obstetrics-gynecology, and primary care. Adjusted results based on linear probability models with carrier, specialty, and rating area (Rating Areas 4 & 8 vs. all other rating areas).

eAppendix Exhibit 5: Tests of Proportion for Removal from Provider Directory, by Carrier

Carrier 1	Carrier 2	Proportion 1	Proportion 2	Delta	p-value
	Carrier A	0.513	0.182	0.332	0.000
Carrier C	Carrier E	0.513	0.234	0.279	0.000
	Carrier B	0.513	0.146	0.367	0.000
	Carrier D	0.513	0.161	0.352	0.000
	
Carrier A	Carrier E	0.182	0.234	-0.053	0.058
	Carrier B	0.182	0.146	0.036	0.260
	Carrier D	0.182	0.161	0.020	0.525
	
Carrier E	Carrier B	0.234	0.146	0.088	0.004
	Carrier D	0.234	0.161	0.073	0.017
	
Carrier B	Carrier D	0.146	0.161	-0.015	0.636

Notes: Data based on a survey of 1,802 providers. Of these, 1,349 were listed in online provider directories. Data collection was confined to the ACA market. Survey was conducted from December 11, 2023, to January 8, 2024. Specialties included were cardiology, dermatology, endocrinology, gastroenterology, neurology, obstetrics-gynecology, and primary care.

eAppendix Exhibit 6: Tests of Proportion for Providers with Inaccuracies, by Carrier

Carrier 1	Carrier 2	Proportion 1	Proportion 2	Delta	p-value
	Carrier A	0.232	0.446	-0.214	0.000
Carrier C	Carrier E	0.232	0.400	-0.168	0.000
	Carrier B	0.232	0.446	-0.214	0.000
	Carrier D	0.232	0.524	-0.292	0.000
	
Carrier A	Carrier E	0.446	0.400	0.046	0.162
	Carrier B	0.446	0.446	0.000	0.994
	Carrier D	0.446	0.524	-0.078	0.064
Carrier E	
	Carrier B	0.400	0.446	-0.046	0.212
	Carrier D	0.400	0.524	-0.124	0.001
Carrier B	Carrier D	0.446	0.524	-0.078	0.083

Notes: Data based on a survey of 1,802 providers. Of these, 1,349 were listed in online provider directories. Data collection was confined to the ACA market. Survey was conducted from December 11, 2023, to January 8, 2024. Specialties included were cardiology, dermatology, endocrinology, gastroenterology, neurology, obstetrics-gynecology, and primary care.

eAppendix Exhibit 7: Tests of Proportion for Providers with Contact Information Issues, by Carrier

Carrier 1	Carrier 2	Proportion 1	Proportion 2	Delta	p-value
Carrier C	Carrier A	0.183	0.329	-0.146	0.000
	Carrier E	0.183	0.296	-0.113	0.000
	Carrier B	0.183	0.363	-0.179	0.000
	Carrier D	0.183	0.427	-0.244	0.000
Carrier A	Carrier E	0.329	0.296	0.033	0.281
	Carrier B	0.329	0.363	-0.033	0.410
	Carrier D	0.329	0.427	-0.098	0.016
Carrier E	Carrier B	0.296	0.363	-0.067	0.055
	Carrier D	0.296	0.427	-0.132	0.000
Carrier B	Carrier D	0.363	0.427	-0.065	0.143

Notes: Data based on a survey of 1,802 providers. Of these, 1,349 were listed in online provider directories. Data collection was confined to the ACA market. Survey was conducted from December 11, 2023, to January 8, 2024. Specialties included were cardiology, dermatology, endocrinology, gastroenterology, neurology, obstetrics-gynecology, and primary care.

eAppendix Exhibit 8: Tests of Proportion for Providers with Inaccurate Specialty, by Carrier

Carrier 1	Carrier 2	Proportion 1	Proportion 2	Delta	p-value
	Carrier A	0.052	0.142	-0.089	0.000
Carrier C	Carrier E	0.052	0.129	-0.077	0.000
	Carrier B	0.052	0.096	-0.044	0.050
	Carrier D	0.052	0.113	-0.061	0.009
	
Carrier A	Carrier E	0.142	0.129	0.013	0.579
	Carrier B	0.142	0.096	0.046	0.101
	Carrier D	0.142	0.113	0.029	0.311
Carrier E	
	Carrier B	0.129	0.096	0.033	0.176
	Carrier D	0.129	0.113	0.016	0.515
Carrier B	Carrier D	0.096	0.113	-0.017	0.538

Notes: Data based on a survey of 1,802 providers. Of these, 1,349 were listed in online provider directories. Data collection was confined to the ACA market. Survey was conducted from December 11, 2023, to January 8, 2024. Specialties included were cardiology, dermatology, endocrinology, gastroenterology, neurology, obstetrics-gynecology, and primary care.

eAppendix Exhibit 9: Tests of Proportion for Out-of-Network Providers, by Carrier

Carrier 1	Carrier 2	Proportion 1	Proportion 2	Delta	p-value
Carrier C	Carrier A	0.026	0.012	0.014	0.203
	Carrier E	0.026	0.016	0.010	0.288
	Carrier B	0.026	0.013	0.014	0.260
	Carrier D	0.026	0.032	-0.006	0.669
Carrier A	Carrier E	0.012	0.016	-0.004	0.642
	Carrier B	0.012	0.013	0.000	0.984
	Carrier D	0.012	0.032	-0.020	0.098
Carrier E	Carrier B	0.016	0.013	0.004	0.694
	Carrier D	0.016	0.032	-0.016	0.123
Carrier B	Carrier D	0.013	0.032	-0.020	0.142

Notes: Data based on a survey of 1,802 providers. Of these, 1,349 were listed in online provider directories. Data collection was confined to the ACA market. Survey was conducted from December 11, 2023, to January 8, 2024. Specialties included were cardiology, dermatology, endocrinology, gastroenterology, neurology, obstetrics-gynecology, and primary care.

eAppendix Exhibit 10: Number of Days Between Survey Contacts for Providers with Inaccuracies, by Carrier

Carrier	Observations	Mean	Median	Range	Adjusted Mean
Carrier A	145	542.2	546	433 544.1	544.1
Carrier B	107	537.4	538	432 538.4	538.4
Carrier C	71	542.7	542	510 543.2	543.2
Carrier D	130	538.6	545	434 538.4	538.4
Carrier E	273	539.3	545	418 540.1	540.1
Total	726	539.8	544	418 540.9	540.9

Notes: Data based on a survey of 1,802 providers. Of these, 1,349 were listed in online provider directories. Data collection was confined to the ACA market. Survey was conducted from December 11, 2023, to January 8, 2024. Specialties included were cardiology, dermatology, endocrinology, gastroenterology, neurology, obstetrics-gynecology, and primary care.

eAppendix Exhibit 11: T-tests for Days Between Survey Contacts for Providers with Persistent Inaccuracies, by Carrier

Carrier 1	Carrier 2	Mean 1	Mean 2	Delta	p-value
	Carrier A	542.7	542.2	0.532	0.855
Carrier C	Carrier E	542.7	539.3	3.436	0.289
	Carrier B	542.7	537.4	5.270	0.063
	Carrier D	542.7	538.6	4.118	0.223
	Carrier E	542.2	539.3	2.904	0.261
Carrier A	Carrier B	542.2	537.4	4.738	0.090
	Carrier D	542.2	538.6	3.586	0.226
	Carrier B	539.3	537.4	1.833	0.519
Carrier E	Carrier D	539.3	538.6	0.682	0.808
	Carrier D	537.4	538.6	-1.151	0.715

Notes: Data based on a survey of 1,802 providers. Of these, 1,349 were listed in online provider directories. Data collection was confined to the ACA market. Survey was conducted from December 11, 2023, to January 8, 2024. Specialties included were cardiology, dermatology, endocrinology, gastroenterology, neurology, obstetrics-gynecology, and primary care.

eAppendix Exhibit 12: Tests of Proportion for Providers without Inaccuracies, by Carrier

Carrier 1	Carrier 2	Proportion 1	Proportion 2	Delta	p-value
	Carrier A	0.095	0.126	-0.031	0.210
Carrier C	Carrier E	0.095	0.142	-0.047	0.039
	Carrier B	0.095	0.167	-0.072	0.012
	Carrier D	0.095	0.133	-0.038	0.155
	
Carrier A	Carrier E	0.126	0.142	-0.016	0.493
	Carrier B	0.126	0.167	-0.041	0.174
	Carrier D	0.126	0.133	-0.007	0.807
	
Carrier E	Carrier B	0.142	0.167	-0.025	0.356
	Carrier D	0.142	0.133	0.009	0.727
	
Carrier B	Carrier D	0.167	0.133	0.034	0.298

Notes: Data based on a survey of 1,802 providers. Of these, 1,349 were listed in online provider directories. Data collection was confined to the ACA market. Survey was conducted from December 11, 2023, to January 8, 2024. Specialties included were cardiology, dermatology, endocrinology, gastroenterology, neurology, obstetrics-gynecology, and primary care.

eAppendix Exhibit 13: Provider Verification Data, by Specialty

Specialty	Overall	Removed		Unable to Verify		No Inaccuracies		At Least One Inaccuracy		Contact Information Issue	Inaccurate Specialty	Out-of-Network
		N	Proportion	N	Proportion	N	Proportion	N	Proportion	N	N	N
Cardiology	219	58	0.26	46	0.21	31	0.14	84	0.38	71	18	2
Dermatology	170	33	0.19	42	0.25	39	0.23	56	0.33	43	13	6
Endocrinology	202	38	0.19	46	0.23	34	0.17	84	0.42	64	28	2
Gastroenterology	248	58	0.23	53	0.21	36	0.15	101	0.41	81	19	7
Neurology	409	114	0.28	83	0.20	34	0.08	178	0.44	140	52	4
OBGYN	248	85	0.34	44	0.18	25	0.10	94	0.38	78	21	4
Primary Care	306	65	0.21	71	0.23	41	0.13	129	0.42	81	50	9
Total	1802	451	0.25	385	0.21	240	0.13	726	0.40	558	201	34

Notes: Data based on a survey of 1,802 providers. Of these, 1,349 were listed in online provider directories. Data collection was confined to the ACA market. Survey was conducted from December 11, 2023, to January 8, 2024. Specialties included were cardiology, dermatology, endocrinology, gastroenterology, neurology, obstetrics-gynecology, and primary care.

eAppendix Exhibit 14: Provider Verification Data, by Carrier, Unadjusted and Adjusted Results

Specialty	Removed		Unable to Verify		No Inaccuracies		At Least on Inaccuracies		Contact Information Issue		Inaccurate Specialty		Out-of-Network	
	Unadjusted	Adjusted	Unadjusted	Adjusted	Unadjusted	Adjusted	Unadjusted	Adjusted	Unadjusted	Adjusted	Unadjusted	Adjusted	Unadjusted	Adjusted
Cardiology	26.5%	27.3%	21.0%	20.7%	14.2%	13.9%	38.4%	38.1%	32.4%	32.3%	8.2%	8.0%	0.9%	1.0%
Dermatology	19.4%	16.3%	24.7%	25.0%	22.9%	23.2%	32.9%	35.6%	25.3%	27.6%	7.6%	8.1%	3.5%	3.6%
Endocrinology	18.8%	21.6%	22.8%	22.1%	16.8%	16.7%	41.6%	39.6%	31.7%	30.2%	13.9%	13.1%	1.0%	1.1%
Gastroenterology	23.4%	22.1%	21.4%	21.3%	14.5%	14.6%	40.7%	42.0%	32.7%	33.9%	7.7%	7.8%	2.8%	2.9%
Neurology	27.9%	28.3%	20.3%	20.3%	8.3%	8.2%	43.5%	43.3%	34.2%	33.9%	12.7%	13.0%	1.0%	0.9%
OBGYN	34.3%	33.9%	17.7%	18.1%	10.1%	10.7%	37.9%	37.3%	31.5%	30.8%	8.5%	8.3%	1.6%	1.6%
Primary Care	21.2%	21.3%	23.2%	23.5%	13.4%	13.2%	42.2%	41.9%	26.5%	26.3%	16.3%	16.3%	2.9%	2.8%
Total	25.0%	25.0%	21.4%	21.4%	13.3%	13.3%	40.3%	40.3%	31.0%	31.0%	11.2%	11.2%	1.9%	1.9%

Notes: Data based on a survey of 1,802 providers. Of these, 1,349 were listed in online provider directories. Data collection was confined to the ACA market. Survey was conducted from December 11, 2023, to January 8, 2024. Specialties included were cardiology, dermatology, endocrinology, gastroenterology, neurology, obstetrics-gynecology, and primary care. Adjusted results based on linear probability models with carrier, specialty, and rating area (Rating Areas 4 & 8 vs. all other rating areas).

eAppendix Exhibit 15: Tests of Proportion for Removal from Provider Directory, by Specialty

Specialty 1	Specialty 2	Proportion 1	Proportion 2	Delta	p-value
Cardiology	Dermatology	0.265	0.194	0.071	0.102
	Endocrinology	0.265	0.188	0.077	0.061
	Gastroenterology	0.265	0.234	0.031	0.440
	Neurology	0.265	0.279	-0.014	0.710
	OBGYN	0.265	0.343	-0.078	0.068
	Primary Care	0.265	0.212	0.052	0.162
Dermatology	Endocrinology	0.194	0.188	0.006	0.883
	Gastroenterology	0.194	0.234	-0.040	0.333
	Neurology	0.194	0.279	-0.085	0.033
	OBGYN	0.194	0.343	-0.149	0.001
	Primary Care	0.194	0.212	-0.018	0.636
Endocrinology	Gastroenterology	0.188	0.234	-0.046	0.239
	Neurology	0.188	0.279	-0.091	0.015
	OBGYN	0.188	0.343	-0.155	0.000
	Primary Care	0.188	0.212	-0.024	0.505
Gastroenterology	Neurology	0.234	0.279	-0.045	0.205
	OBGYN	0.234	0.343	-0.109	0.007
	Primary Care	0.234	0.212	0.021	0.546
Neurology	OBGYN	0.279	0.343	-0.064	0.083
	Primary Care	0.279	0.212	0.066	0.043
OBGYN	Primary Care	0.343	0.212	0.130	0.001

Notes: Data based on a survey of 1,802 providers. Of these, 1,349 were listed in online provider directories. Data collection was confined to the ACA market. Survey was conducted from December 11, 2023, to January 8, 2024. Specialties included were cardiology, dermatology, endocrinology, gastroenterology, neurology, obstetrics-gynecology, and primary care.

eAppendix Exhibit 16: Tests of Proportion for Providers with Inaccuracies, by Specialty

Specialty 1	Specialty 2	Proportion 1	Proportion 2	Delta	p-value
Cardiology	Dermatology	0.384	0.329	0.054	0.270
	Endocrinology	0.384	0.416	-0.032	0.499
	Gastroenterology	0.384	0.407	-0.024	0.601
	Neurology	0.384	0.435	-0.052	0.211
	OBGYN	0.384	0.379	0.005	0.920
	Primary Care	0.384	0.422	-0.038	0.382
Dermatology	Endocrinology	0.329	0.416	-0.086	0.087
	Gastroenterology	0.329	0.407	-0.078	0.106
	Neurology	0.329	0.435	-0.106	0.018
	OBGYN	0.329	0.379	-0.050	0.299
	Primary Care	0.329	0.422	-0.092	0.048
Endocrinology	Gastroenterology	0.416	0.407	0.009	0.854
	Neurology	0.416	0.435	-0.019	0.649
	OBGYN	0.416	0.379	0.037	0.427
	Primary Care	0.416	0.422	-0.006	0.898
Gastroenterology	Neurology	0.407	0.435	-0.028	0.482
	OBGYN	0.407	0.379	0.028	0.520
	Primary Care	0.407	0.422	-0.014	0.734
Neurology	OBGYN	0.435	0.379	0.056	0.156
	Primary Care	0.435	0.422	0.014	0.715
OBGYN	Primary Care	0.379	0.422	-0.043	0.310

Notes: Data based on a survey of 1,802 providers. Of these, 1,349 were listed in online provider directories. Data collection was confined to the ACA market. Survey was conducted from December 11, 2023, to January 8, 2024. Specialties included were cardiology, dermatology, endocrinology, gastroenterology, neurology, obstetrics-gynecology, and primary care.

eAppendix Exhibit 17: Tests of Proportion for Providers with Contact Information Issues, by Specialty

Specialty 1	Specialty 2	Proportion 1	Proportion 2	Delta	p-value
Cardiology	Dermatology	0.324	0.253	0.071	0.126
	Endocrinology	0.324	0.317	0.007	0.871
	Gastroenterology	0.324	0.327	-0.002	0.956
	Neurology	0.324	0.342	-0.018	0.647
	OBGYN	0.324	0.315	0.010	0.823
	Primary Care	0.324	0.265	0.059	0.138
Dermatology	Endocrinology	0.253	0.317	-0.064	0.175
	Gastroenterology	0.253	0.327	-0.074	0.105
	Neurology	0.253	0.342	-0.089	0.035
	OBGYN	0.253	0.315	-0.062	0.173
	Primary Care	0.253	0.265	-0.012	0.779
Endocrinology	Gastroenterology	0.317	0.327	-0.010	0.825
	Neurology	0.317	0.342	-0.025	0.530
	OBGYN	0.317	0.315	0.002	0.958
	Primary Care	0.317	0.265	0.052	0.203
Gastroenterology	Neurology	0.327	0.342	-0.016	0.680
	OBGYN	0.327	0.315	0.012	0.773
	Primary Care	0.327	0.265	0.062	0.111
Neurology	OBGYN	0.342	0.315	0.028	0.463
	Primary Care	0.342	0.265	0.078	0.026
OBGYN	Primary Care	0.315	0.265	0.050	0.197

Notes: Data based on a survey of 1,802 providers. Of these, 1,349 were listed in online provider directories. Data collection was confined to the ACA market. Survey was conducted from December 11, 2023, to January 8, 2024. Specialties included were cardiology, dermatology, endocrinology, gastroenterology, neurology, obstetrics-gynecology, and primary care.

eAppendix Exhibit 18: Tests of Proportion for Providers with Inaccurate Specialty, by Specialty

Specialty 1	Specialty 2	Proportion 1	Proportion 2	Delta	p-value
Cardiology	Dermatology	0.082	0.076	0.006	0.836
	Endocrinology	0.082	0.139	-0.056	0.064
	Gastroenterology	0.082	0.077	0.006	0.824
	Neurology	0.082	0.127	-0.045	0.088
	OBGYN	0.082	0.085	-0.002	0.923
	Primary Care	0.082	0.163	-0.081	0.006
Dermatology	Endocrinology	0.076	0.139	-0.062	0.057
	Gastroenterology	0.076	0.077	0.000	0.996
	Neurology	0.076	0.127	-0.051	0.079
	OBGYN	0.076	0.085	-0.008	0.763
	Primary Care	0.076	0.163	-0.087	0.007
	Endocrinology	Gastroenterology	0.139	0.077	0.062
Neurology		0.139	0.127	0.011	0.692
OBGYN		0.139	0.085	0.054	0.068
Primary Care		0.139	0.163	-0.025	0.448
Gastroenterology	Neurology	0.077	0.127	-0.051	0.043
	OBGYN	0.077	0.085	-0.008	0.742
	Primary Care	0.077	0.163	-0.087	0.002
Neurology	OBGYN	0.127	0.085	0.042	0.093
	Primary Care	0.127	0.163	-0.036	0.170
OBGYN	Primary Care	0.085	0.163	-0.079	0.006

Notes: Data based on a survey of 1,802 providers. Of these, 1,349 were listed in online provider directories. Data collection was confined to the ACA market. Survey was conducted from December 11, 2023, to January 8, 2024. Specialties included were cardiology, dermatology, endocrinology, gastroenterology, neurology, obstetrics-gynecology, and primary care.

eAppendix Exhibit 19: Tests of Proportion for Out-of-Network Providers, by Specialty

Specialty 1	Specialty 2	Proportion 1	Proportion 2	Delta	p-value
Cardiology	Dermatology	0.009	0.035	-0.026	0.071
	Endocrinology	0.009	0.010	-0.001	0.935
	Gastroenterology	0.009	0.028	-0.019	0.134
	Neurology	0.009	0.010	-0.001	0.937
	OBGYN	0.009	0.016	-0.007	0.503
	Primary Care	0.009	0.029	-0.020	0.110
Dermatology	Endocrinology	0.035	0.010	0.025	0.093
	Gastroenterology	0.035	0.028	0.007	0.683
	Neurology	0.035	0.010	0.026	0.032
	OBGYN	0.035	0.016	0.019	0.208
	Primary Care	0.035	0.029	0.006	0.725
Endocrinology	Gastroenterology	0.010	0.028	-0.018	0.167
	Neurology	0.010	0.010	0.000	0.989
	OBGYN	0.010	0.016	-0.006	0.567
	Primary Care	0.010	0.029	-0.020	0.139
Gastroenterology	Neurology	0.028	0.010	0.018	0.074
	OBGYN	0.028	0.016	0.012	0.360
	Primary Care	0.028	0.029	-0.001	0.934
Neurology	OBGYN	0.010	0.016	-0.006	0.472
	Primary Care	0.010	0.029	-0.020	0.052
OBGYN	Primary Care	0.016	0.029	-0.013	0.304

Notes: Data based on a survey of 1,802 providers. Of these, 1,349 were listed in online provider directories. Data collection was confined to the ACA market. Survey was conducted from December 11, 2023, to January 8, 2024. Specialties included were cardiology, dermatology, endocrinology, gastroenterology, neurology, obstetrics-gynecology, and primary care.

eAppendix Exhibit 20: Number of Days Between Survey Contacts for Providers with Inaccuracies, by Specialty

Specialty	Observations	Mean	Median	Range		Adjusted Mean
Cardiology	84	533.2	538	427	573	538.2
Dermatology	56	536.1	540	419	568	539.7
Endocrinology	84	539.9	545.5	418	569	539.6
Gastroenterology	101	541.9	545	449	569	542.9
Neurology	178	541.8	546	429	569	542.3
OBGYN	94	540.0	546	432	570	539.1
Primary Care	129	541.0	545	434	570	542.4
Total	726	539.8	544	418	573	540.9

Notes: Data based on a survey of 1,802 providers. Of these, 1,349 were listed in online provider directories. Data collection was confined to the ACA market. Survey was conducted from December 11, 2023, to January 8, 2024. Specialties included were cardiology, dermatology, endocrinology, gastroenterology, neurology, obstetrics-gynecology, and primary care.

eAppendix Exhibit 21: T-tests for Days Between Survey Contacts for Providers with Persistent Inaccuracies, by Specialty

Carrier 1	Carrier 2	Mean 1	Mean 2	Delta	p-value
Cardiology	Dermatology	533.2	536.1	-2.917	0.570
	Endocrinology	533.2	539.9	-6.667	0.116
	Gastroenterology	533.2	541.9	-8.685	0.015
	Neurology	533.2	541.8	-8.611	0.009
	OBGYN	533.2	540.0	-6.816	0.093
	Primary Care	533.2	541.0	-7.774	0.030
Dermatology	Endocrinology	536.1	539.9	-3.750	0.422
	Gastroenterology	536.1	541.9	-5.768	0.133
	Neurology	536.1	541.8	-5.694	0.124
	OBGYN	536.1	540.0	-3.900	0.384
	Primary Care	536.1	541.0	-4.857	0.222
Endocrinology	Gastroenterology	539.9	541.9	-2.018	0.524
	Neurology	539.9	541.8	-1.944	0.522
	OBGYN	539.9	540.0	-0.150	0.968
	Primary Care	539.9	541.0	-1.107	0.735
Gastroenterology	Neurology	541.9	541.8	0.074	0.977
	OBGYN	541.9	540.0	1.868	0.539
	Primary Care	541.9	541.0	0.911	0.738
Neurology	OBGYN	541.8	540.0	1.795	0.536
	Primary Care	541.8	541.0	0.837	0.743
OBGYN	Primary Care	540.0	541.0	-0.957	0.760

Notes: Data based on a survey of 1,802 providers. Of these, 1,349 were listed in online provider directories. Data collection was confined to the ACA market. Survey was conducted from December 11, 2023, to January 8, 2024. Specialties included were cardiology, dermatology, endocrinology, gastroenterology, neurology, obstetrics-gynecology, and primary care.

eAppendix Exhibit 22: Tests of Proportion for Providers without Inaccuracies, by Specialty

Specialty 1	Specialty 2	Proportion 1	Proportion 2	Delta	p-value
Cardiology	Dermatology	0.142	0.229	-0.088	0.025
	Endocrinology	0.142	0.168	-0.027	0.448
	Gastroenterology	0.142	0.145	-0.004	0.912
	Neurology	0.142	0.083	0.058	0.022
	OBGYN	0.142	0.101	0.041	0.176
	Primary Care	0.142	0.134	0.008	0.804
Dermatology	Endocrinology	0.229	0.168	0.061	0.139
	Gastroenterology	0.229	0.145	0.084	0.027
	Neurology	0.229	0.083	0.146	0.000
	OBGYN	0.229	0.101	0.129	0.000
	Primary Care	0.229	0.134	0.095	0.008
Endocrinology	Gastroenterology	0.168	0.145	0.023	0.500
	Neurology	0.168	0.083	0.085	0.002
	OBGYN	0.168	0.101	0.068	0.035
	Primary Care	0.168	0.134	0.034	0.286
Gastroenterology	Neurology	0.145	0.083	0.062	0.012
	OBGYN	0.145	0.101	0.044	0.133
	Primary Care	0.145	0.134	0.011	0.705
Neurology	OBGYN	0.083	0.101	-0.018	0.442
	Primary Care	0.083	0.134	-0.051	0.028
OBGYN	Primary Care	0.101	0.134	-0.033	0.231

Notes: Data based on a survey of 1,802 providers. Of these, 1,349 were listed in online provider directories. Data collection was confined to the ACA market. Survey was conducted from December 11, 2023, to January 8, 2024. Specialties included were cardiology, dermatology, endocrinology, gastroenterology, neurology, obstetrics-gynecology, and primary care.

eAppendix Exhibit 23: Provider Verification Data, by Geography

Specialty	Overall	Removed		Unable to Verify		No Inaccuracies		At Least One Inaccuracy		Contact Information Issue	Inaccurate Specialty	Out-of-Network
		N	Proportion	N	Proportion	N	Proportion	N	Proportion	N	N	N
Non-Rural	1,581	396	0.250	335	0.212	218	0.138	632	0.400	489	173	29
Rural	221	55	0.249	50	0.226	22	0.100	94	0.425	69	28	5
Philadelphia / Pittsburg Rating Areas	937	267	0.285	197	0.210	135	0.144	258	0.275	258	86	21
All Other Rating Areas	865	184	0.213	188	0.217	105	0.121	388	0.449	300	115	13
Total	1,802	451	0.25	385	0.21	240	0.13	726	0.40	558	201	34

Notes: Data based on a survey of 1,802 providers. Of these, 1,349 were listed in online provider directories. Data collection was confined to the ACA market. Survey was conducted from December 11, 2023, to January 8, 2024. Specialties included were cardiology, dermatology, endocrinology, gastroenterology, neurology, obstetrics-gynecology, and primary care.

eAppendix Exhibit 24: Tests of Proportion for Removal from Provider Directory, by Geography

Geography 1	Geography 2	Proportion 1	Proportion 2	Delta	p-value
Non-Rural	Rural	0.250	0.249	0.001	0.479
Philadelphia / Pittsburg Rating Areas	All Other Rating Areas	0.285	0.213	0.072	0.000

Notes: Data based on a survey of 1,802 providers. Of these, 1,349 were listed in online provider directories. Data collection was confined to the ACA market. Survey was conducted from December 11, 2023, to January 8, 2024. Specialties included were cardiology, dermatology, endocrinology, gastroenterology, neurology, obstetrics-gynecology, and primary care.

eAppendix Exhibit 25: Tests of Proportion for Providers with Inaccuracies, by Geography

Geography 1	Geography 2	Proportion 1	Proportion 2	Delta	p-value
Non-Rural	Rural	0.400	0.425	0.026	0.234
Philadelphia / Pittsburg Rating Areas	All Other Rating Areas	0.361	0.449	0.088	0.000

Notes: Data based on a survey of 1,802 providers. Of these, 1,349 were listed in online provider directories. Data collection was confined to the ACA market. Survey was conducted from December 11, 2023, to January 8, 2024. Specialties included were cardiology, dermatology, endocrinology, gastroenterology, neurology, obstetrics-gynecology, and primary care.

eAppendix Exhibit 26: Tests of Proportion for Providers with Contact Information Issues, by Geography

Geography 1	Geography 2	Proportion 1	Proportion 2	Delta	p-value
Non-Rural	Rural	0.309	0.312	0.003	0.465
Philadelphia / Pittsburg Rating Areas	All Other Rating Areas	0.275	0.347	0.071	0.001

Notes: Data based on a survey of 1,802 providers. Of these, 1,349 were listed in online provider directories. Data collection was confined to the ACA market. Survey was conducted from December 11, 2023, to January 8, 2024. Specialties included were cardiology, dermatology, endocrinology, gastroenterology, neurology, obstetrics-gynecology, and primary care.

eAppendix Exhibit 27: Tests of Proportion for Providers with Inaccurate Specialty, by Geography

Geography 1	Geography 2	Proportion 1	Proportion 2	Delta	p-value
Non-Rural	Rural	0.109	0.127	0.017	0.222
Philadelphia / Pittsburg Rating Areas	All Other Rating Areas	0.092	0.133	0.041	0.003

Notes: Data based on a survey of 1,802 providers. Of these, 1,349 were listed in online provider directories. Data collection was confined to the ACA market. Survey was conducted from December 11, 2023, to January 8, 2024. Specialties included were cardiology, dermatology, endocrinology, gastroenterology, neurology, obstetrics-gynecology, and primary care.

eAppendix Exhibit 28: Tests of Proportion for Out-of-Network Providers, by Geography

Geography 1	Geography 2	Proportion 1	Proportion 2	Delta	p-value
Non-Rural	Rural	0.018	0.023	0.004	0.331
Philadelphia / Pittsburg Rating Areas	All Other Rating Areas	0.022	0.015	0.007	0.125

Notes: Data based on a survey of 1,802 providers. Of these, 1,349 were listed in online provider directories. Data collection was confined to the ACA market. Survey was conducted from December 11, 2023, to January 8, 2024. Specialties included were cardiology, dermatology, endocrinology, gastroenterology, neurology, obstetrics-gynecology, and primary care.

eAppendix Exhibit 29: Number of Days Between Survey Contacts for Providers with Inaccuracies, by Geography

Geography	Observations	Mean	Median	Range		Adjusted Mean
Non-Rural	632	539.8	544	418	573	541.2
Rural	94	539.79	546	427	571	539.1
Philadelphia / Pittsburg Rating Areas	338	540.0	543.5	418	573	540.1
All Other Rating Areas	388	539.6	545	420	573	541.7
Total	726	539.8	544	418	573	540.9

Notes: Data based on a survey of 1,802 providers. Of these, 1,349 were listed in online provider directories. Data collection was confined to the ACA market. Survey was conducted from December 11, 2023, to January 8, 2024. Specialties included were cardiology, dermatology, endocrinology, gastroenterology, neurology, obstetrics-gynecology, and primary care.

eAppendix Exhibit 30: T-tests for Days Between Survey Contacts for Providers with Persistent Inaccuracies, by Geography

Geography 1	Geography 2	Proportion 1	Proportion 2	Delta	p-value
Non-Rural	Rural	539.8	539.8	0.02	0.500
Philadelphia / Pittsburg Rating Areas	All Other Rating Areas	540.0	539.6	0.39	0.415

Notes: Data based on a survey of 1,802 providers. Of these, 1,349 were listed in online provider directories. Data collection was confined to the ACA market. Survey was conducted from December 11, 2023, to January 8, 2024. Specialties included were cardiology, dermatology, endocrinology, gastroenterology, neurology, obstetrics-gynecology, and primary care.

eAppendix Exhibit 31: Tests of Proportion for Providers without Inaccuracies, by Geography

Geography 1	Geography 2	Proportion 1	Proportion 2	Delta	p-value
Non-Rural	Rural	0.138	0.100	0.038	0.058
Philadelphia / Pittsburg Rating Areas	All Other Rating Areas	0.144	0.121	0.023	0.078

Notes: Data based on a survey of 1,802 providers. Of these, 1,349 were listed in online provider directories. Data collection was confined to the ACA market. Survey was conducted from December 11, 2023, to January 8, 2024. Specialties included were cardiology, dermatology, endocrinology, gastroenterology, neurology, obstetrics-gynecology, and primary care.

eAppendix Exhibit 32: Provider Verification Data, by Geography, Unadjusted and Adjusted Results

Specialty	Removed		Unable to Verify		No Inaccuracies		At Least on Inaccuracies		Contact Information Issue		Inaccurate Specialty		Out-of-Network	
	Unadjusted	Adjusted	Unadjusted	Adjusted	Unadjusted	Adjusted	Unadjusted	Adjusted	Unadjusted	Adjusted	Unadjusted	Adjusted	Unadjusted	Adjusted
Non-Rural	25.0%	25.2%	21.2%	21.2%	13.8%	13.8%	40.0%	39.7%	30.9%	30.6%	10.9%	11.0%	1.8%	1.8%
Rural	24.9%	23.4%	22.6%	22.5%	10.0%	9.9%	42.5%	44.2%	31.2%	33.4%	12.7%	12.0%	2.3%	2.3%
Philadelphia / Pittsburg Rating Areas	28.5%	25.8%	21.0%	22.3%	14.4%	15.2%	36.1%	36.6%	27.5%	26.9%	9.2%	10.4%	2.2%	2.1%
All Other Rating Areas	21.3%	24.1%	21.7%	20.3%	12.1%	11.3%	44.9%	44.3%	34.7%	35.4%	13.3%	12.0%	1.5%	1.6%
Total	25.0%	25.0%	21.4%	21.4%	13.3%	13.3%	40.3%	40.3%	31.0%	31.0%	11.2%	11.2%	1.9%	1.9%

Notes: Data based on a survey of 1,802 providers. Of these, 1,349 were listed in online provider directories. Data collection was confined to the ACA market. Survey was conducted from December 11, 2023, to January 8, 2024. Specialties included were cardiology, dermatology, endocrinology, gastroenterology, neurology, obstetrics-gynecology, and primary care. Adjusted results based on linear probability models with carrier, specialty, and rating area (Rating Areas 4 & 8 vs. all other rating areas).