

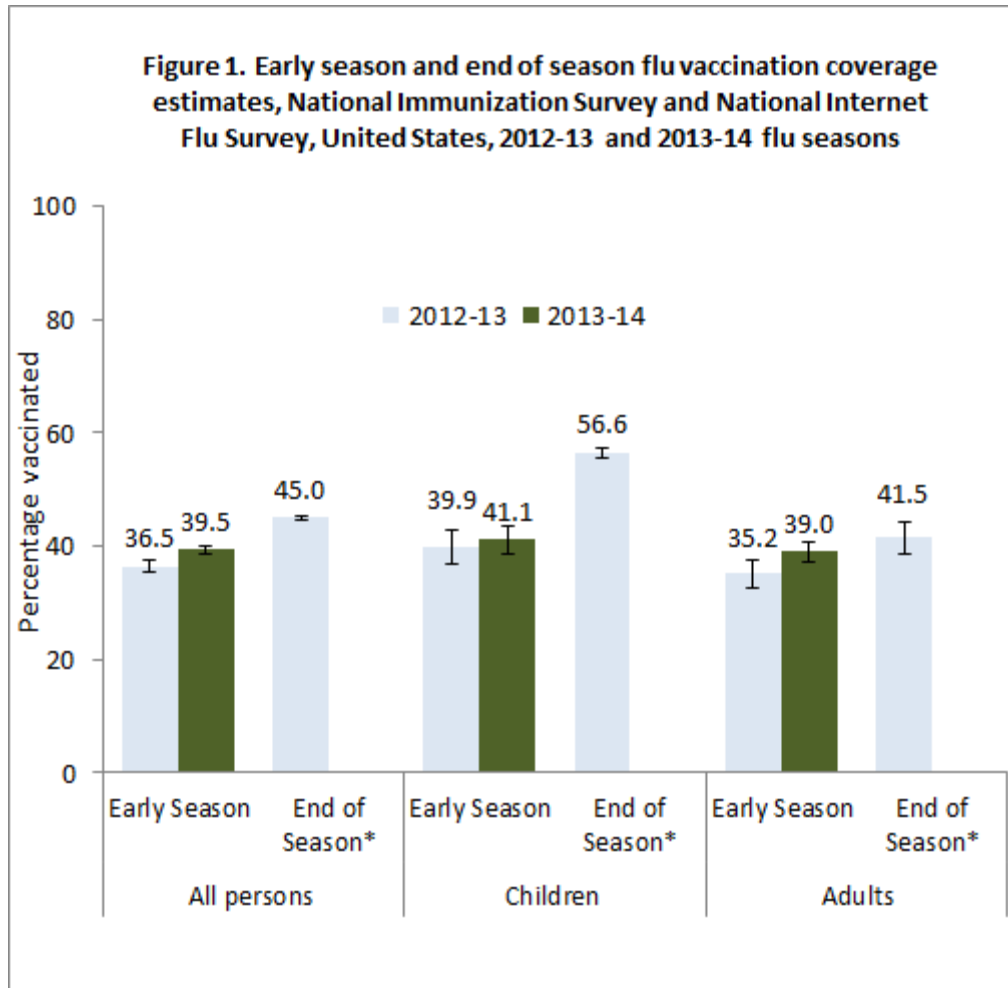
National Early Season Flu Vaccination Coverage

United States, November 2013



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Influenza (flu) is a serious disease that can lead to hospitalization and sometimes even death.

- Anyone can get sick from the flu.

Flu vaccination is the best way to prevent people from getting the flu and potentially serious flu-related complications (1). CDC recommends that everyone 6 months and older get a flu vaccination each flu season (2).

CDC analyzed survey data from the National Immunization Survey (NIS) influenza vaccination survey for children 6 months through 17 years and the National Internet Flu Survey (NIFS) for adults 18 years and older in this report. NIS data were collected by telephone surveys of parents conducted during October 1-November 16, 2013, while the NIFS data were collected through an Internet survey conducted during November 1-14, 2013. The results of these surveys provide information for use by vaccination campaigns during National Influenza Vaccination Week (NIVW), held December 8-14, 2013. This report provides early flu season estimates of how many people in the United States had received a flu vaccination. Final 2013-14 influenza season vaccination coverage estimates will be available after the end of the season.

KEY FINDINGS

- Fewer than half of children and adults were vaccinated by early flu season (early November 2013):
 - 39.5% of people 6 months and older
 - 41.1% of children 6 months to 17 years
 - 39.0% of adults 18 years and older
- Among persons ≥ 6 months, early 2013-14 flu season vaccination coverage was 3.0 percentage points higher than coverage at the same time last season.
 - The change was due to an increase in adult vaccination coverage.
- Among children, flu vaccination coverage estimates were similar compared to the same time last season.
- Among adults, early season flu vaccination coverage increased by 3.8 percentage points compared to last season.
- Among adults, non-Hispanic blacks had lower flu vaccination coverage than non-Hispanic whites. Early season flu vaccination coverage among adults was similar across all other racial/ethnic groups.
- Among children, early season flu vaccination coverage was similar across all racial/ethnic groups.
- Among both adults and children, the most common places for flu vaccination were medical locations. Retail settings and workplaces were other important venues for adults.

CONCLUSIONS/RECOMMENDATIONS

- As of early November, more than 60% of Americans had not yet received a flu vaccination and lacked the protection it offers from flu and its complications.
- Individuals should get flu vaccinations as soon as possible.
- Providers should continue to remind all patients that it is time to get a flu vaccination and use systems to ensure unvaccinated patients get a vaccination as soon as possible. Provider reminders to mention flu vaccination and standing orders are systems that can be useful in health care settings.
- Vaccination providers and immunization programs should work to increase community demand for vaccination and expand access to vaccination services.
 - Worksites can collaborate with vaccination providers and immunization programs to promote flu vaccination and even offer vaccination at work.
 - Vaccination providers should ensure systems are in place to ensure patients receive a strong recommendation for vaccination.

WHO WAS VACCINATED?

Flu Vaccination Coverage by Age Group

All Ages (≥ 6 months)

- Flu vaccination coverage early in the 2013-14 season was 39.5%, which was 3.0 percentage points higher compared to the same time last flu season (36.5%) (Table 1).

Table 1. Flu vaccination coverage by age group, National Immunization Survey and National Internet Flu Survey, United States, early 2012-13 and 2013-14 seasons

	November 2012 % [†] ± 95% CI [‡]	November 2013 % [†] ± 95% CI [‡]
Overall (≥ 6 months)	36.5 ± 1.9	39.5 ± 1.5 [§]
Children (6 months-17 years)	39.9 ± 3.0	41.1 ± 2.3
Adults (≥ 18 years)	35.2 ± 2.4	39.0 ± 1.8 [§]

[Footnotes](#) | [Data Sources and Methods](#) | [Limitations](#)

Children (6 months-17 years)

- Among children 6 months to 17 years, early season flu vaccination coverage with one or more doses was 41.1% as of early November, similar to coverage estimates from the same time last season (Table 2).
- All child age groups had similar coverage compared to the same time last flu season.
- Flu vaccination coverage among children decreased as age increased.
- Flu vaccination coverage was highest in children 6 months-4 years (50.6%) and lowest among children 13-17 years (30.2%).

Table 2. Flu vaccination coverage among children, National Immunization Survey, United States, early 2012-13 and 2013-14 seasons

	November 2012 % [†] ± 95% CI [‡]	November 2013 % [†] ± 95% CI [‡]
All children (6 months-17 years)	39.9 ± 3.0	41.1 ± 2.3
6 months-4 years	49.3 ± 6.3	50.6 ± 4.7
5-12 years	42.3 ± 3.8	43.0 ± 3.1
13-17 years	29.7 ± 5.7	30.2 ± 4.4

[Footnotes](#) | [Data Sources and Methods](#) | [Limitations](#)

Adults (ages 18 years and older)

- Among adults ≥ 18 years, early season flu vaccination coverage as of early November was 39.0%, 3.8 percentage points higher than the same time last flu season (Table 3).
- Flu vaccination coverage among adults increased compared to the same time last season in the following groups:
- Adults 18-49 years by 5.1 percentage points.
- Adults 18-64 years by 3.9 percentage points.
- Adults 18-64 years without high-risk conditions by 4.3 percentage points.
- Flu vaccination coverage among adults increased as age increased.
- Vaccination coverage among adults was highest among adults ≥ 65 years (61.8%) and lowest among adults 18-49 years (31.4%).
- Adults 18-64 years with high-risk conditions had higher coverage (44.2%) than adults 18-64 years without high-risk conditions (30.0%).

Table 3. Flu vaccination coverage among adults, National Internet Flu Survey, United States, early 2012-13 and 2013-14 seasons

	November 2012 % [†] \pm 95% CI [‡]	November 2013 % [†] \pm 95% CI [‡]
All adults (≥ 18 years)	35.2 \pm 2.4	39.0 \pm 1.8 [§]
18-49 years	26.3 \pm 3.1	31.4 \pm 2.5 [§]
50-64 years	37.9 \pm 4.3	39.1 \pm 3.1
18-64 years	30.0 \pm 2.5	33.9 \pm 2.0 [§]
18-64 years, high-risk	42.1 \pm 5.0	44.2 \pm 3.7
18-64 years, no high-risk	25.7 \pm 2.9	30.0 \pm 2.3 [§]
65+ years	59.2 \pm 6.1	61.8 \pm 3.9

[Footnotes](#) | [Data Sources and Methods](#) | [Limitations](#)

Flu Vaccination Coverage by Race/Ethnicity

Children (6 months-17 years)

- For all racial/ethnic groups, coverage among children was similar to coverage estimates compared to the same time last season (Table 4).
- There were no racial/ethnic group differences in influenza vaccination coverage of children based on these early season estimates.

Table 4. Flu vaccination coverage among children by race and ethnicity, National Immunization Survey, United States, early 2012-13 and 2013-14 seasons

	November 2012 % [†] ± 95% CI [‡]	November 2013 % [†] ± 95% CI [‡]
Children (6 months-17 years)	39.9 ± 3.0	41.1 ± 2.3
Hispanic	42.4 ± 7.1	41.2 ± 5.2
Non-Hispanic, white only	39.8 ± 3.8	41.1 ± 3.0
Non-Hispanic, black only	39.0 ± 8.4	37.6 ± 5.5
Non-Hispanic, other or multiple race	42.1 ± 8.0	46.1 ± 7.0

[Footnotes](#) | [Data Sources and Methods](#) | [Limitations](#)

Adults (18 years and older)

- Among Hispanic adults, there was a 7.8 percentage point increase in coverage (Table 5) compared to the same time last season.
- For all other racial/ethnic groups, coverage among adults was similar compared to the same time last season.
- Among adults, there was only one early season difference between the racial/ethnic groups:
- Non-Hispanic white adults had higher coverage (39.8%) compared to non-Hispanic black adults (34.6%), similar to last year.

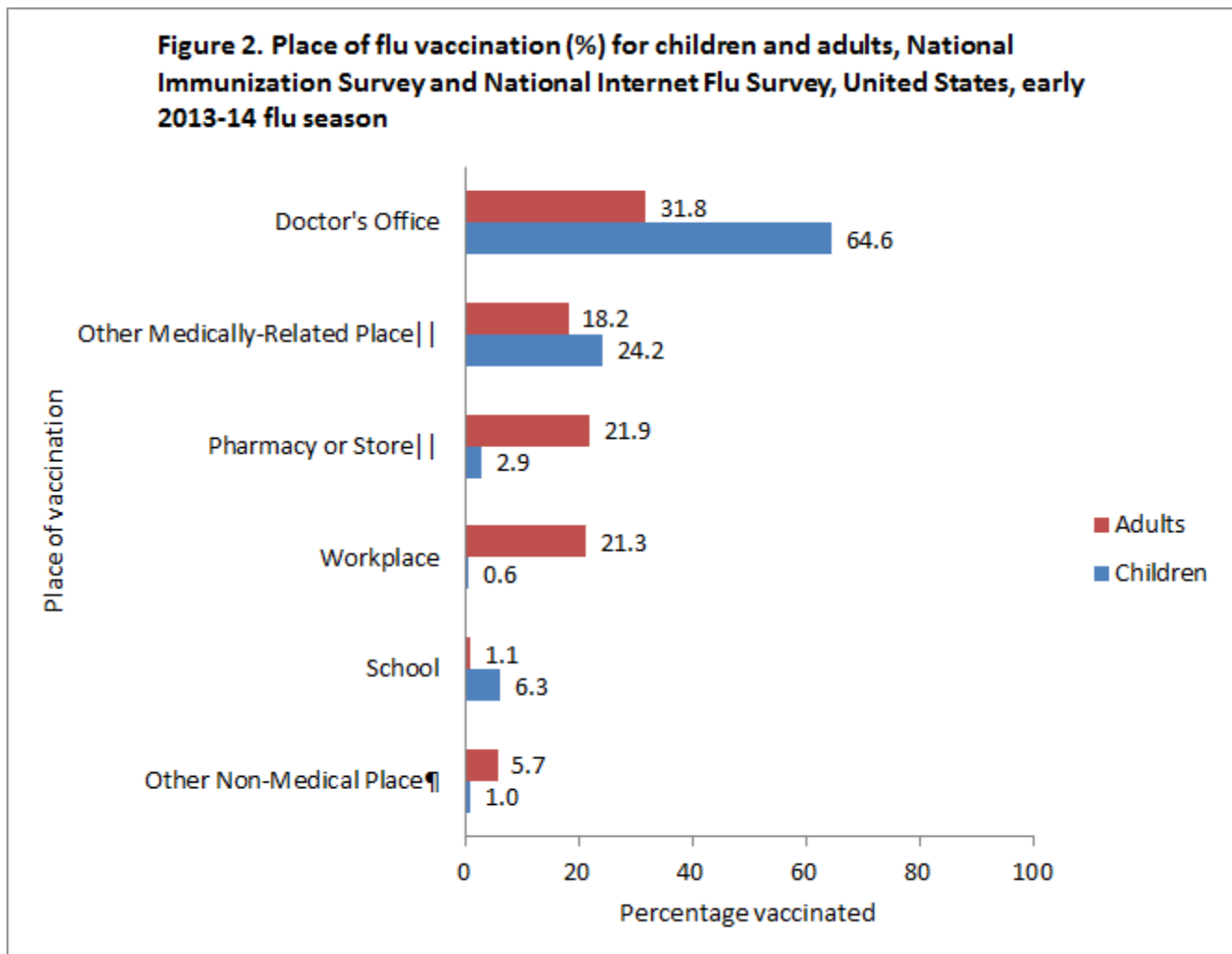
Table 5. Flu vaccination coverage among adults by race and ethnicity, National Internet Flu Survey, United States, early 2012-13 and 2013-14 seasons

	November 2012 % [†] ± 95% CI [‡]	November 2013 % [†] ± 95% CI [‡]
Adults (≥ 18 years)	35.2 ± 2.4	39.0 ± 1.8 [§]
Hispanic	29.5 ± 4.5	37.3 ± 5.2 [§]
Non-Hispanic, white only	37.4 ± 2.5	39.8 ± 2.2
Non-Hispanic, black only	33.4 ± 4.1	34.6 ± 4.4
Non-Hispanic, other or multiple race	37.2 ± 4.7	40.7 ± 5.5

[Footnotes](#) | [Data Sources and Methods](#) | [Limitations](#)

Place of Vaccination

- The most common places of vaccination among both adults and children were a doctor's office (children: 64.6%, adults: 31.8%) or other medically-related place (adults: 18.2%, children: 24.2%) (Figure 2).
- Among children, the most common non-medical place of flu vaccination was schools (6.3%).
- Other common places of flu vaccination reported by adults early in the 2013-14 season included pharmacies or stores (21.9%) and workplaces (21.3%).
- These results are similar to estimates from the early 2012-13 season. Early in that season, 34.5% of adults and 64.8% of children were vaccinated in a doctor's office and 21.5% of adults and 25.3% of children were vaccinated in some other medically-related place.



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WHAT CAN BE DONE? (Recommendations)

Although many children (41.1%) and adults (39.0%) were vaccinated early in the 2013-14 flu season, more than half of the United States population \geq 6 months had not received a flu vaccination by the end of the survey period. Continued efforts are needed to expand vaccination coverage during the next few months of this season to increase the number of persons protected against the flu and to minimize the risk of flu, including:

Decrease racial and ethnic disparities among adults:

- Although the 7.8 percentage point increase in coverage among Hispanics in this season was encouraging, and coverage in this group was similar to non-Hispanic whites for this early season, disparities in flu vaccination remain among non-Hispanic blacks. Continued efforts to increase vaccination coverage among adults in other racial and ethnic groups are necessary to eliminate racial/ethnic differences in influenza vaccination coverage.
 - Immunization programs should work with leaders in communities with low vaccination coverage to promote vaccination and ensure all members have access to flu vaccination.
 - Immunization programs should also work with vaccination providers in these communities to encourage them to offer flu vaccination so all members who want to can get a flu vaccination.

Implement proven strategies to increase vaccination coverage:

- Increased effort is needed to implement strategies proven to increase flu vaccination coverage.
 - Health care providers should strongly recommend flu vaccination. Patients are much more likely to get vaccinated when health care providers give a strong recommendation for vaccination.
 - Health care providers can utilize Immunization Information Systems, provider assessment and feedback, provider reminders, and standing orders, as well combinations of these interventions, which are evidence-based provider/system strategies to increase vaccination.
 - Providers should refer to The [Guide to Community Preventive Services](#) that provides guidance on effective interventions for increasing [vaccination](#).

DATA SOURCES AND METHODS

The 2013-14 flu vaccination coverage estimates and findings reported here are early season estimates. These results will differ from final end-of-season coverage estimates expected in September 2014. End-of-season estimates in Figure 1 are from the National Immunization Survey (NIS) for children and the Behavioral Risk Factor Surveillance System (BRFSS) for adults ([Flu Vaccination Coverage, United States, 2012-13 Influenza Season](#)).

The 2013-14 season estimates in this report are based on two different data sources. Estimates for children are based on data from NIS, while estimates for adults are based on data from the National Internet Flu Survey (NIFS). NIS data from October-November 2013 are compared to NIS data from October-November 2012. Adult NIFS data from November 2013 were compared to NIFS data from November 2012 ([National Early Season Flu Vaccination Coverage, United States, 2012-13 Flu Season](#)).

National Immunization Survey

The NIS is an ongoing, national, random-digit dialed (RDD) telephone survey of households with children conducted by NORC at the University of Chicago and sponsored by CDC. The survey includes the NIS-Child for households with children who are 19-35 months and the NIS-Teen for households with children 13-17 years. For households with children 6-18 months and 3-12 years, an influenza vaccination module is conducted. Sampling for the NIS is done by list-assisted RDD sampling of both landline and cellular telephones. Sample selection is carried out separately for landline and cellular telephone numbers. Advance letters are sent to landline households for which the telephone number could be matched to an address. The survey interviewers conduct the survey in both English and Spanish; interviews conducted in other languages used language line interpretation services.

Flu vaccination coverage estimates presented in this report are based on interviews conducted from October 1-November 16, 2013. A total of 24,507 NIS interviews were completed for children 6 months to 17 years. Of these, 5,930 were by landline telephone and 18,577

were by cellular telephone. For reporting place of vaccination, three weeks of NIS interviews (October 27-November 16, 2013) were combined; therefore, the place of vaccination estimates are based on 4,541 vaccinated children.

Flu vaccination coverage estimates represent approximately the cumulative proportion of persons vaccinated as of November 13, 2013. Coverage was calculated using an enhanced estimation strategy that resembles the Kaplan Meier estimation procedure (3). The flu vaccination coverage estimates represent receipt of at least one dose of flu vaccine. Place of vaccination was estimated using simple weighted proportions. All estimates were weighted based upon the probability of selection of the telephone number, including adjustments for non-response at the telephone number resolution and household screening stages, probability of selecting the child of interest within the household, and for person non-response. The data were also weighted using a ratio adjustment to population controls (age, sex, race/ethnicity, and geographic area). All NIS estimates reported here were calculated by NORC at the University of Chicago, utilizing weights they developed.

National Internet Flu Survey

The adult estimates are based on data from the 2013 NIFS conducted by Gesellschaft für Konsumforschung (GfK) Custom Research, LLC, for the University of Michigan, and sponsored by CDC, to rapidly collect flu vaccination-related data early during the 2013-14 flu season. The survey was conducted using a probability-based panel designed to be representative of the U.S. population. The survey was conducted in both English and Spanish.

The sample was stratified by age group and by race/ethnicity. For this ongoing panel, participants are initially chosen by a random selection of telephone numbers and residential addresses. Persons in selected households are then invited by telephone or mail to participate in the web-enabled KnowledgePanel®. For those who agree to participate but do not already have Internet access, GfK provides both a laptop and Internet access at no cost. People who already have computers and Internet service participate using their own equipment. Panelists receive unique login information for accessing surveys online, and are sent e-mails throughout each month inviting them to participate in surveys. The field period of data collection for the NIFS was November 1-14, 2013. A survey invitation was sent to a sample consisting of 9,039 panel members. A total of 5,325 completed the NIFS. All NIFS estimates reported here were calculated by the University of Michigan utilizing weights developed by GfK.

Additional Methods

Differences between groups and between 2012-13 and 2013-14 seasons were determined using t-tests with significance at $p < 0.05$ and assuming large degrees of freedom (thus using the value of 1.96 for the critical value). Differences mentioned in this report were statistically significant; not all statistically significant findings were mentioned.

To produce a national estimate of flu vaccination coverage for all persons ≥ 6 months, the estimates from the NIS for children and from the NIFS for adults were combined by weighting them by population size (based on census population counts).

LIMITATIONS

- The findings reported here are early season estimates and final end-of-season coverage estimates will likely increase.
- Children 6 months-8 years may require two doses of flu vaccine to optimize immunity (2); estimates in this report reflect parental report of at least one dose, and not whether those children requiring two doses were fully immunized.
- NIS is a telephone survey that excludes households with no telephone service. Non-coverage and non-response bias may remain after weighting adjustments.
- The adult estimates in this report are based upon NIFS, an Internet panel survey. Although the Internet panel was probability-based, the estimates may not represent all adults in the United States, and bias may remain even after the weighting adjustments.
- All data rely upon self-report and are not validated with medical records; validity studies have shown that parental report (for children) and self-report (for adults) may overestimate flu vaccination coverage.

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RELATED LINKS

- [FluVaxView - Influenza Vaccination Coverage](#)
- [Prevention and Control of Seasonal Influenza with Vaccines: Recommendations of the ACIP – United States, 2013-2014](#)
- [Presentation to the Advisory Committee on Immunization Practices on “Influenza Vaccination Distribution and Coverage, United States, 2010-2011 and 2011-2012 Seasons” \[1.4 MB, 30 pages\]](#)
- [March Flu Vaccination Coverage, National Immunization Survey and National Flu Survey, March 2012](#)
- [Results from the November 2011 National Flu Survey – United States, 2010-11 Influenza Season](#)
- [Results from the November 2010 National Flu Survey – United States, 2010-11 Influenza Season \[652 KB, 7 pages\]](#)
- [National Immunization Survey](#)
- [US Vaccination Coverage Reported via NIS](#)
- [CDC Influenza awareness campaign media relations toolkit, 2013 \[489 KB, 23 pages\]](#)
- [Follow CDC Flu on Twitter: @CDCFlu](#)

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FOOTNOTES

* End-of-season estimates are from the National Immunization Survey for children and the Behavioral Risk Factor Surveillance System for adults ([Flu Vaccination Coverage, United States, 2012-13 Influenza Season](#)). The 2013-14 end-of-season estimates will not be available until September 2014.

† All percentages in the table are weighted to the U.S. population.

‡ CI=Confidence interval half-width.

§ Statistically significant difference between the 2013-14 season and the 2012-13 season by t-test ($P < 0.05$).

|| Other medically-related place includes hospital, clinic or health center, local health department, and other unspecified medically-related place. Pharmacy or store includes pharmacy or drugstore and local supermarket or grocery store.

¶ Other non-medical place includes senior center, military-related place, other school such as college or trade school, home, and other unspecified non-medical place.

