Chronic frequent emergency department users with ambulatory care sensitive conditions
A population-based cohort study

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Context

- Frequent emergency department (ED) users (≥4 ED visits in 1 year): small proportion of ED users, but add up to a large number of visits [1]
- Many frequent ED users are diagnosed with one or more ambulatory care sensitive conditions (ACSC) [2]
- Some of those users keep on frequently visiting ED: **chronic frequent users**
- Very scarce literature about chronic frequent use

Objectives

In an adult population with ACSC:

1) To describe the prevalence of chronic frequent ED users
2) To compare characteristics of frequent and chronic frequent users
3) To identify factors associated with chronic frequent ED use

Methodology

Design and data sources

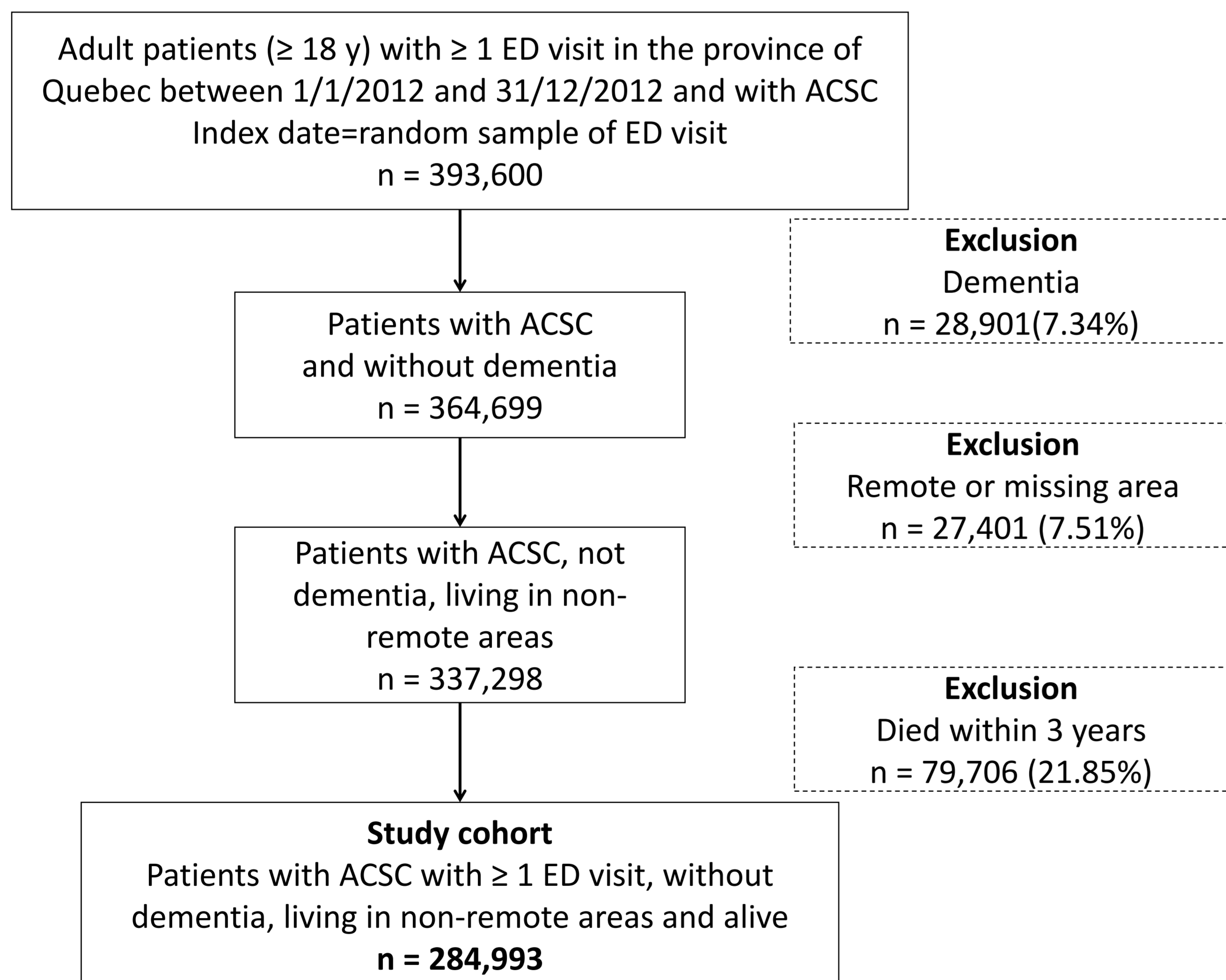Observational population-based cohort study using Quebec's administrative data

Variables

Variables usually associated with frequent and chronic frequent use [3,4]

- Age; Sex; Public Prescription Drug Insurance Plan (PPDIP); Residential area
- ACSC (high blood pressure, diabetes, angina, asthma, chronic obstructive pulmonary disease, congestive heart failure, epilepsy); Comorbidity index; Mental health disorders; Drug abuse
- Previous hospitalization (2 years); Number of ED visits (previous year)

Statistical analyses

- Outcome: Chronic frequent use (≥4 ED visits during 3 consecutive years)
- Descriptive statistics (Chi-square or t-test for testing differences)
- Multivariable logistic regression with backwards variable selection
- Random split between training and validation sets (50/50)

Participants

Adult patients (≥ 18 y) with ≥ 1 ED visit in the province of Quebec between 1/1/2012 and 31/12/2012 and with ACSC
Index date=random sample of ED visit
n = 393,600

→ Exclusion: Dementia n = 28,901(7.34%)

Patients with ACSC and without dementia
n = 364,699

→ Exclusion: Remote or missing area n = 27,401 (7.51%)

Patients with ACSC, not dementia, living in non-remote areas
n = 337,298

→ Exclusion: Died within 3 years n = 79,706 (21.85%)

Study cohort
Patients with ACSC with ≥ 1 ED visit, without dementia, living in non-remote areas and alive
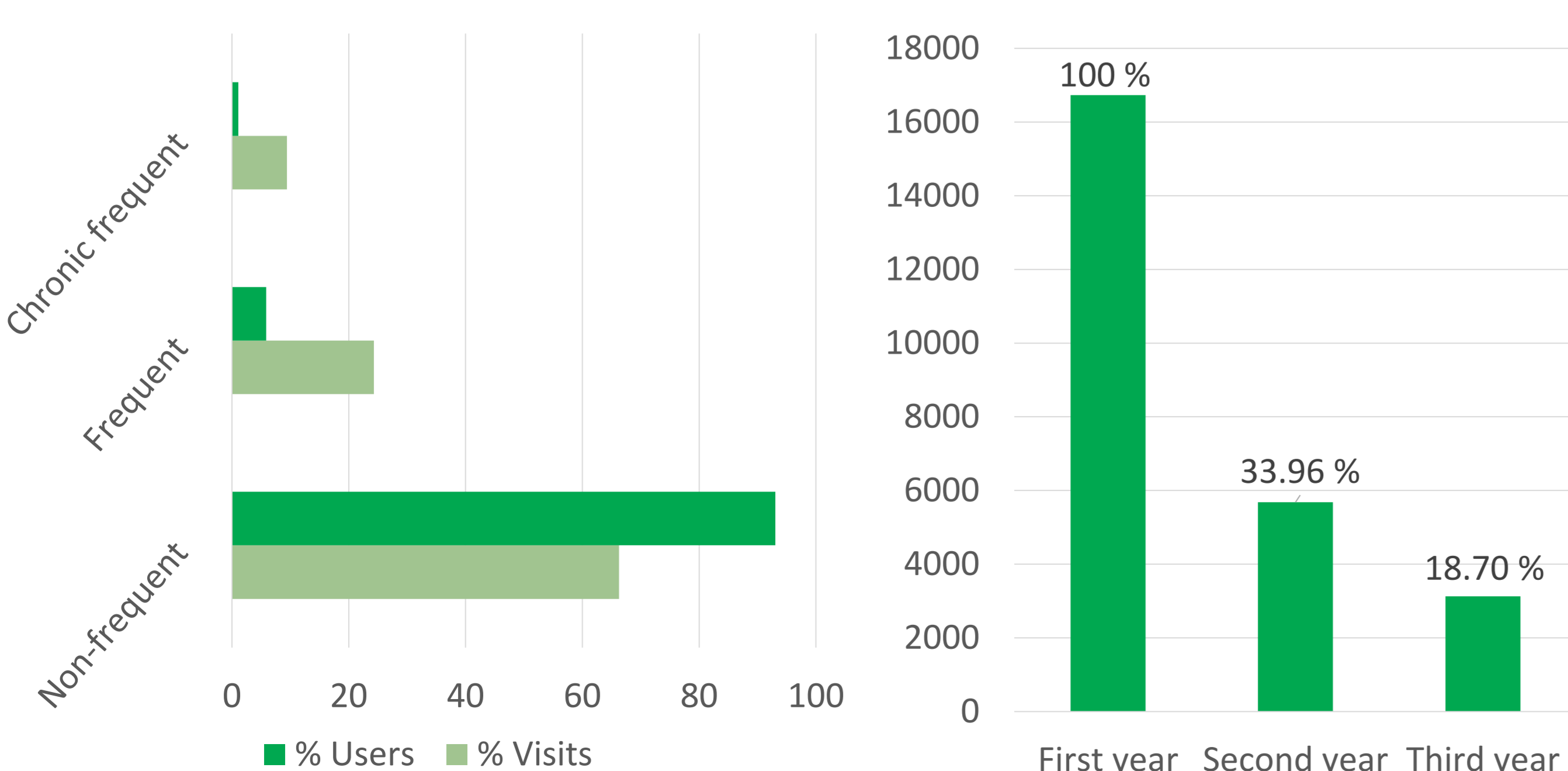**n = 284,993**

Results

Figure 1.
Left : Percentages relative to total users and visits, by types of users.
Right : Number of frequent users relative to first year of follow-up.

Table 1. Cohort characteristics (total, frequent users and chronic frequent users).

Variable	Total (%)	Frequent users (%)	Chronic frequent users (%)
Total	284,993 (100)	16,729 (100)	3,128 (100)
Sex			
Male	134,182 (47.08)	7,374 (44.08)	1,279 (40.89)
Female	150,811 (52.92)	9,355 (55.92)	1,849 (59.11)
Age			
18-34	17,582 (6.17)	1,475 (8.82)	330 (10.55)
35-44	57,784 (20.28)	3,583 (21.42)	819 (26.18)
55-64	63,794 (22.38)	3,160 (18.89)	591 (18.89)
65-74	71,670 (25.15)	3,769 (22.53)	637 (20.36)
75-84	55,777 (19.57)	3,456 (20.66)	586 (18.73)
≥85	18,386 (6.45)	1,286 (7.69)	165 (5.27)
PPDIP			
Regular	104,961 (36.83)	5,115 (30.58)	754 (24.10)
≥65 years	71,377 (25.05)	5,018 (30.00)	904 (28.90)
Private	84,208 (29.55)	3,437 (20.55)	489 (15.63)
LRFA	24,447 (8.58)	3,159 (18.88)	981 (31.36)
COPD	40,450 (14.19)	4,452 (26.61)	1,147 (36.67)
CHD	70,844 (24.86)	5,343 (31.94)	1,102 (35.23)

Variable	Total (%)	Frequent users (%)	Chronic frequent users (%)
Area			
Metropolitan	188,105 (66)	10,238 (61.2)	1,883 (60.20)
Small town	43,881 (15.40)	2,995 (17.90)	582 (18.61)
Rural	53,007 (18.60)	3,496 (20.90)	663 (21.20)
# of ED visits (previous year)			
≤1	215,033 (75.45)	6,312 (37.73)	483 (15.44)
2	34,135 (11.98)	2,712 (16.21)	358 (11.45)
3	16,444 (5.77)	2,126 (12.71)	398 (12.72)
4	8,154 (2.86)	1,455 (8.70)	324 (10.36)
≥5	11,227 (3.94)	4,124 (24.65)	1,565 (50.03)
Comorbidity index			
0	176,067 (61.78)	7,308 (43.68)	1,074 (34.34)
1-2	62,701 (22.00)	4,515 (26.99)	914 (29.22)
3-4	21,787 (7.64)	2,272 (13.58)	514 (16.43)
≥5	24,438 (8.57)	2,634 (15.75)	626 (20.01)
Alcohol abuse	7,750 (2.72)	1,325 (7.92)	412 (13.17)
Depression	33,594 (11.79)	3,779 (22.59)	1,023 (32.70)
Drug abuse	5,399 (1.89)	1,259 (7.53)	453 (14.48)
Psychoses	8,539 (3.00)	1,385 (8.28)	427 (13.65)

Figure 2. Log odds ratios and 95% confidence intervals for chronic frequent use (left) and frequent use (right).
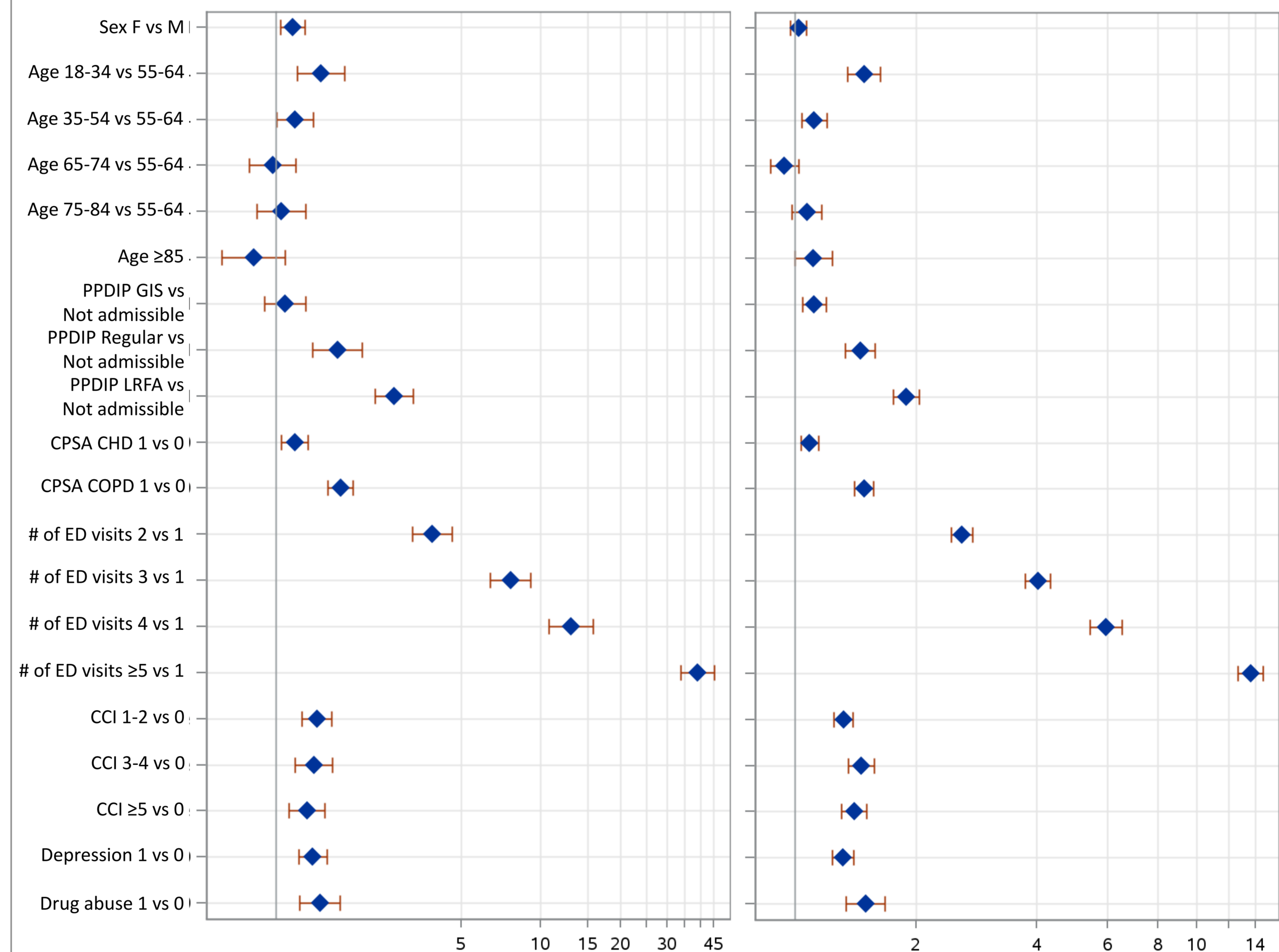
Discussion

- Chronic frequent ED users → 1.1% of the cohort and 19% of the frequent users, 9% of all ED visits during the first year
- **Common characteristics** between chronic and frequent users
- Odds ratios larger for chronic frequent users
- **Attrition rate** higher after the first year
- Use of exhaustive medical and administrative databases
- Self-perceived health variables not available in administrative databases

Conclusion

- **First study** about chronic frequent use in an ACSC population
- Chronic frequent users may be frequent users for more than 3 years
- Variables not available may be relevant for distinguishing between frequent users and chronic frequent users

References

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3. Krieg, Cynthia, et al. "Individual predictors of frequent emergency department use: a scoping review." *BMC health services research* 16.1 (2016): 594.
4. Hunt, Kelly A., et al. "Characteristics of frequent users of emergency departments." *Annals of emergency medicine* 48.1 (2006): 1-8.