

Community Health Needs Assessment of Plain Populations in Lancaster County, Pennsylvania

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Abstract: We conducted a health needs assessment of three Plain communities in Lancaster County, Pennsylvania, from a random sample of 433 households surveyed by mail. Here we compare those findings with a similar survey we conducted in 2014–2015 with additional questions on vaccine uptake and the response to COVID-19. Results of the two surveys are quite similar. Plain respondents continue to have little diagnosed asthma, fewer mental health issues, and are more likely to have had prenatal care but otherwise their health is similar to that of other adults in Lancaster County.

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Introduction

In 2014–2015, we conducted a household survey of 770 randomly selected Plain households to assess the health and health needs of adult Old Order Amish and Old Order Mennonite people living in Lancaster County, Pennsylvania (Miller et al., 2017; Miller et al., 2019). We found that, despite their relative geographic and genetic isolation, the health of adult members of the Plain communities



in Lancaster County is similar to that of other adults in the county. Notable exceptions to this are less asthma and depression in Plain families. In earlier work, we also showed that Plain women had fewer low birthweight babies compared with the general population of women in Central Pennsylvania (Miller et al., 2007). We also found that surveying Plain communities by mail is feasible and successful, with the imprimatur of a respected community organization, in 2014 the Clinic for Special Children in Strasburg, Pennsylvania (<https://clinicforspecialchildren.org/>).

In 2022, we conducted another survey of Lancaster County Plain households to assess their health and health needs, including access to and need for health care, and COVID-19 and vaccine uptake, physical health, social support, and mental health. In this case, the survey was conducted as a community health needs assessment for WellSpan Health (<https://www.wellspan.org/>), a hospital system with large numbers of the Plain populations within its catchment area. In this article, we compare the findings of these two surveys.

Community health needs assessments appraise the demographics and care needs for populations in the catchment area of not-for-profit hospitals as required by the Affordable Care Act (Centers for Disease Control and Prevention, 2022). In Lancaster County, as the Plain population approaches 10% of the county population (Young Center, 2022) and as these groups often do not have telephones, assessing their needs is important and difficult.

Methods

The Center for Opinion Research at Franklin & Marshall College conducted a household survey by mail between May and June 2022 to assess the health needs of Old Order Amish and Old Order Mennonites living in Lancaster County, Pennsylvania, and, in smaller numbers, Adams, Franklin, Lebanon, and York Counties. These Plain groups are within the catchment area of the WellSpan Health hospital system, one of four large hospital systems with overlapping patient populations in Lancaster County and surrounding counties.

Address Book of the Lancaster County Amish (Beiler, 2011; Lapp, 2018), *Directory of the Groffdale Conference Mennonite Churches* (Shirk & Shirk, 2012, 2022), and *Directory of the Weaverland Conference Mennonite Churches* (Wise & Martin, 2005) were used as the sampling frames. These contained the most complete available listing of households in their respective groups.

In Lancaster County, 2,549 Plain households were contacted and 433 (17%) responded. The response rates were 11.6% for Amish households, 26.2% for Groffdale, and 27.6% for Weaverland Mennonites. For the purposes of this analysis, the Mennonite groups were combined.

Survey methodology was very similar to that used previously (Miller et al., 2017) as was the survey instrument. A copy of the survey instrument is available from the corresponding author.

Results

We report the proportion of respondents for each survey question for Old Order Amish and Old Order Mennonites (Groffdale and Weaverland Mennonites combined) living in Lancaster County.

Our respondents in 2022 tended to be older than those in 2014 and were less likely to have children under age 18 at home (Table 1). Amish respondents ranged in age from 18 to 89 with an average age of 59 years old; Mennonites ranged in age from 18 to 98 with an average age of 52 years old. Respondents were likely to be married and to drink well water and were likely to have had their water tested for contaminants.

Respondents reported good health with few limitations (Table 2). More than 55% of respondents in each population and gender group were overweight or obese and the rates of overweight and obesity increased notably for every group but Mennonite men, where three in four remain overweight or obese. Four to 6% of respondents have diagnosed asthma. There was little change in diagnosed health conditions for either group.

Most respondents have a regular doctor who is a family physician (Table 3). One-third to one-half have needed care in the past year, and relatively few have delayed care they needed. Our respondents made relatively little use of preventive care but most take a supplementary vitamin. The use of health and preventive services was largely unchanged among both groups across the two survey periods.

There are notable differences in Amish and Mennonite belief in the safety of vaccines, the proportion of children vaccinated against childhood diseases, and uptake of the COVID-19 vaccine (Table 4). Both groups make appropriate use of prenatal care and often have home births.

Respondents reported few emotional problems and modest numbers of diagnoses of anxiety and depression, poor mental health days, and medication for mental health (Table 5). Few respondents had high CESD depression scores, few scored moderate or severe symptoms on the PHQ-8 depression scale, and most would seek medical care for mental health problems. Respondents reported very high numbers of friends and much social support.

Plain respondents reported fewer poor mental health days and fewer diagnoses of depression compared with the general population of Lancaster County adults. Compared to the approximately 10% of Amish respondents and approximately 15% of Plain Mennonite respondents who reported one or more poor mental health days in the past 30, 31% of Lancaster County adults reported one or more poor mental health days (Penn Medicine Lancaster General Health & WellSpan Health, 2022).

Further, compared with the approximately 7% of Amish respondents and approximately 18% of Plain Mennonite respondents who reported a physician diagnosis of depression, among the general population of Lancaster County adults in 2022, 23% have diagnosed depression (Penn Medicine Lancaster General Health & WellSpan Health, 2022).

These differences are also evident among the population 65 years old or older (Table 6). Among Amish respondents 65 years old or older, four of 51 (7.8%) and, among Mennonites, 14 of 77 (18.2%) reported a diagnosis of depression compared with 18.9% of Lancaster County Medicare beneficiaries. Among Amish respondents 65 or over, only five (9.8%) and, among Mennonites, only four (5.2%) reported one or more poor mental health days in the past 30, compared with 19% of Lancaster County adults 65 or older (Penn Medicine Lancaster General Health & WellSpan Health, 2022).

Similarly, among Amish respondents 65 or older, only one reported a high CESD depression score and 46 of 56 (82%) reported high levels of social support. Among Mennonites 65 or older, none score high on the CESD depression scale and 72 of 86 (84%) reported high levels of social support.

Table 1

Demographics and Environmental Exposures in Plain Populations of Lancaster County: Percentage of Respondents

	2022		2014	
	Amish (n = 162)	Mennonites (n = 271)	Amish (n = 220)	Mennonites (n = 163)
Demographics				
Age				
Under 35	11.7	26.6	32.3	26.4
35–55	32.1	29.2	32.7	38.0
Over 55	56.2	44.3	33.2	35.0
Married	75.3	75.6	84.0	74.0
Children under 18 years				
None	57.4	51.3	17.5	21.3
1–2	10.5	14.4	10.0	14.2
3–4	13.6	16.2	16.6	20.6
5 or more	18.5	18.1	55.9	43.9
Environmental exposures				
Drink well water	90.1	90.8	95.2	94.2
Home built before 1975	40.7	54.6	49.3	57.9
Live on a farm	48.1	39.1	52.3	39.4
(Among those who drink well water)	(n = 146)	(n = 246)		
Water been tested for quality and contaminants	71.6	73.8		

Table 2*Health in Plain Populations of Lancaster County: Percentage of Respondents*

	2022		2014	
	Amish (n = 162)	Mennonites (n = 271)	Amish (n = 220)	Mennonites (n = 163)
Self-reported physical health				
Health fair or poor	19.8	8.5	13.3	8.1
Accomplished less than hoped as a result of physical health				
Often or all the time	4.3	5.2	4.8	15.4
Currently taking prescription medication	29.8	49.1		
Suffer from chronic pain	19.6	24.0		
BMI				
Men	(n = 66)	(n = 94)	(n = 106)	(n = 44)
Underweight (<18.5)	4.5	1.1	1.9	0
Overweight (25–29.9)	40.9	42.6	33.0	54.5
Obese (30 or greater)	15.2	35.1	13.2	22.7
Women	(n = 72)	(n = 158)	(n = 92)	(n = 111)
Underweight (<18.5)	1.4	0.6	0	3.6
Overweight (25–29.9)	34.7	37.3	31.5	22.7
Obese (30 or greater)	26.4	34.8	20.7	25.2
Health conditions				
Hypertension	18.5	23.2	5.3	25.3
High cholesterol	21.6	19.9	16.7	26.0
Coronary artery disease	6.2	7.4	4.3	5.8
Stroke	1.9	3.0	0.5	1.9
Blood clot	4.9	5.9	4.8	7.7
Epilepsy	0.6	2.6	1.0	1.3
Arthritis	14.2	16.6	13.9	16.8
Anemia	14.8	21.0	20.7	31.8
COPD	3.1	2.2	3.4	1.3
Thyroid problems	15.4	12.9	15.8	11.6
Chlamydia	0	0.4		
Herpes	0.6	0		
Gonorrhea	0	0		
Syphilis	0	0		
Diabetes	1.9	7.0	2.4	7.1
Urinary tract infection	11.7	14.8	13.4	25.6
Asthma	3.7	5.5	5.7	4.3
(Among women)	(n = 65)	(n = 150)	(n = 100)	(n = 110)
Endometriosis	1.3	6.6	2.0	6.4
Bacterial vaginosis	0	3.0	0	4.5
Vaginal yeast infection	18.8	16.8	32.0	33.6
Pelvic inflammatory disease	1.3	1.2		
Cervical cancer	0	0		
Pregnancy complications	7.5	11.4	11.0	9.2

Table 3*Health Care and Preventive Care in Plain Populations of Lancaster County: Percentage of Respondents*

	2022		2014	
	Amish (n = 162)	Mennonites (n = 271)	Amish (n = 220)	Mennonites (n = 163)
Health care				
Have a regular doctor	72.2	92.3	73.5	95.1
(If yes) regular doctor is				
Family doctor	81.2	88.4	81.1	93.5
Chiropractor	6.8	1.2	9.4	1.9
Nurse practitioner	2.6	2.4		
Midwife	3.4	2.0	1.9	1.9
Needed care in past 12 months	33.3	50.6	26.1	43.1
(If yes) delayed care because of				
Too expensive	11.1	13.9	27.9	13.8
Not sure where to go for health care	14.8	8.0	16.7	4.7
Could not make an appointment	7.4	8.8	7.3	6.2
The office or clinic was not open	11.1	3.6	7.3	3.2
No transportation	13.0	5.1	2.6	3.2
The office or clinic was too far away	0	4.4	0	0
No childcare	5.6	0.7	0	1.6
Don't like how treated	11.1	2.2	10.0	1.6
Concerned about COVID	5.6	4.4		
Preventive care health services or tests in past 12 months				
Physical checkup	25.3	42.8	19.2	36.6
Blood pressure	46.3	60.1	43.1	61.5
Blood cholesterol	20.4	26.2	17.3	26.9
Diabetes	12.3	22.1	11.4	24.4
Flu shot	1.9	13.3	3.0	16.6
Colon cancer screening	3.1	2.6		
Dental exam	25.9	62.4	39.3	69.6
(Among women)	(n = 58)	(n = 146)	(n = 94)	(n = 107)
Pelvic exam	6.3	11.4	5.3	17.8
Pap smear	2.5	7.8	12.2	24.3
Physical breast exam	6.3	15.0	13.4	22.2
Mammogram	6.3	12.6	3.2	16.5
(Among men)	(n = 70)	(n = 88)	(n = 101)	(n = 45)
Prostate exam or PSA	9.6	6.2	3.0	4.4
Number of days in past month physical activities other than work (median, range)	10 (1–31)	10 (1–31)		
Currently taking a vitamin or supplement	85.2	71.2		

Table 4

Vaccine Uptake and Pregnancy Care in Plain Populations of Lancaster County: Percentage of Respondents

	2022		2014	
	Amish (n = 162)	Mennonites (n = 271)	Amish (n = 220)	Mennonites (n = 163)
Vaccines				
Believe vaccines safe and effective (definitely or probably yes)	29.6	71.6		
Have you received the COVID-19 vaccine (yes)	2.5	13.7		
(Among families with children)	(n = 64)	(n = 120)	(n = 199)	(n = 157)
Children vaccinated	30.0	93.5	51.9	90.1
Pregnancy				
Weeks pregnant when first prenatal visit	(n = 64)	(n = 126)	(n = 146)	(n = 112)
Never	1.8	0.3	0	0
0–4	0	3.3	6.2	1.8
5–8	23.6	27.5	20.5	23.2
9–12	30.9	48.3	34.2	45.5
More than 12	43.6	20.0	39.0	29.5
Number of prenatal visits	(n = 162)	(n = 271)	(n = 149)	(n = 113)
Never	1.8	0.8	1.3	0.8
1–5	36.8	10.7	32.9	19.5
6–10	52.6	61.2	53.0	53.1
More than 10	8.8	27.3	12.8	26.5
Last baby born				
Home	47.5	46.3		
Birthing center	19.7	8.1		
Hospital	32.8	43.9		

Table 5*Mental Health and Social Support in Plain Populations of Lancaster County: Percentage of Respondents*

	2022		2014	
	Amish (n = 162)	Mennonites (n = 271)	Amish (n = 220)	Mennonites (n = 163)
Accomplished less than hoped as a result of emotional problems				
Often or all of the time	1.2	2.2	0.5	1.3
Health conditions				
Anxiety or depression	7.4	18.5	7.8	17.0
One or more poor mental health days	11.7	16.6	9.8	14.7
Taking medication or receiving treatment for a mental health condition	5.6	19.2	7.0	16.1
CESD depression score ^a				
Scoring 4–5 out of 0–5	1.9	1.1	2.3	0
Would you go to a doctor if you felt you had a mental problem				
Likely or very likely	54.3	76.8	57.6	80.2
PHQ-8 depression scale, moderate or severe symptoms ^b	9.3	1.5	1.0	0.7
Social support				
Ever experienced unfair treatment because of race, ethnicity, or cultural background	1.9	2.2		
How many close friends to talk to (median, range)	20 (1–80)	15 (1–97)	5 (0–100)	6 (0–100)
% responding often or all the time on four measures of social support ^c	86.0	90.1	87.8	90.5

^a Five questions from the Center for Epidemiologic Studies Depression Scale. ^b Personal Health Questionnaire Depression Scale. ^c Four questions from the Medical Outcomes Study Social Support Survey.

Table 6*Mental Health and Social Support in Plain Populations of Lancaster County: Percentage of Respondents 65 Years Old or Older*

	2022		
	Amish (n = 51)	Mennonites (n = 77)	Lancaster County Medicare beneficiaries ^a
Health conditions			
Anxiety or depression	7.8	18.2	18.9
One or more poor mental health days	9.8	5.2	19.0
CESD depression score ^b			
Scoring 4–5 out of 0–5	2.0	0	
Social support	(n = 56)	(n = 86)	
% responding often or all the time on four measures of social support ^c	82.1	83.7	

^a 2022 Community Health Needs Assessment. ^b Five questions from the Center for Epidemiologic Studies Depression Scale. ^c Four questions from the Medical Outcomes Study Social Support Survey.

Discussion

Responses to our survey of Plain communities were remarkably stable over the eight years between surveys despite the intervening COVID-19 pandemic. Some small differences in health and health care between 2022 and 2014 may reflect differences in the average age of respondents, probably from sampling variation. The age difference is also reflected in fewer children living in the home.

About half of respondents live on farms and in older homes that may be at risk of lead paint contamination. Although many drink well water, most have had their water tested for contaminants. However, the discovery of trichloroethylene in ground water in the Village of Intercourse, Leacock Township, Pennsylvania, in the heart of the Lancaster Amish settlement, and the decision to connect homes in Intercourse to public water systems as a result (Gonzalez, 2019), may, in time, change the provision of water to Plain households.

Respondents continue to report good health, modest numbers of chronic health diagnoses, regular health care with few impediments, relatively little preventive care but regular prenatal care when pregnant and home births, good mental health, and much social support. Differences between Mennonite and Amish respondents in some health conditions probably reflect differences in the use of health services rather than differences in underlying disease rates.

Virtually all of our respondents had prenatal care when pregnant, compared with fewer than two-thirds of other Lancaster County residents (Penn Medicine Lancaster General Health & WellSpan Health, 2022). Plain respondents continue to report fewer diagnoses of asthma than the 11% of adults in Lancaster County with diagnosed asthma (Penn Medicine Lancaster General Health & WellSpan Health, 2022).

Surveys of the Plain community once again show that these populations tend to have generally better health than the nearby “English” community in Lancaster County, notably on indicators such as asthma and mental health disorders. Despite better general health indicators, we did see that Plain respondents in every age bracket weighed more over the eight years between surveys as did every group of Lancaster County adults (Table 7), suggesting that, although Plain communities are separate, they are still subject to forces shaping the broader culture.

Our Plain respondents were also unlikely to have received the vaccine for COVID-19 and were also unworried about the disease. One local health care provider has speculated that the disease infected most of the Plain community by spring 2020, when they resumed church services and likely achieved herd immunity (Brambila, 2021).

Of particular interest are the forces that move Plain communities towards the mainstream culture. The number of Plain people who operate small businesses that interact with the outside community is growing (Wesner, n.d.) as are the number of Plain people who work outside the Plain community (McDevitt, 2019). Too, a number of Plain people have cell phones (Granville & Gilbertson, 2017) and, perhaps disturbingly, some political groups try to influence Plain voting behavior and use Plain symbols to influence the voting behavior of others (see, for example, Amish PAC, <https://www.amishpac.com/>; Kopko et al., 2021). Have these forces resulted in the relative lack of uptake of the COVID-19 vaccines?

Differences in response rates between 2014 and 2022 may reflect differences in the esteem with which sponsors of the surveys were held by the community. In 2014, the survey was undertaken with the imprimatur of the Clinic for Special Children, a widely known, admired, and supported clinic for the treatment of genetic disease among the Plain people. In 2022, the survey sponsor was the WellSpan Health System, a local, not-for-profit hospital system.

Assessing the health needs of Plain groups in Lancaster County is increasingly important to health care providers as the Plain population continues to grow and as Plain people sometimes have specialized health care needs. Further, Plain patients are often sought after as patients as they usually do not have health insurance and pay cash for services (Kraybill et al., 2013). Also, competition for patients is growing as two large providers move into the county in addition to the two already there. WellSpan has used these data to educate their own employees about the differences in health needs and habits of their Old Order patients as a way to improve care. WellSpan has also used the data to develop its Community Health Improvement Plan (https://www.wellspan.org/media/2729103/2022-25_CHIP_Report.pdf).

Given the importance of surveying Plain communities in Lancaster County and elsewhere, and the difficulty of reaching them with electronic methods, we are continuing to explore ways to improve the validity of our findings and increase the response rates to our mailed surveys.

Table 7

Overweight or Obesity (BMI \geq 25) among Plain People and the Lancaster County, Pennsylvania, General Population, 2014 and 2022: Percentage of Respondents

	2022			2014		
	Amish	Mennonites	Lancaster County	Amish	Mennonites	Lancaster County
18–44 years old	50.0	64.9	64	44.4	46.5	51
45–64 years old	64.8	84.4	81	61.2	80.4	68
65 years or older	58.3	79.5	71	46.9	69.2	66

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