



Risks Factors for Adult Protective Services Involvement Among Medicare Beneficiaries in Washington State

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ADULT PROTECTIVE SERVICES (APS) investigates reports of self-neglect, financial exploitation, neglect (abandonment and non-self-neglect), or abuse (improper use of restraint, mental abuse, physical abuse, or sexual abuse) of vulnerable adults in Washington State¹. Recent national estimates suggest the prevalence of abuse and neglect, including self-neglect, of vulnerable adults is approximately 10 percent (Acierno et al. 2009), with many cases not reported for investigation (Storey 2020). In Washington State in 2018, the APS program administered by the DSHS Aging and Long-Term Support Administration received 60,038 reports of abuse and neglect. Analysis of the factors associated with increased risk of abuse and neglect can inform forecasts of future investigation volume, help quantify potential underreporting, and identify points of intervention.

This report describes the risk factors associated with APS outcomes for adults enrolled in Medicare in Washington State in 2018. Subsequent reports will examine these risk factors in a predictive modeling context, examine how health service utilization may be affected by receipt of APS services, and estimate the potential scale of unmet need for APS services, particularly among persons for whom the benefit of Medicaid-paid case management oversight is not available.

Key Findings

- 1. Functional impairment, physical health, and behavioral health risk factors are more prevalent among Medicare adults and elders identified as alleged victims in APS investigations, relative to Medicare beneficiaries who were not involved with APS.**
- 2. Risk models for APS outcomes should be estimated separately for adults under age 60 and for elders (persons ages 60 and older).** Key aspects of these analyses vary by age: risk factor prevalence, and the association between risk factors and the likelihood of APS involvement or allegation substantiation. For example, intellectual and developmental disabilities are more prevalent for adults under 60 involved in APS investigations, while Alzheimer’s diagnoses are more prevalent among elders.
- 3. Risk models for APS should be estimated separately by allegation type.** Risk factor prevalence and the association between risk factors and the likelihood of substantiation vary by allegation type. For example, homelessness is more prevalent among persons investigated for self-neglect, while intellectual disabilities are more prevalent among alleged victims of other allegations.

¹ For more information on the Adult Protective Services program administered in Washington State by the DSHS Aging and Long-Term Support Administration, or to report suspected abuse or neglect, visit <https://www.dshs.wa.gov/altsa/adult-protective-services-aps>.

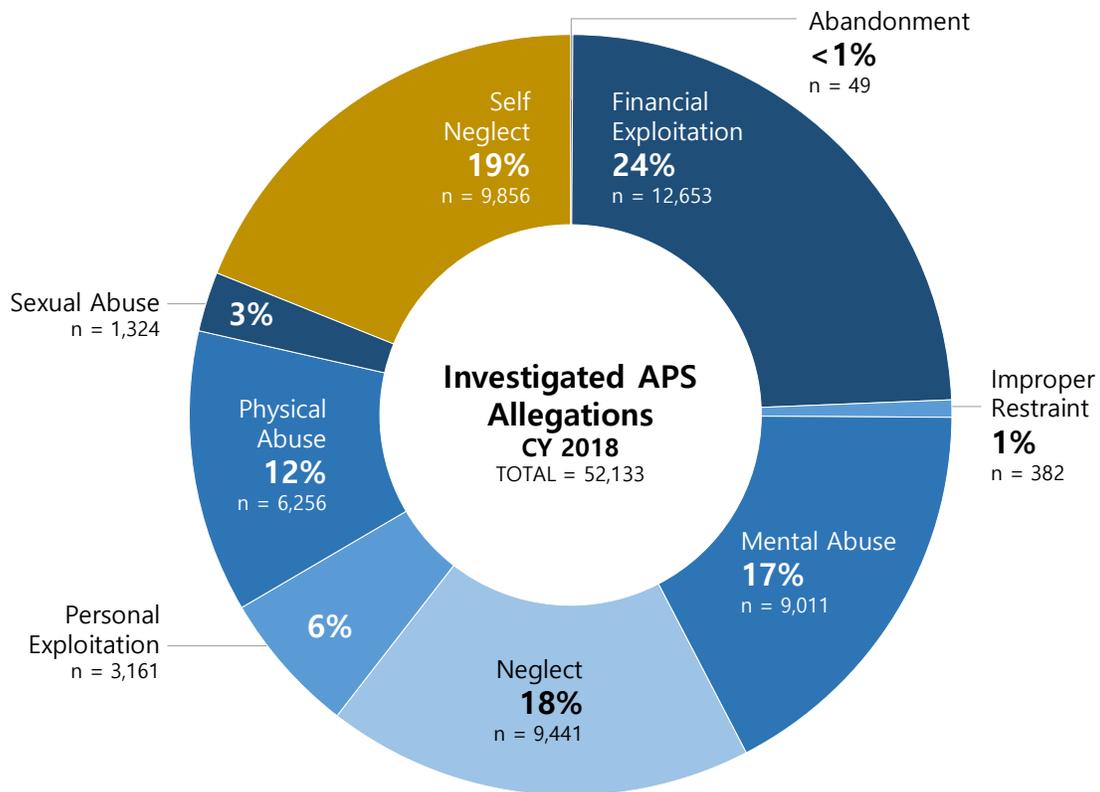
Adult Protective Services in Washington State

APS receives and investigates reports of abandonment, abuse, financial exploitation, neglect, and self-neglect of vulnerable adults and provides protective services and legal remedies to protect vulnerable adults as described in RCW 74.34. When a report is made, APS intake gathers the initial report information and makes a response within 24 hours. A response may include contacting the reporter, referring the report to the appropriate agency for investigation, screening, or assignment for investigation. When the allegations appear to contain elements of abandonment, abuse, financial exploitation, neglect, or self-neglect; and the alleged victim appears to be a vulnerable adult (per RCW 74.34.020); then APS intake will assign the initial report for investigation. If the initial report is not assigned for investigation, it is screened out from the investigation process and, if warranted, the reporter is provided with potential services and/or resources for the alleged vulnerable adult.

After the initial report is assigned for investigation, APS investigators gather and evaluate information from observations, review of pertinent records, and interviews of key persons including the reporter, alleged victim, alleged perpetrator, and other relevant persons. Investigations should be closed within 90 calendar days of assignment unless necessary investigation or protective services activity extends the investigation. At the conclusion of the investigation, evidence is reviewed and findings are categorized as follows: unsubstantiated, inconclusive, or substantiated.

In 2018, APS received 60,038 reports and conducted 41,953 investigations that reviewed 52,133 allegations. The total allegations within a year is always larger than the number of total investigations, as one investigation may contain multiple allegations. Figure 1 below shows the distribution of the types of self-neglect (yellow) allegations and other non-self-neglect allegations by type (shades of blue) investigated in 2018.

FIGURE 1
APS Allegations in CY 2018



Developing a Model for Measuring Adult Protective Services Risk

To develop models for identifying risk of APS involvement, it is important to understand the definition of vulnerable adults that underlies eligibility for APS services, and the different categories of abuse and neglect allegations. From this context, we develop a conceptual framework for analyzing relationships between risk factors, APS eligibility, and APS outcomes.

Defining Vulnerable Adults

Washington State formally defines vulnerable adults by law (see 74.34 RCW) as

- An individual who is 60 years of age or older with a functional, mental, or physical inability to care for themselves; OR
- An individual who is over the age of 18 AND
 - Has been found incapacitated OR
 - Has a development disability, including intellectual disabilities, autism, or other similar conditions OR
 - Lives in a DSHS-licensed facility (such as an adult family home, assisted living facility, or nursing home) OR
 - Receives in-home services through a licensed home health, hospice, or home care agency OR
 - Self-directs their own care and receives services from a personal aide.

Given the potential differences in risk factors for abuse and neglect between adults ages 18-59 and elders ages 60 and older under this definition, separate analyses will be conducted for these two populations. We note that other researchers studying risk factors associated with vulnerable adult abuse and neglect also emphasized the importance of studying these populations separately (Lachs et al. 1996, Lachs et al. 1997).

Categories of APS Outcomes

Abuse and neglect allegations are derived from data in the Tracking Incidents of Vulnerable Adults (TIVA) database maintained by the APS division of DSHS. Nine different types of allegations are tracked in TIVA. To highlight key risk patterns, our descriptive analyses will focus on the following APS outcomes:

- **No allegation:** no involvement in an investigation as an alleged victim.
- **Any allegation:** involved in an investigation as an alleged victim regardless of allegation type or finding (substantiated, unsubstantiated, inconclusive, or other).
- **Any substantiated allegation:** involved as an alleged victim in an investigation with a *substantiated* allegation of abuse or neglect, regardless of allegation type.
- **Any self-neglect allegation:** involved in a self-neglect investigation regardless of finding (other types of neglect are not included).
- **Any substantiated self-neglect allegation:** involved in an investigation with a *substantiated* self-neglect allegation.
- **Any other allegation:** Involved as an alleged victim in an investigation with a non-self-neglect allegation such as financial exploitation, neglect (abandonment and non-self-neglect), or abuse (improper use of restraint, mental abuse, physical abuse, personal exploitation, or sexual abuse), regardless of finding.
- **Any substantiated other allegation:** involved as an alleged victim in an investigation with a *substantiated* non-self-neglect allegation including exploitation, neglect, or abuse.

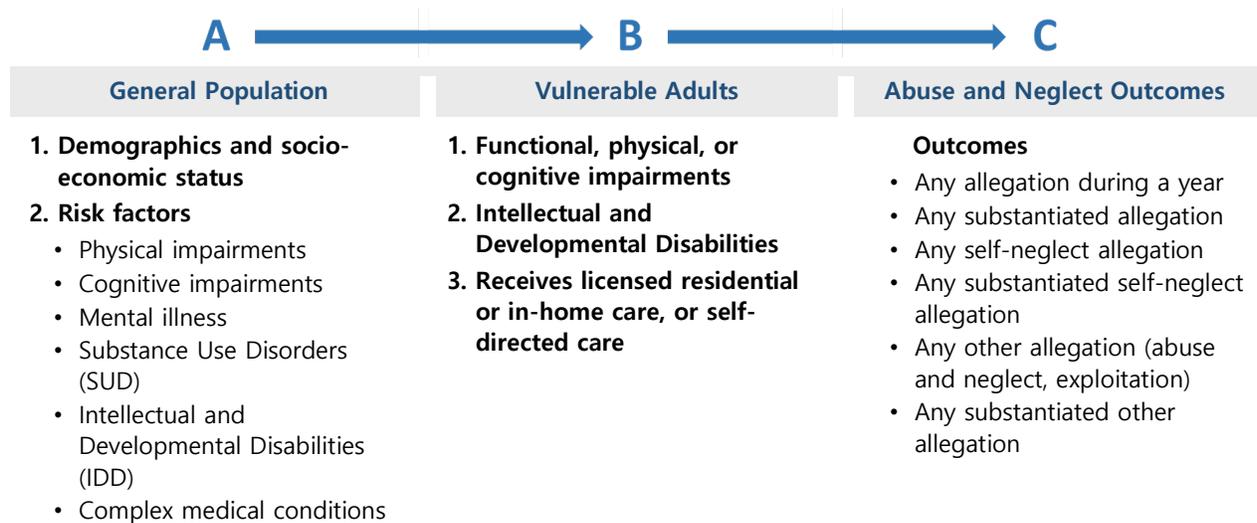
Previous research has indicated that self-neglect should be studied separately from other abuse types (Sommerfeld et al. 2014; Anthony et al. 2009; and Dyer et al. 2007) due to differences between the nature of self-neglect vs. neglect or abuse that involves a perpetrator. Combining all allegation types into a single category may obscure critical differences in risk patterns.

A Conceptual Framework for APS Risk Models

The conceptual model described below provides a framework for interpreting the descriptive analyses provided in this report, and the predictive models to be developed in subsequent reporting. The descriptive analyses presented in this report and predictive models developed in future reports will stratify based on age (adults and elders) and allegation type.

FIGURE 2

Conceptual Adult Protective Service Risk Model



Two main types of models will be estimated using this conceptual framework:

- **Reduced Form Model (A → C).** This type of model directly estimates the association between potential risk factors and APS outcomes, without modeling the relationship between those risk factors and the likelihood that the individual would be considered a vulnerable adult eligible to receive services from APS. We present “reduced form” descriptive data in the remainder of this report.
- **Vulnerable Adult Model (B → C).** This type of model estimates the association between potential risk factors and APS outcomes among persons meeting vulnerable adult criteria. For example, subsequent reporting will examine APS outcomes for persons receiving Medicaid long term support services (LTSS) who, based on their LTSS receipt, meet the vulnerable adult definition in 74.34 RCW.

Subsequent analyses may also consider two part models (A → B then B → C) that jointly model the relationship between identified risk factors (A) and vulnerability (B) and the relationship between those risk factors and APS outcomes (C) specifically for vulnerable adults (B).

Identifying Risk Factors for Abuse and Neglect among Adult and Elder Medicare Beneficiaries

This analysis is based on APS investigation episodes completed in 2018 that are linked to Medicare beneficiaries. Seventy-eight percent of the 44,309 APS episodes² completed in 2018 in TIVA were successfully linked to Medicare beneficiaries. Of the linked episodes, 21,211 unique Medicare beneficiaries were identified as having at least one completed APS episode in 2018 (see Table 1).

TABLE 1

APS Episode Counts in CY 2018

Episodes	NUMBER
APS episodes completed in CY 2018	44,309
Episodes linked to Medicare beneficiaries	34,750
Medicare beneficiaries with an episode	21,211
Adults (under age 60) with an episode	3,156
Elders (ages 60 and older) with an episode	18,055

Only completed episodes with an identified finding (substantiated or non-substantiated) are included in this analysis. Table 2 below details the number of Medicare beneficiaries with and without APS involvement in 2018, by age and allegation type. As indicated in the table, there are vastly higher rates of substantiation for self-neglect allegations, relative to other allegation types. For example, 28 percent of self-neglect APS investigation involving elders were associated with a substantiated self-neglect allegation (1,703 of 6,033), while only 3 percent of other allegation types were substantiated (377 of 13,715). It is important to note that that self-neglect investigations, unlike all other APS allegations, do not involve an alleged perpetrator and are therefore not subjected to the rigorous due process review. As such, it is not surprising to see a higher percentage of self-neglect cases being substantiated when compared to other types of APS allegations. A similar pattern is observed for adults under 60. These observations reinforce the importance of distinguishing between self-neglect and other allegation types in the analyses that follow.

TABLE 2

Medicare Beneficiaries With and Without APS Outcomes in CY 2018

Medicare Adults (Under Age 60) With:	NUMBER
No APS allegations	135,010
One or more APS allegation(s)	3,156
One or more self-neglect allegation(s)	570
One or more other (abuse, neglect, exploitation) allegation(s)	2,762
One or more substantiated APS allegation(s)	207
One or more substantiated self-neglect allegation(s)	148
One or more substantiated other (abuse, neglect, exploitation) allegation(s)	106
Medicare Elders (Ages 60 and older) With:	
No APS allegations	1,310,389
One or more APS allegation(s)	18,055
One or more self-neglect allegation(s)	6,033
One or more other (abuse, neglect, exploitation) allegation(s)	13,715
One or more substantiated APS allegation(s)	2,063
One or more substantiated self-neglect allegation(s)	1,703
One or more substantiated other (abuse, neglect, exploitation) allegation(s)	377

² The count of episodes completed in 2018 (44,309) differs from the previously noted count of investigations opened in 2018 (41,953) because we include investigations completed in 2018 that opened in prior years.

Prior research identified APS-involvement risk factors in four general domains: sociodemographic characteristics, physical and behavioral health conditions, functional impairments, and social networks (Lachs et al. 1997; Acierno et al 2010; Ernst et al. 2014; and Gorbien and Eisenstien 2005).

Using these four general domains as guidelines, we associate the prevalence of the following individual risk factors and other characteristics with APS outcomes. These risk factors include: demographics (age, gender, race, and ethnicity); socio-economic status indicators (Medicare Part D subsidies, ZIP code-based poverty rates); utilization of disability-related durable medical equipment; diagnosed disabling central nervous system conditions (e.g., Alzheimer's, Multiple Sclerosis); developmental conditions (e.g., intellectual disabilities); sensory, and mobility (e.g., hip fractures, falls) impairments; frailty-related diagnoses (e.g., failure to thrive, altered mental status); medical comorbidities (e.g., cardiovascular diseases, diabetes); mental illnesses (e.g., Schizophrenia, bipolar disorder, depression); substance use disorders; and utilization of medical services (e.g., ED visits, hospitalizations, skilled nursing facility stays).

Although Medicare claims and encounter data contain limited information related to the "social network" domain, there is the potential to develop additional risk indicators for this domain from other data sources in future predictive modeling work focused on the Medicaid LTSS population.

Select Findings

The descriptive analyses in this report provide three sets of comparisons of the prevalence of selected risk factors among Medicare beneficiaries experiencing different APS outcomes (for example, see Figure 2). These comparisons contrast the prevalence of risk factors among seven population groups:

1. Medicare adults or elders who did not experience an APS allegation in CY 2018 (this group is used in all three sets of comparisons);
2. Medicare adults or elders with an APS allegation in CY 2018;
3. Medicare adults or elders with a substantiated APS allegation in CY 2018;
4. Medicare adults or elders with a self-neglect allegation in CY 2018;
5. Medicare adults or elders with a substantiated self-neglect allegation in CY 2018;
6. Medicare adults or elders with a non-self-neglect (other) allegation type in CY 2018; and
7. Medicare adults or elders with a substantiated other allegation type in CY 2018.

Comparisons of risk factor prevalence across these groups help identify several important relationships between risk factors and APS outcomes. By contrasting groups (1) and (2), we can identify risk factors associated with an increased risk of involvement in an APS investigation of any type. In addition, by contrasting risk factor prevalence for groups (1), (4), and (6), we can identify whether factors associated with increased risk of involvement in an APS investigation are differentially associated with risk of self-neglect allegation versus other allegation types (abuse, neglect, or exploitation). Further, by examining the relative prevalence of risk factors in groups (4) and (5), we can identify factors associated with increased risk that a self-neglect allegation will be substantiated. Similarly, by examining the relative prevalence of risk factors in groups (6) and (7), we can identify factors associated with increased risk that other allegation types (abuse, neglect, or exploitation) will be substantiated.

We will see several cases where the stratification by allegation type (self-neglect vs other) is necessary to identify underlying associations with substantiation of abuse or neglect allegations. This is because the probability of substantiation is vastly higher for self-neglect cases, relative to other case types. This means that risk factors that are more prevalent among non-self-neglect cases may appear to be associated with reduced risk of substantiation when comparing risk factor prevalence in groups (2) and (3), but this may mask increased risk of substantiation when analyses are stratified based on allegation

type. That is, when we compare groups (4) and (5) separately from groups (6) and (7), we may find an increased risk of substantiation for both self-neglect and other allegation types, in cases where the comparison of groups (2) and (3) would point to reduced risk of substantiation.

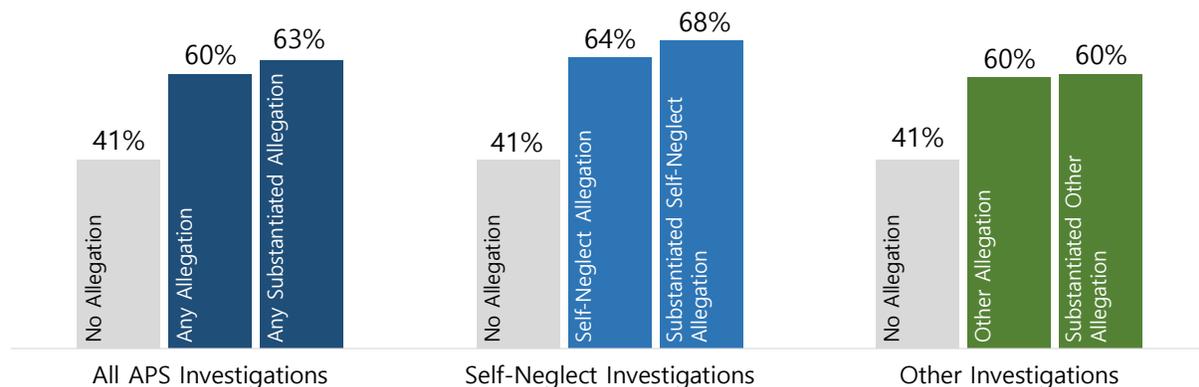
As an example to help guide interpretation, Figure 3 below reports the prevalence of lifetime anxiety disorder diagnoses in the Medicare adult (under age 60) population. The prevalence of an anxiety disorder diagnosis is higher among Medicare adults who were an alleged victim in any type of APS allegation (60 percent) than among Medicare adults who were not an alleged victim in an APS investigation (41 percent). Prevalence of anxiety disorder diagnoses was slightly higher among adults with a substantiated allegation of any type (63 percent).

When looking at the subtypes of APS allegations, we see the prevalence of anxiety disorders is slightly higher among adults involved in self-neglect allegations (64 percent), compared to alleged victims in APS investigations associated with other allegation types (60 percent). Alleged victims in self-neglect investigations with substantiated allegations have an even higher prevalence of anxiety disorder diagnosis (68 percent).

FIGURE 3

Prevalence of Anxiety Disorder Diagnoses

Among CY 2018 Medicare Adults Under Age 60, Subgroups Based on APS Outcomes in CY 2018



The full descriptive results are included in Appendix A and Appendix B. The next phase of this work will develop formal predictive models that use statistical methods to account for the individual effects of the various risk factors examined in the descriptive analyses reported here. In the following sections, selected risk factors for Medicare adults and elders are highlighted.

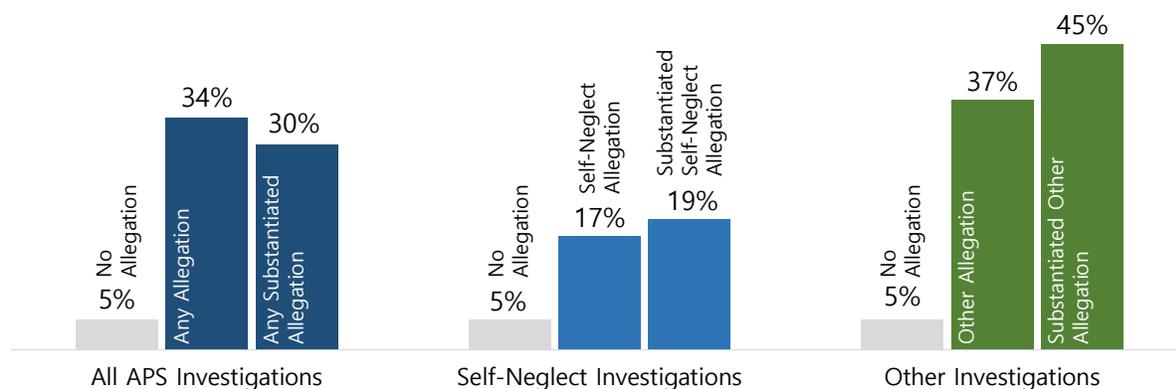
Select Risk Factors for Abuse and Neglect Among Medicare Adults Under Age 60

Intellectual and Developmental Disabilities. Across the four intellectual and developmental disability risk factors examined (autism spectrum disorder, intellectual disabilities, learning disabilities, and other developmental delays), there is considerably higher prevalence among persons identified as alleged victims in APS allegations, relative to Medicare adults who were not involved with APS. For example, the prevalence of intellectual disabilities in the Medicare adult population not involved in an APS investigation is only 5 percent (Figure 4), while the prevalence among those identified as an alleged victim in an APS allegation is 34 percent. The prevalence of intellectual disabilities is lower for adults involved in self-neglect allegations (17 percent), relative to adults identified as alleged victims in other allegation types (37 percent). For both self-neglect and other allegation types, intellectual disabilities are associated with increased likelihood that the allegation will be substantiated. This is an example of a risk factor that is far more prevalent among alleged victims of other (non-self-neglect) allegation types, and where stratification by allegation type is necessary to identify the positive association between the risk factor and the risk of substantiation.

FIGURE 4

Prevalence of Intellectual Disabilities

Among CY 2018 Medicare Adults Under Age 60, Subgroups Based on APS Outcomes in CY 2018

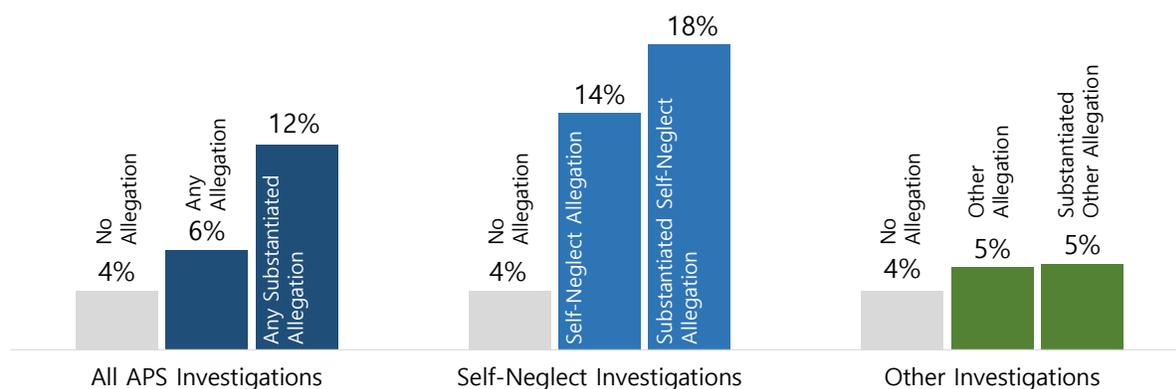


Homelessness. There is a higher rate of homelessness among alleged victims in APS allegations, relative to Medicare adults who were not involved with APS. Homelessness is measured by “Z code” diagnoses on health care claims used to identify factors affecting health status and service use. The prevalence of homelessness among Medicare adults not involved with APS is 4 percent (Figure 5). However, the prevalence of homelessness among adults involved in self-neglect investigations is considerably higher (14 percent). Among adults involved in substantiated cases of self-neglect, the prevalence of homelessness is higher still (18 percent). In contrast, homelessness is less prevalent among alleged victims in other investigations (5 percent), and homelessness is not associated with increased likelihood of substantiation in other (non-self-neglect) investigations.

FIGURE 5

Prevalence of Homelessness

Among CY 2018 Medicare Adults Under Age 60, Subgroups Based on APS Outcomes in CY 2018



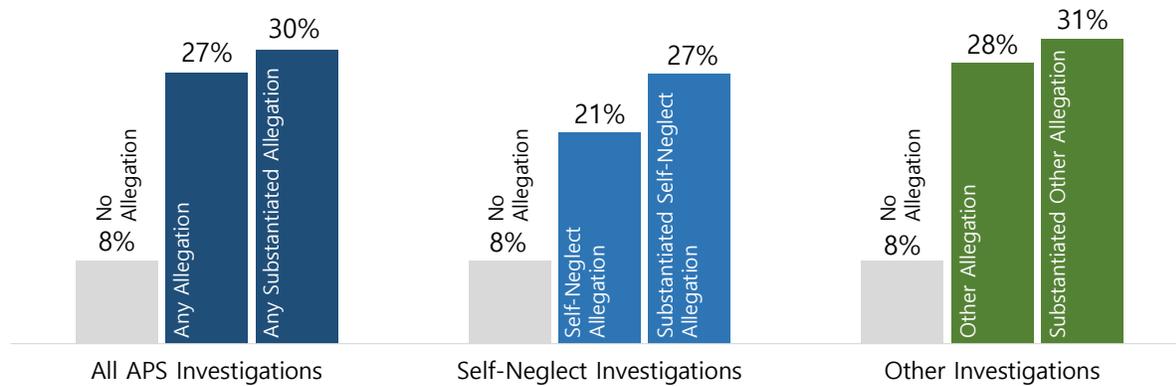
Mobility Related Diagnoses. Across the different types of mobility-related diagnoses (mobility impairments, falls, and other indicators of reduced mobility), there is a higher prevalence among alleged victims in APS allegations, relative to Medicare adults without APS involvement. Mobility-related diagnoses are also more prevalent among those with a self-neglect allegation, compared to other allegation types. For example, falls are associated with a higher likelihood of a substantiated self-neglect allegation (43 percent) compared with a substantiated other allegation (19 percent). Prevalence of these types of diagnoses had variable association with the likelihood of substantiation depending on the allegation type.

Central Nervous System Diagnoses. Three central nervous system diagnoses (Parkinson’s, cerebral palsy, and epilepsy) are more prevalent among alleged victims in APS investigations, compared to Medicare adults who were not involved with APS (for epilepsy, this was 27 percent vs 8 percent). As shown in Figure 6, an epilepsy diagnosis is slightly less likely for those with a self-neglect allegation (21 percent) compared to other allegations (28 percent). This diagnosis is associated with increased likelihood of substantiation in both self-neglect investigations and cases associated with other allegation types.

FIGURE 6

Prevalence of Epilepsy

Among CY 2018 Medicare Adults Under Age 60, Subgroups Based on APS Outcomes in CY 2018

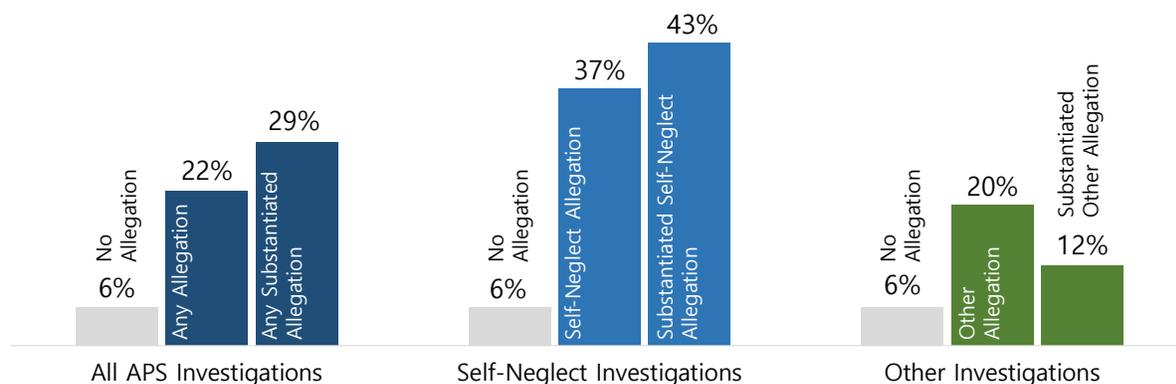


Frailty Indicators. All frailty indicators analyzed are more prevalent among adults identified as alleged victims in APS investigations, compared to Medicare adults without APS involvement. For example, the prevalence of an “altered mental status” diagnosis in the Medicare adult population without APS involvement is 6 percent, while the prevalence among adults identified as alleged victims in an APS investigation is 22 percent (Figure 7). The prevalence of an altered mental status diagnosis is considerably higher among adults with a self-neglect allegation (37 percent) compared to alleged victims on other investigations (20 percent). The prevalence of an altered mental status diagnosis is even higher among those with a substantiated self-neglect allegation (43 percent vs 37 percent), but substantiation is less likely among adults with this condition in other investigation types. This is another example of a risk factor where stratification by allegation type is necessary to identify the association between the condition and the likelihood of substantiation.

FIGURE 7

Prevalence of Altered Mental Status

Among CY 2018 Medicare Adults Under Age 60, Subgroups Based on APS Outcomes in CY 2018

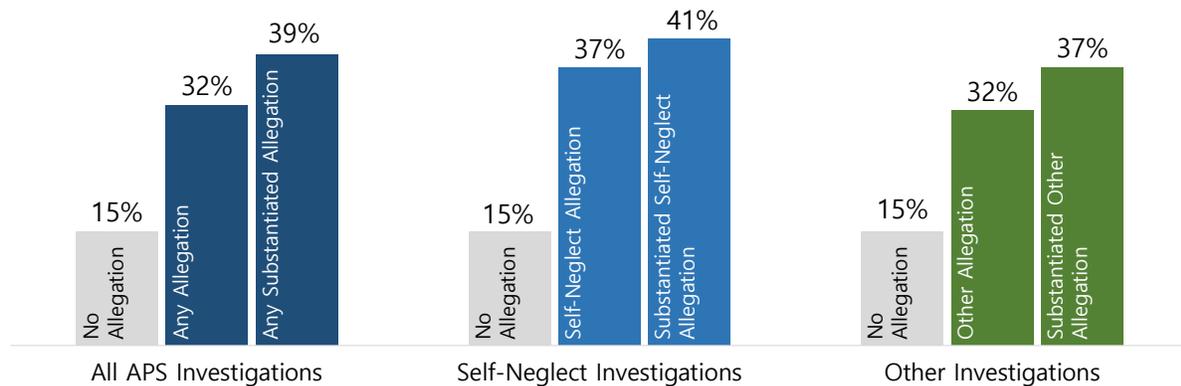


Mental Health Conditions. As noted above in Figure 3, anxiety disorders have a higher prevalence among persons who were an alleged victim in an APS investigation, compared to Medicare adults who were not involved with APS. This pattern is also observed for PTSD, bipolar, depression, personality, and schizophrenia/psychotic disorders. Figure 8 shows the prevalence of schizophrenia/psychotic disorders among Medicare adults not involved with APS (15 percent), compared to adults identified as an alleged victim in an APS investigation (32 percent). The prevalence of schizophrenia/personality disorders is higher for those with a self-neglect allegation (37 percent), relative to those with any other (non-self-neglect) allegation (32 percent). For both allegation types, schizophrenia/psychotic disorders are associated with an increased likelihood that the allegation will be substantiated.

FIGURE 8

Prevalence of Schizophrenia/Psychotic Disorders

Among CY 2018 Medicare Adults Under Age 60, Subgroups Based on APS Outcomes in CY 2018

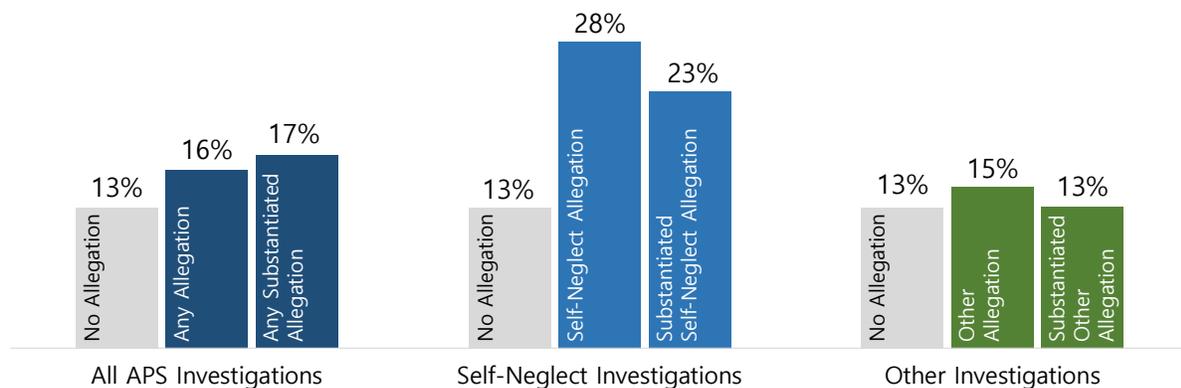


Substance Use Disorders. As with mental health conditions, alcohol use disorders, opioid use disorders, and other drug disorders are more prevalent among alleged victims in APS investigations, compared to adults who are not involved with APS. For example, as shown in Figure 9, opioid use disorder is slightly more prevalence among adults identified as an alleged victim in any APS investigation (16 percent), compared to Medicare adults who were not involved with APS (13 percent). However, this masks a relatively high prevalence of opioid use disorders with self-neglect allegations (28 percent). For adults involved in self-neglect investigations or as alleged victims in other allegations, opioid use disorders are associated with a decreased likelihood that the allegation will be substantiated.

FIGURE 9

Prevalence of Opioid Use Disorders

Among CY 2018 Medicare Adults Under Age 60, Subgroups Based on APS Outcomes in CY 2018

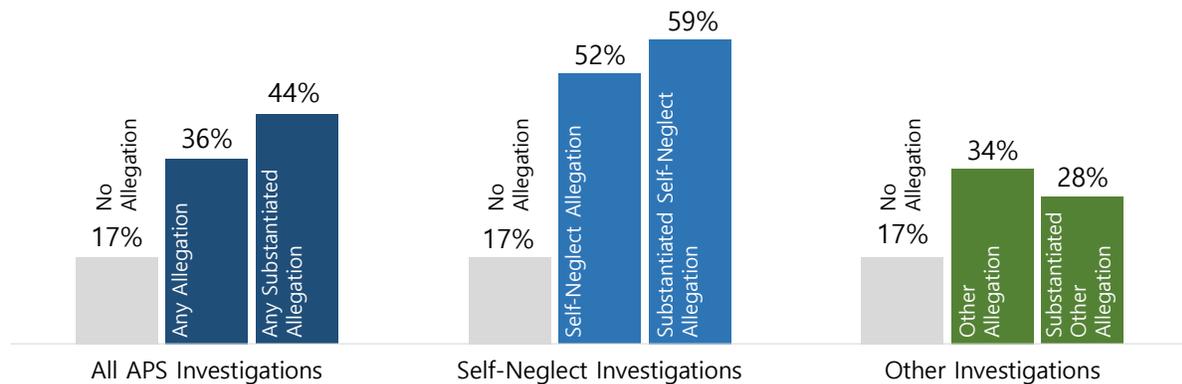


Medical Service Utilization. High emergency department visit frequency and utilization of intensive services (acute inpatient stays, skilled nursing facility stays) are more prevalent among alleged victims in APS investigations, compared to adults who are not involved with APS. For example, 36 percent of alleged victims in APS investigations had two or more emergency department visits, compared to 17 percent of persons not involved with APS (see Figure 10). The likelihood of having two or more emergency department visits is higher for those with a self-neglect allegation (52 percent) compared to other allegation types (34 percent). Experiencing multiple ED visits is associated with increased likelihood of substantiation in self-neglect investigations, but is associated with decreased likelihood of substantiation in investigations of other allegation types.

FIGURE 10

Prevalence of Two or More Emergency Department Visits

Among CY 2018 Medicare Adults Under Age 60, Subgroups Based on APS Outcomes in CY 2018

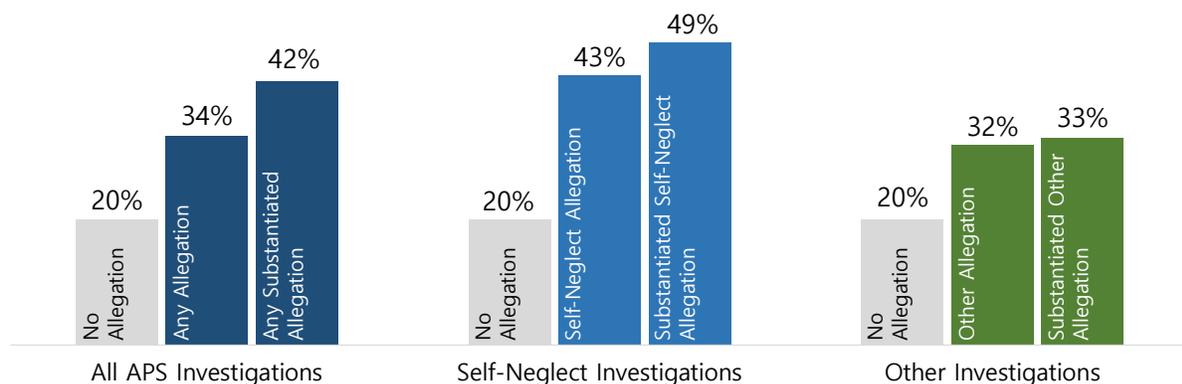


Medical Conditions. Medical conditions examined are generally more prevalent among alleged victims in APS investigations, compared to adults who are not involved with APS. In particular, chronic health conditions (such as diabetes, congestive heart failure, chronic kidney disease, asthma, and COPD) are most prevalent among those with a self-neglect allegation, compared to alleged victims in other types of APS investigations. For example, the prevalence of a diabetes diagnosis in the Medicare adult population without an APS allegation is 20 percent (Figure 11), while the prevalence among alleged victims in APS investigations is 34 percent. The prevalence of diabetes is higher for adults involved in self-neglect allegations (43 percent) compared to adults with other allegation types (32 percent). Diabetes prevalence is highest among adults involved in substantiated cases of self-neglect (49 percent).

FIGURE 11

Prevalence of Diabetes

Among CY 2018 Medicare Adults Under Age 60, Subgroups Based on APS Outcomes in CY 2018



Select Risk Factors for Abuse and Neglect among Medicare Elders

While many risk factors have broadly similar patterns for Medicare elders ages 60 and older and Medicare adults aged 18 to 59, though relative prevalence and the strength of relationships with allegation risk and substantiation risk varies, there are several risk factors that have distinctly different patterns. Figures 12 through 17 on the next page illustrate risk factors that are particularly salient for Medicare elders ages 60 and older. Below we summarize some of the key findings for the risk factors highlighted in Figures 12 through 17.

- **Falls** are highly prevalent among elders who are alleged victims in APS investigations (44 percent), relative to elders who are not involved with APS (12 percent). Falls are about equally prevalent among elders involved in self-neglect investigations (45 percent) and elders involved in other case types (44 percent). Falls are associated with a slightly increased risk of substantiation in self-neglect cases, and a slightly reduced risk of substantiation in investigations associated with other allegation types (Figure 12).
- **Altered mental status** diagnoses (defined as confusion or disorientation from unknown causes) are highly prevalent among elders who are alleged victims in APS investigations (39 percent), relative to elders who are not involved in APS (6 percent). Diagnoses of altered mental status are equally prevalent among elders involved in self-neglect investigations and elders involved in other case types (40 percent). An altered mental status diagnosis is associated with an increased risk of substantiation in self-neglect cases, and a slightly reduced risk of substantiation in investigations associated with other allegation types (Figure 13).
- **Pressure ulcers** are more prevalent among elders who are alleged victims in APS investigations (19 percent), relative to elders who are not involved with APS (3 percent). Pressure ulcers are about equally prevalent among elders involved in self-neglect investigations (21 percent) and elders involved in other case types (19 percent). Pressure ulcers are associated with increased risk of substantiation in self-neglect cases, and a slightly increased risk of substantiation in other allegation types (Figure 14).
- **Multiple ED visits** are more prevalent among elders who are alleged victims in APS investigations (32 percent), relative to elders who are not involved with APS (7 percent). Multiple ED visits are more prevalent among elders involved in self-neglect investigations (37 percent), relative to elders involved in other case types (32 percent). Multiple ED visits are associated with an increased risk of substantiation in self-neglect cases, and a reduced risk of substantiation in investigations associated with other allegation types (Figure 15).
- **Strokes** are more prevalent among elders who are alleged victims in APS investigations (28 percent), relative to elders who are not involved with APS (9 percent). Strokes are less prevalent among elders involved in self-neglect investigations (23 percent), relative to elders involved in other case types (30 percent). Strokes are not associated with increased risk of substantiation in self-neglect cases, but are associated with increased risk of substantiation in investigations associated with other allegation types (Figure 16).
- **Alzheimer's** diagnoses are more prevalent among elders who are alleged victims in APS investigations (22 percent), relative to elders who are not involved with APS (3 percent). Alzheimer's diagnoses are less prevalent among elders in self-neglect cases (16 percent), compared to alleged victims in other APS investigations (25 percent). Alzheimer's diagnoses are associated with an increased risk of substantiation in both self-neglect cases and investigations associated with other allegation types (Figure 17).

FIGURE 12

Prevalence of Falls

Among CY 2018 Medicare Elders (Ages 60 and older), Subgroups Based on APS Outcomes in CY 2018

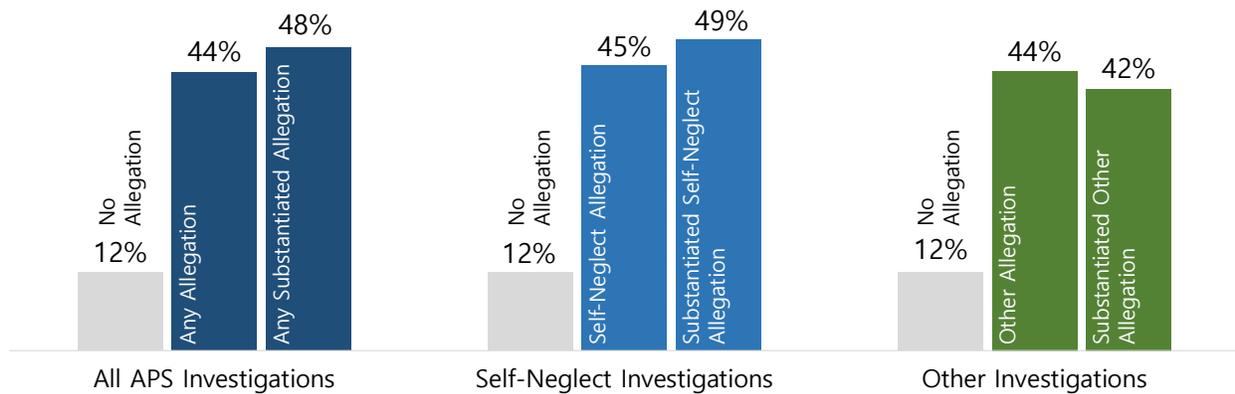


FIGURE 13

Prevalence of Altered Mental Status

Among CY 2018 Medicare Elders (Ages 60 and older), Subgroups Based on APS Outcomes in CY 2018

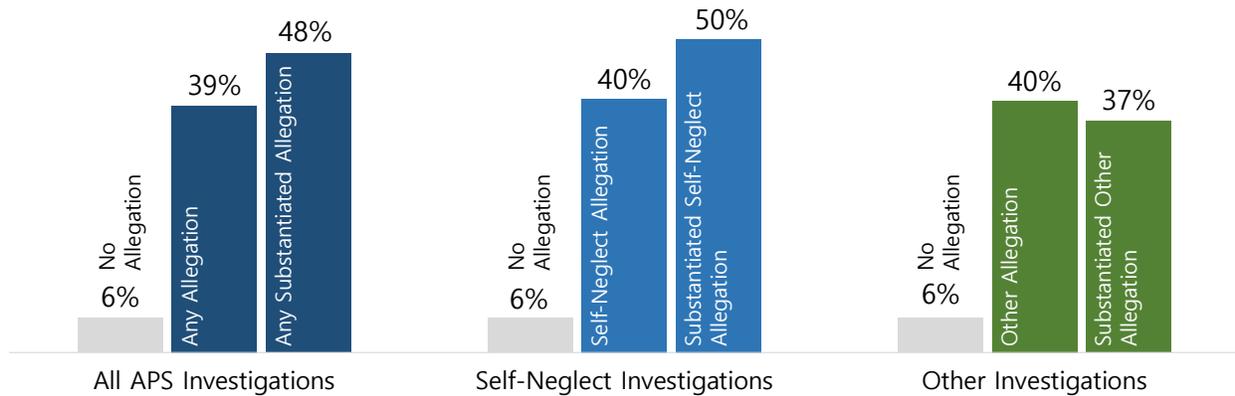


FIGURE 14

Prevalence of Pressure Ulcers

Among CY 2018 Medicare Elders (Ages 60 and older), Subgroups Based on APS Outcomes in CY 2018

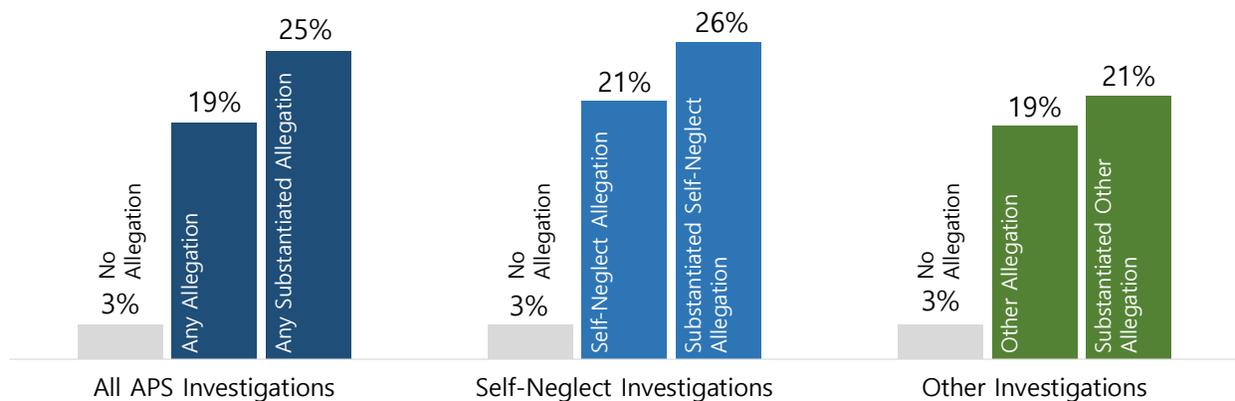


FIGURE 15

Prevalence of Two or More Emergency Department Visits

Among CY 2018 Medicare Elders (Ages 60 and older), Subgroups Based on APS Outcomes in CY 2018

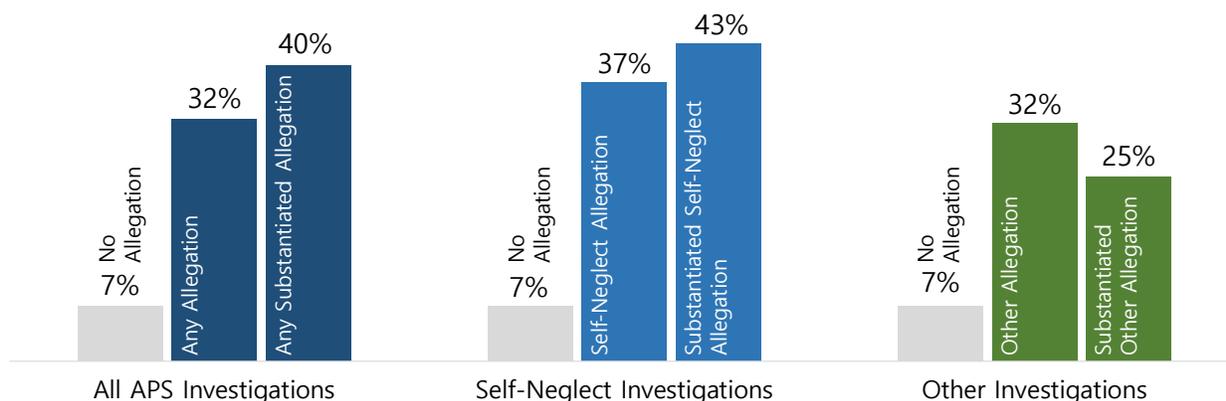


FIGURE 16

Prevalence of Strokes

Among CY 2018 Medicare Elders (Ages 60 and older), Subgroups Based on APS Outcomes in CY 2018

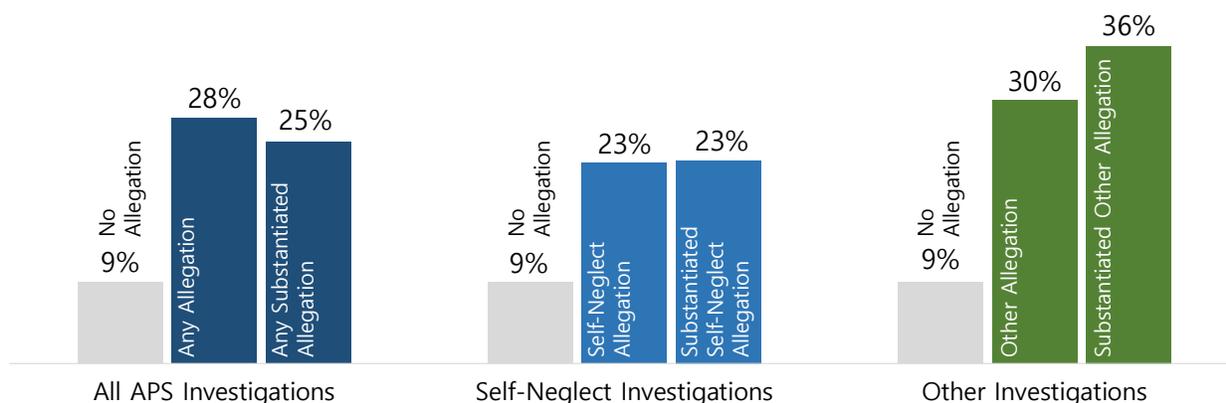
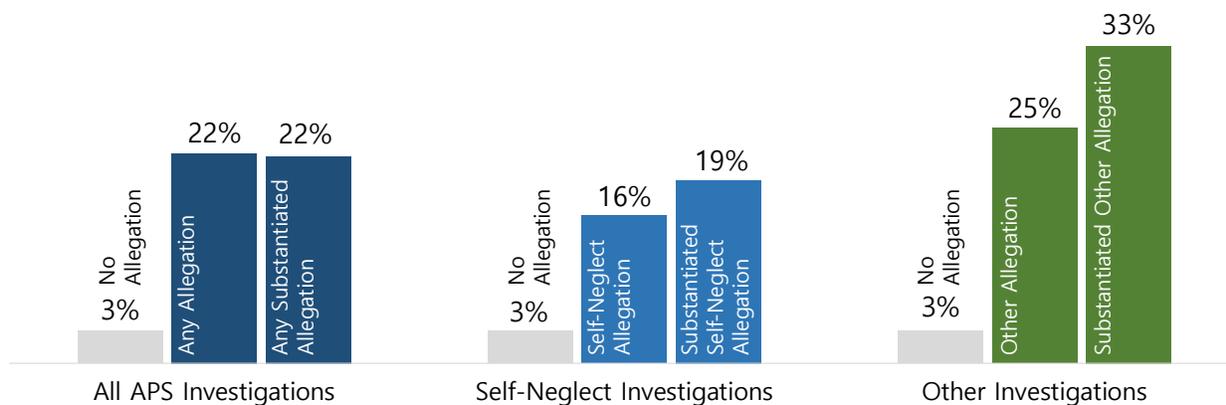


FIGURE 17

Prevalence of Alzheimer's Diagnoses

Among CY 2018 Medicare Elders (Ages 60 and older), Subgroups Based on APS Outcomes in CY 2018



Discussion

The risk factors highlighted in this report have a higher prevalence among Medicare beneficiaries identified as an alleged victim in an APS investigation. This result is not surprising, given that these risk factors are related to the likelihood that an individual would be considered a vulnerable adult eligible to receive APS services. However, we note that some risk factors are associated with a reduced risk of allegation substantiation, among persons identified as an alleged victim in an APS investigation.

Although several risk factors have similar prevalence patterns across the adult (under age 60) and elder (ages 60 and older) Medicare populations, some risk factors are more salient for specific age groups and allegation types. For example, intellectual and developmental disabilities are particularly prevalent among adults under 60 identified as an alleged victim in other (non-self-neglect) allegations, and prevalence is highest among those for whom the allegations are substantiated. Similarly, Alzheimer's is more prevalent among elders identified as an alleged victim in other (non-self-neglect) allegations, and prevalence is highest among those for whom the allegations are substantiated.

The next phase of this project will examine the relationship between risk factors and APS outcomes in a predictive modeling framework that will more precisely quantify the association between risk factors and the likelihood of APS involvement and allegation substantiation. Motivated by the empirical patterns demonstrated in this report, modeling will be done separately for adults and elders and by allegation type. This phase will also examine differences in APS experiences by race and ethnicity.

We will also explore models focused on allegation risk among persons receiving Medicaid-paid LTSS services who, by definition, meet the vulnerability criteria specified in 74.34 RCW. Focusing on the Medicaid LTSS population will allow us to leverage rich information captured in CARE assessments used to determine eligibility for LTSS services, including additional measures related to "social network" risk factors (for example, more comprehensive identification of persons living alone). We note that persons receiving Medicaid-paid LTSS tend to have more interactions with persons with mandatory reporting requirements (for example, Medicaid case managers and other health care providers), which would tend to increase APS referral rates for this population independent of any underlying differences in rates of abuse or neglect.

Future analyses will also explore the relationship between health service utilization and receipt of APS services. The descriptive analyses presented in this report show that adults and elders receiving APS services are far more likely to use costly health care services, including inpatient hospital and outpatient ED services. As with receipt of Medicaid-paid LTSS, this association in part reflects the relationship of these experiences to the likelihood that a person would be considered a vulnerable adult, and the effect of increased interactions with providers who are mandatory reporters of abuse and neglect. Future analyses will examine patterns of utilization before, during, and after receipt of APS services. This work will build towards the application of quasi-experimental methods to assess whether receipt of APS services is associated with changes in health care spending.

As previously noted, cases of abuse and neglect are likely underreported, based on prevalence estimates from national surveys. Acierno et al. (2009) estimates that 10 percent of vulnerable adults experience abuse and neglect, including self-neglect. If national survey estimates reflect the prevalence of abuse and neglect of vulnerable adults in Washington State, then the observed APS referral volume implies that most cases are not reported, and very few are substantiated following investigation. The predictive modeling developed in the next phase of this project will provide a statistical framework for estimating the population size and characteristics of persons at risk of needing APS services who have not been involved in an APS referral. Unmet need for APS services may be more significant among persons not enrolled in Medicaid who therefore do not benefit from Medicaid-paid case management oversight. In addition, as the population of Washington ages, the incidence of abuse and neglect of

vulnerable adults is expected to increase. We note that from 2018 to 2021, the number APS reports increased from 60,038 reports to 66,676 reports.

The analyses presented in this report and planned future research are intended to contribute to a better understanding of the factors associated with the risk of abuse and neglect among vulnerable adults. This information could help identify intervention points to reduce the risk of APS involvement, in a demographic context where the APS system likely will need to respond to an increasing number of reports as the population of Washington State ages and the number of vulnerable adults increases.

APPENDIX

APPENDIX TABLE A.

Risk Factors for Abuse and Neglect

Among Vulnerable Adults (Ages 18 – 59 years old)

APS OUTCOMES	Substantiated Other Allegation									
	Other Allegation									
	Substantiated Self-Neglect Allegation									
	Self-Neglect Allegation									
	Any Substantiated Allegation									
	Any Allegation									
No Allegations										
OBSERVATIONS		135,010	3,156	247	570	148	2,762	106		
SOCIODEMOGRAPHIC RISK FACTORS										
Gender (% Male)	52.2%	48.6%	50.2%	50.0%	48.6%	48.4%	52.8%			
Race/Ethnicity										
American Indian/Alaskan Native	2.4%	2.5%	4.0%	2.1%	6.1%	2.6%	0.9%			
Asian American/Pacific Islander	3.8%	2.9%	2.0%	2.5%	2.0%	2.9%	1.9%			
Black or African American	7.4%	5.8%	4.5%	4.4%	5.4%	5.9%	3.8%			
Hispanic or Latino	7.2%	4.8%	7.7%	4.2%	7.4%	5.0%	8.5%			
Non-Hispanic White	76.7%	82.1%	81.0%	85.4%	79.1%	81.6%	83.0%			
Other Race/Ethnicity	0.9%	1.0%	0.4%	0.7%	0.0%	1.0%	0.9%			
Socioeconomic Status										
Medicare Part D Subsidy Receipt	62.9%	94.4%	95.1%	90.0%	94.6%	95.3%	96.2%			
Family Below Poverty Line	8.7%	9.0%	9.1%	9.3%	9.2%	9.0%	8.9%			
Household with Annual Income less than \$100,00	27.9%	27.0%	27.6%	26.7%	27.3%	26.9%	28.6%			
SOCIAL NETWORKS										
Living Alone (z-code)	0.2%	1.1%	2.9%	3.7%	4.0%	0.8%	1.3%			
Homeless (z-code)	3.5%	5.9%	12.2%	14.1%	18.2%	4.9%	5.1%			
FUNCTIONAL IMPAIRMENTS										
LTSS Setting at Beginning of APS Episode³										
Any Medicaid LTSS	13.3%	81.8%	88.7%	67.2%	86.5%	84.9%	92.5%			
No Medicaid LTSS	86.7%	18.2%	11.3%	32.8%	13.5%	15.1%	7.5%			
Nursing Home	1.0%	9.6%	4.0%	4.9%	4.7%	10.1%	2.8%			
In-Home Care	8.9%	37.0%	61.5%	56.7%	76.4%	35.3%	42.5%			
Residential Facility	3.4%	35.2%	23.1%	5.6%	5.4%	39.6%	47.2%			
Intellectual and Developmental Disabilities										
Autism Spectrum Disorder	2.1%	11.9%	12.8%	4.7%	9.1%	12.9%	17.9%			
Intellectual Disabilities	4.5%	34.2%	30.2%	16.7%	19.2%	36.8%	44.9%			
Learning Disabilities	1.2%	8.7%	11.0%	6.0%	9.1%	9.1%	14.1%			
Other Developmental Delays	3.0%	25.6%	29.1%	13.3%	18.2%	27.4%	43.6%			
Cognitive Impairment										
Alzheimer's	0.3%	1.9%	1.2%	1.0%	1.0%	2.0%	1.3%			
Traumatic Brain Injury	0.8%	2.9%	1.7%	2.6%	1.0%	3.0%	2.6%			
Durable Medical Equipment										
Diabetic Footwear	1.3%	3.8%	4.1%	6.3%	7.1%	3.6%	0.0%			
Oxygen	2.7%	6.2%	10.5%	11.2%	12.1%	5.6%	7.7%			

³ The LTSS setting at the beginning of the APS episode may or may not be the same as the LTSS setting at the time of alleged incident.

APS OUTCOMES	Substantiated Other Allegation						
	Other Allegation						
	Substantiated Self-Neglect Allegation						
	Self-Neglect Allegation						
	Any Substantiated Allegation						
	Any Allegation						
	No Allegations						
Wheelchairs	2.1%	11.4%	8.1%	13.1%	10.1%	11.8%	6.4%
Mobility Related Diagnoses							
Mobility Impairments	4.7%	17.1%	16.9%	22.5%	21.2%	16.8%	11.5%
Falls	11.3%	30.2%	33.1%	36.8%	43.4%	29.4%	19.2%
Other Reduced Mobility	1.6%	8.0%	9.9%	14.4%	16.2%	7.4%	1.3%
Central Nervous System Diagnoses							
Parkinson's	0.4%	1.5%	1.7%	1.8%	3.0%	1.5%	0.0%
Cerebral Palsy	1.9%	9.1%	6.4%	5.0%	4.0%	9.8%	9.0%
Epilepsy	8.4%	27.4%	29.7%	21.4%	27.3%	28.4%	30.8%
Multiple Sclerosis	2.3%	3.6%	3.5%	5.7%	5.1%	3.5%	2.6%
Sensory							
Blindness and Visual Impairment	1.0%	4.0%	5.8%	6.0%	8.1%	3.8%	2.6%
Frailty Indicators							
Abnormal Gait	6.6%	22.2%	25.0%	30.0%	34.3%	21.3%	15.4%
Failure to Thrive	0.5%	5.1%	8.7%	11.0%	14.1%	4.2%	1.3%
Altered Mental Status	5.5%	22.2%	29.1%	36.8%	43.4%	20.2%	11.5%
Wheelchair Dependence Diagnosis	1.5%	11.4%	11.6%	14.9%	18.2%	11.4%	5.1%
Coordination	2.1%	13.7%	11.6%	16.4%	19.2%	13.4%	2.6%
Limitation Due to Disability	0.1%	0.6%	0.6%	1.3%	1.0%	0.4%	0.0%
Muscle Weakness	5.3%	18.2%	18.0%	29.8%	29.3%	16.8%	6.4%
Need Assistance	1.5%	7.1%	6.4%	12.5%	9.1%	6.4%	2.6%
Incontinence	5.5%	22.5%	20.9%	26.1%	27.3%	22.2%	12.8%
Weight Loss	3.8%	9.2%	14.0%	13.6%	18.2%	8.7%	7.7%
Pressure Ulcers	3.0%	14.2%	21.5%	25.6%	33.3%	12.7%	6.4%
PHYSICAL AND BEHAVIORAL HEALTH CONDITIONS							
Mental Health Conditions							
Anxiety Disorder (ever)	41.4%	60.3%	63.4%	64.0%	67.7%	59.6%	60.3%
Bipolar Disorder	20.3%	33.1%	38.4%	37.1%	44.4%	32.6%	30.8%
Depression (ever)	52.8%	67.5%	74.4%	79.9%	80.8%	66.0%	67.9%
Personality Disorders	7.7%	16.4%	22.1%	23.2%	23.2%	15.7%	20.5%
Schizophrenia/Psychotic Disorders	15.2%	32.2%	39.0%	37.3%	41.4%	31.5%	37.2%
PTSD	13.8%	18.5%	19.8%	21.4%	19.2%	18.0%	20.5%
Substance Use Disorders							
Alcohol Use Disorders	11.4%	13.7%	19.8%	26.9%	30.3%	11.9%	7.7%
Opioid Use Disorder	12.7%	16.1%	17.4%	27.7%	23.2%	14.6%	12.8%
Other Drug Disorders	11.6%	12.0%	21.5%	21.7%	33.3%	10.3%	6.4%
Medical Service Utilization							
One Emergency Department Visit	15.1%	19.0%	18.0%	19.3%	20.2%	19.2%	14.1%
Two or More Emergency Department Visits	16.7%	35.6%	44.2%	52.0%	58.6%	33.7%	28.2%
Any Acute Inpatient Stays (Physical Health)	11.9%	26.1%	33.1%	46.5%	51.5%	23.4%	12.8%
Any Skilled Nursing Facility Stays	1.3%	9.2%	15.1%	19.3%	24.2%	8.1%	3.8%
Any Other Inpatient Stays (Psychiatric/Rehab)	2.7%	5.2%	9.9%	11.0%	14.1%	4.5%	5.1%
Any Home Health Services	2.2%	14.6%	18.0%	27.4%	28.3%	13.0%	5.1%

APS OUTCOMES	Substantiated Other Allegation						
	Other Allegation						
	Substantiated Self-Neglect Allegation						
	Self-Neglect Allegation						
	Any Substantiated Allegation						
	Any Allegation						
	No Allegations						
Any Inpatient Emergency Department Visits	9.0%	22.6%	31.4%	42.3%	49.5%	20.0%	12.8%
Any Skilled Nursing Home Visits	2.6%	15.7%	21.5%	33.2%	36.4%	13.4%	2.6%
Medical Conditions							
Diabetes	20.1%	33.6%	42.4%	43.3%	48.5%	32.1%	33.3%
Anti-coagulants Rx	7.2%	14.0%	11.0%	24.0%	19.2%	12.5%	1.3%
Hyperlipidemia Rx	18.4%	31.9%	34.9%	39.4%	38.4%	30.7%	30.8%
Congestive Heart Failure	8.3%	17.5%	24.4%	28.5%	33.3%	16.1%	12.8%
Peripheral Vascular Disease	4.6%	16.8%	21.5%	19.1%	25.3%	16.4%	15.4%
Stroke	3.9%	8.7%	8.7%	11.7%	12.1%	8.4%	3.8%
ESRD Enrollment	2.9%	2.7%	4.7%	5.2%	7.1%	2.4%	1.3%
Renal, low	7.1%	20.3%	21.5%	21.4%	28.3%	20.3%	15.4%
Neurogenic bladder Rx	2.8%	9.8%	8.1%	10.7%	9.1%	9.8%	7.7%
Chronic Kidney Disease	19.0%	30.8%	35.5%	45.4%	42.4%	28.5%	25.6%
Gastro, high	2.5%	5.2%	3.5%	5.7%	4.0%	5.0%	2.6%
Gastro, low	20.0%	29.1%	25.6%	29.0%	27.3%	29.1%	24.4%
Gastro, medium	7.6%	11.7%	20.3%	21.9%	26.3%	10.5%	12.8%
Gastric Acid Disorder Rx	23.5%	46.7%	43.6%	49.1%	48.5%	46.7%	39.7%
Hematological, low	3.1%	6.5%	9.3%	9.7%	13.1%	6.1%	5.1%
Iron Deficiency Rx	2.0%	3.5%	4.1%	6.8%	7.1%	3.0%	0.0%
Infectious, low	4.5%	5.6%	6.4%	8.6%	6.1%	5.4%	9.0%
Infections, high Rx	2.6%	4.9%	7.0%	9.7%	12.1%	4.4%	0.0%
Infections, medium Rx	22.3%	35.3%	34.9%	41.8%	38.4%	34.6%	33.3%
Viral Hepatitis	5.1%	5.5%	5.8%	9.1%	8.1%	5.2%	3.8%
Metabolic, high	3.6%	6.3%	4.7%	8.4%	6.1%	5.9%	2.6%
Metabolic, medium	7.8%	14.2%	18.0%	26.1%	25.3%	12.5%	7.7%
Thyroid Disorder Rx	8.4%	18.3%	18.6%	14.4%	16.2%	18.7%	20.5%
Acquired Hypothyroidism	13.2%	25.0%	23.8%	24.5%	26.3%	24.8%	19.2%
Pulmonary, high	0.3%	0.6%	0.6%	1.3%	1.0%	0.5%	0.0%
Pulmonary, medium	5.2%	11.5%	11.6%	19.8%	16.2%	10.4%	6.4%
Asthma/COPD Rx	19.9%	33.3%	37.8%	39.9%	44.4%	32.6%	29.5%
Asthma	16.5%	25.2%	30.2%	31.1%	35.4%	24.7%	24.4%
COPD	14.1%	22.0%	26.2%	34.2%	35.4%	20.4%	14.1%
Skin, high	1.8%	11.9%	19.8%	19.6%	30.3%	11.3%	7.7%
Skin, low	2.5%	6.2%	7.6%	11.2%	9.1%	5.4%	5.1%
Pain Rx	39.7%	47.8%	52.9%	57.2%	63.6%	46.7%	38.5%
Obesity	27.2%	42.0%	49.4%	47.5%	54.5%	41.3%	41.0%
Cancer, high	1.6%	1.9%	1.2%	3.1%	2.0%	1.6%	0.0%
Cancer, low	1.9%	1.7%	1.7%	1.8%	2.0%	1.7%	1.3%
Cancer, medium	0.7%	0.8%	0.0%	0.5%	0.0%	0.8%	0.0%
Cancer, very high	0.9%	0.9%	1.2%	2.1%	1.0%	0.7%	1.3%
Prostate cancer	0.1%	0.1%	0.0%	0.3%	0.0%	0.0%	0.0%

APPENDIX TABLE B.

Risk Factors for Abuse and Neglect

Among Vulnerable Elders (Ages 60 years old and above)

APS OUTCOMES	Substantiated Other Allegation										
	Other Allegation										
	Substantiated Self-Neglect Allegation										
	Self-Neglect Allegation										
	Any Substantiated Allegation										
	Any Allegation										
	No Allegations										
OBSERVATIONS	1,310,389	18,055	2,063	6,033	1,703	13,715	377				
SOCIODEMOGRAPHIC RISK FACTORS											
Age											
60 – 74 years old	61.7%	40.5%	44.9%	46.0%	47.0%	38.5%	35.5%				
75 – 84 years old	27.1%	33.2%	35.6%	34.9%	36.4%	32.8%	31.6%				
85+ years old	11.2%	26.4%	19.5%	19.2%	16.6%	28.7%	32.9%				
Gender (% Male)	46.3%	38.2%	43.2%	44.1%	44.7%	35.6%	36.1%				
Race/Ethnicity											
American Indian/Alaskan Native	0.8%	2.0%	2.2%	2.1%	2.2%	2.2%	2.4%				
Asian American/Pacific Islander	5.2%	2.6%	1.9%	2.0%	1.8%	2.7%	2.4%				
Black or African American	2.3%	3.9%	4.0%	3.8%	3.8%	4.0%	4.5%				
Hispanic	3.5%	3.3%	2.9%	2.8%	3.1%	3.5%	1.6%				
Non-Hispanic White	84.8%	86.8%	87.6%	88.0%	87.7%	86.1%	87.8%				
Other Race/Ethnicity	1.2%	0.8%	1.0%	0.8%	0.9%	0.8%	1.1%				
Socioeconomic Status											
Medicare Part D Subsidy Receipt	13.4%	48.7%	52.4%	45.5%	52.7%	50.5%	51.5%				
Family Below Poverty Line	7.4%	8.4%	8.4%	8.5%	8.5%	8.3%	7.9%				
Household with Annual Income less than \$100,00	32.1%	29.2%	28.7%	28.6%	28.4%	29.3%	30.1%				
SOCIAL NETWORKS											
Living Alone (z-code)	0.4%	3.0%	6.4%	5.3%	7.5%	2.2%	0.9%				
Homeless (z-code)	0.2%	3.1%	6.8%	5.9%	7.9%	2.5%	1.3%				
FUNCTIONAL IMPAIRMENTS											
LTSS Setting at Beginning of APS Episode⁴											
Any Medicaid LTSS	3.9%	38.8%	42.7%	30.2%	41.2%	42.7%	49.9%				
No Medicaid LTSS	96.1%	61.2%	57.3%	69.8%	58.8%	57.3%	50.1%				
Nursing Home	0.8%	13.8%	14.1%	8.3%	12.6%	15.9%	21.2%				
In-Home Care	2.2%	15.0%	20.9%	18.6%	22.8%	14.6%	12.7%				
Residential Facility	0.9%	10.0%	7.6%	3.4%	5.8%	12.2%	15.9%				
Intellectual and Developmental Disabilities											
Autism Spectrum Disorder	0.1%	0.7%	0.3%	0.3%	0.2%	0.9%	0.9%				
Intellectual Disabilities	0.3%	3.3%	2.3%	0.8%	1.4%	4.1%	6.5%				
Learning Disabilities	0.2%	1.4%	1.3%	0.7%	0.9%	1.6%	3.0%				
Other Developmental Delays	0.2%	3.0%	2.1%	1.0%	1.3%	3.7%	5.6%				
Cognitive Impairment											
Alzheimer's	3.4%	22.0%	21.7%	15.5%	19.2%	24.7%	33.3%				
Traumatic Brain Injury	0.3%	1.5%	1.7%	1.3%	1.7%	1.7%	1.7%				
Durable Medical Equipment											
Diabetic Footwear	1.3%	4.0%	3.5%	3.9%	3.5%	4.1%	3.5%				

⁴ The LTSS setting at the beginning of the APS episode may or may not be the same as the LTSS setting at the time of alleged incident.

APS OUTCOMES	Substantiated Other Allegation						
	Other Allegation						
	Substantiated Self-Neglect Allegation						
	Self-Neglect Allegation						
	Any Substantiated Allegation						
	Any Allegation						
	No Allegations						
Oxygen	3.4%	9.1%	9.1%	9.1%	9.4%	9.2%	8.2%
Wheelchairs	1.4%	10.0%	8.6%	7.7%	8.3%	11.0%	10.4%
Mobility Related Diagnoses							
Mobility Impairments	3.4%	16.7%	15.8%	13.4%	14.5%	18.2%	22.9%
Falls	12.4%	44.2%	48.2%	45.3%	49.4%	44.4%	41.6%
Other Reduced Mobility	1.6%	9.7%	11.2%	9.4%	11.4%	10.0%	10.8%
Central Nervous System Diagnoses							
Parkinson's	1.4%	5.3%	3.4%	3.7%	3.2%	5.9%	3.9%
Cerebral Palsy	0.1%	1.2%	0.5%	0.3%	0.2%	1.5%	1.7%
Epilepsy	1.9%	9.4%	8.0%	7.1%	7.4%	10.4%	11.3%
Multiple Sclerosis	0.6%	2.2%	1.8%	1.7%	1.6%	2.4%	2.6%
Sensory							
Blindness and Visual Impairment	0.6%	2.7%	2.1%	2.1%	1.7%	2.9%	3.5%
Frailty Indicators							
Abnormal Gait	13.0%	45.7%	48.1%	45.2%	47.9%	46.3%	48.9%
Failure to Thrive	1.0%	13.4%	25.6%	18.8%	28.5%	12.4%	11.3%
Altered Mental Status	5.5%	39.2%	47.5%	40.3%	49.8%	40.0%	36.8%
Wheelchair Dependence Diagnosis	1.0%	10.1%	9.8%	7.7%	9.2%	11.1%	12.6%
Coordination	2.8%	18.6%	21.1%	17.0%	20.3%	19.6%	25.1%
Limitation Due to Disability	0.1%	0.7%	1.1%	0.9%	1.2%	0.6%	0.9%
Muscle Weakness	9.1%	40.4%	44.8%	39.4%	44.8%	41.3%	44.6%
Need Assistance	1.5%	10.9%	14.7%	12.2%	15.8%	10.8%	10.4%
Incontinence	8.4%	29.9%	33.5%	28.8%	34.1%	31.1%	31.6%
Weight Loss	4.7%	17.4%	20.2%	17.7%	21.5%	17.3%	13.9%
Pressure Ulcers	2.8%	19.1%	24.8%	20.8%	25.6%	18.8%	21.2%
PHYSICAL AND BEHAVIORAL HEALTH CONDITIONS							
Mental Health Conditions							
Anxiety Disorder (ever)	17.6%	45.6%	47.1%	43.6%	47.1%	47.1%	46.8%
Bipolar Disorder	2.5%	11.9%	13.7%	12.1%	14.4%	12.2%	10.4%
Depression (ever)	26.8%	63.5%	64.3%	59.8%	63.4%	65.5%	68.8%
Personality Disorders	1.3%	6.1%	6.7%	5.7%	7.2%	6.4%	4.8%
Schizophrenia/Psychotic Disorders	2.4%	18.5%	23.4%	18.1%	25.0%	19.1%	16.5%
PTSD	1.6%	6.1%	7.7%	6.6%	8.2%	6.2%	5.2%
Substance Use Disorders							
Alcohol Use Disorders	3.4%	13.0%	20.0%	17.6%	22.1%	11.8%	9.5%
Opioid Use Disorder	3.0%	13.6%	14.5%	14.1%	15.4%	13.8%	11.3%
Other Drug Disorders	1.8%	7.0%	8.7%	8.6%	9.3%	6.7%	5.6%
Medical Service Utilization							
One Emergency Department Visit	13.1%	21.6%	21.6%	21.5%	21.1%	21.6%	24.2%
Two or More Emergency Department Visits	7.4%	32.4%	39.6%	37.3%	42.5%	31.9%	24.7%
Any Acute Inpatient Stays (Physical Health)	12.5%	44.3%	57.5%	52.5%	60.7%	42.0%	42.0%
Any Skilled Nursing Facility Stays	3.2%	26.6%	38.1%	32.1%	40.1%	25.1%	27.7%
Any Other Inpatient Stays (Psychiatric, Rehab)	0.5%	3.1%	6.1%	4.1%	6.4%	2.9%	4.8%

APS OUTCOMES	Substantiated Other Allegation						
	Other Allegation						
	Substantiated Self-Neglect Allegation						
	Self-Neglect Allegation						
	Any Substantiated Allegation						
	Any Allegation						
	No Allegations						
Any Home Health Services	5.1%	30.5%	34.3%	33.4%	35.4%	30.1%	29.4%
Any Inpatient Emergency Department Visits	8.4%	37.6%	48.3%	44.1%	51.1%	35.8%	34.6%
Any Skilled Nursing Home Visits	5.5%	31.8%	38.0%	36.0%	39.6%	31.2%	31.6%
Medical Conditions							
Diabetes	24.0%	43.3%	42.5%	42.1%	41.9%	44.1%	45.5%
Anti-coagulants Rx	11.0%	24.4%	25.2%	24.7%	25.3%	24.5%	24.2%
Hyperlipidemia Rx	28.0%	39.2%	38.5%	35.6%	37.4%	40.9%	43.7%
Congestive Heart Failure	15.8%	43.0%	43.2%	41.2%	42.4%	44.0%	46.8%
Peripheral Vascular Disease	11.8%	37.2%	33.0%	30.5%	30.9%	39.8%	42.4%
Stroke	9.3%	28.1%	25.4%	23.0%	23.3%	30.2%	36.4%
ESRD Enrollment	0.5%	2.0%	1.8%	2.3%	1.8%	1.8%	1.3%
Renal, low	11.3%	22.2%	23.3%	21.4%	23.7%	22.7%	21.6%
Neurogenic bladder Rx	3.2%	9.0%	8.2%	7.9%	8.4%	9.5%	7.4%
Chronic Kidney Disease	24.4%	55.2%	59.3%	55.7%	58.8%	55.6%	61.0%
Gastro, high	1.4%	4.0%	3.8%	3.5%	3.8%	4.2%	4.3%
Gastro, low	24.9%	37.3%	32.4%	33.3%	30.9%	38.9%	38.1%
Gastro, medium	5.4%	12.4%	17.9%	15.5%	19.7%	11.5%	9.5%
Gastric Acid Disorder Rx	16.6%	34.0%	33.0%	29.8%	32.2%	35.7%	36.4%
Hematological, low	4.6%	11.9%	14.2%	13.2%	15.5%	11.6%	7.4%
Iron Deficiency Rx	0.9%	2.7%	2.8%	3.2%	3.0%	2.7%	1.7%
Infectious, low	3.8%	5.8%	5.9%	6.4%	6.4%	5.6%	3.5%
Infections, high Rx	1.8%	5.1%	5.7%	5.2%	5.9%	5.1%	5.2%
Infections, medium Rx	18.8%	34.5%	32.4%	30.5%	31.8%	36.6%	34.6%
Viral Hepatitis	1.6%	4.3%	6.0%	5.3%	6.8%	4.0%	2.2%
Metabolic, high	2.6%	4.9%	6.1%	5.8%	6.4%	4.7%	4.8%
Metabolic, medium	7.4%	23.4%	31.9%	26.1%	33.3%	23.0%	23.8%
Thyroid Disorder Rx	10.7%	18.0%	16.2%	15.6%	16.2%	19.1%	16.9%
Acquired Hypothyroidism	19.2%	31.3%	28.2%	28.7%	27.8%	32.6%	31.6%
Pulmonary, high	0.8%	1.3%	1.5%	1.3%	1.5%	1.2%	1.3%
Pulmonary, medium	6.4%	19.4%	22.8%	19.9%	22.8%	19.5%	22.9%
Asthma/COPD Rx	12.2%	25.7%	24.6%	23.6%	24.0%	26.8%	27.3%
Asthma	10.4%	21.1%	20.3%	20.0%	20.3%	21.9%	20.8%
COPD	15.7%	39.2%	41.0%	40.0%	41.3%	39.5%	40.7%
Skin, high	2.0%	17.2%	22.1%	16.8%	22.7%	17.7%	20.3%
Skin, low	2.3%	7.5%	9.3%	9.2%	9.7%	6.8%	7.4%
Pain Rx	30.8%	51.3%	49.3%	47.0%	48.8%	53.6%	51.9%
Obesity	18.2%	30.3%	29.9%	30.5%	29.6%	30.6%	31.6%
Cancer, high	2.9%	4.0%	2.9%	4.0%	2.9%	4.0%	3.0%
Cancer, low	11.5%	9.2%	9.8%	8.7%	9.7%	9.4%	10.4%
Cancer, medium	1.3%	2.2%	2.2%	2.3%	2.6%	2.1%	0.9%
Cancer, very high	1.9%	3.3%	3.7%	4.1%	3.6%	3.0%	4.3%
Prostate cancer	2.9%	2.5%	3.4%	3.0%	3.5%	2.3%	2.6%

STUDY DESIGN AND OVERVIEW

This study is designed to assist the Adult Protective Services (APS) division in identifying individuals at risk for abuse and neglect by estimating risk models for Medicare-enrolled adults and elders. These analyses are based on linked TIVA, Medicare, and Medicaid data for Washington State adults (ages 18 – 59) and elders (ages 60 and older).

APS Outcomes. Descriptive analyses contrast the prevalence of demographic characteristics and risk factors across subgroups experiencing different APS outcomes in the measurement year. These APS outcomes include:

- No allegation: no involvement in an investigation as an alleged victim.
- Any allegation: involved in an investigation as an alleged victim regardless of allegation type or disposition (substantiated, unsubstantiated, inconclusive, or other).
- Any substantiated allegation: involved as an alleged victim in an investigation with a substantiated allegation of abuse or neglect, regardless of allegation type.
- Any self-neglect allegation: involved in a self-neglect investigation regardless of disposition (other types of neglect are not included).
- Any substantiated self-neglect allegation: involved in an investigation with a substantiated self-neglect allegation.
- Any other allegation: Involved as an alleged victim in an investigation with a non-self-neglect allegation such as exploitation (financial or personal), neglect (abandonment and non-self-neglect), or abuse (improper use of restraint, mental abuse, physical abuse, or sexual abuse), regardless of disposition.
- Any substantiated other allegation: involved as an alleged victim in an investigation with a substantiated non-self-neglect allegation including exploitation, neglect, or abuse.

These outcomes are derived from data in the Tracking Incidents of Vulnerable Adults (TIVA) database.

Risk Factors. The risk factors included in the analysis include demographics (age, gender, race, and ethnicity); socio-economic status indicators (Medicare Part D subsidies, ZIP code-based poverty rates); utilization of disability-related durable medical equipment; diagnosed disabling central nervous system conditions (e.g., Alzheimer's, Multiple Sclerosis); developmental conditions (e.g., intellectual disabilities); sensory, and mobility (e.g., hip fractures, falls) impairments; frailty-related diagnoses (e.g., failure to thrive, altered mental status); medical comorbidities (e.g., cardiovascular diseases, diabetes); mental illnesses (e.g., Schizophrenia, bipolar disorder, depression); substance use disorders; and utilization of medical services (e.g., ED visits, hospitalizations, skilled nursing facility stays). The choice of these variables was informed by separate analyses and the APS research literature. Risk indicators are primarily derived from Medicare enrollment and claims data for Washington residents. DSHS, Research and Data Analysis has acquired Medicare data for 7 years. In 2018, these data include information on over 1.4 million beneficiaries, which include adults (under 60 years of age) and elders (ages 60 and older).

Most APS episodes were linkable to Medicare beneficiary data. TIVA data include 44,309 APS episodes in 2018. 78% of the episodes were matched to Medicare beneficiaries. The linked data included 21,211 unique persons with an APS investigation in that year.

Weighted Averages and Simpson's Paradox Example and Interpretation. Many of the risk factors display a phenomenon known as Simpson's Paradox where data that are stratified into groups display different relationships than when the groups are combined. Simpson's Paradox can arise when subgroups have significantly different sizes and experiences, as is the case for comparisons in this report where self-neglect allegations comprise a small proportion of all allegations but are substantiated at a far higher rate than other allegations.

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