

Background

Population subgroups have been used to organize health services and understand the quality of health care. Most commonly, populations have been grouped according to specific diseases or age. However, these subgroups may not adequately capture the health care needs of different patient populations, and thus may be unsuitable for performance reporting. Our objective is to identify population segments based on patients' chronic conditions and primary health care needs.

Methods

We identified population segments based on literature and input from patients, decision-makers, clinicians, and researchers. We used linked administrative data (physician claims, hospitalizations, and prescription medications) from Population Data BC to define segments based on diagnoses and health care events over a seven year period (2007-2013). A multi-staged approach was used:

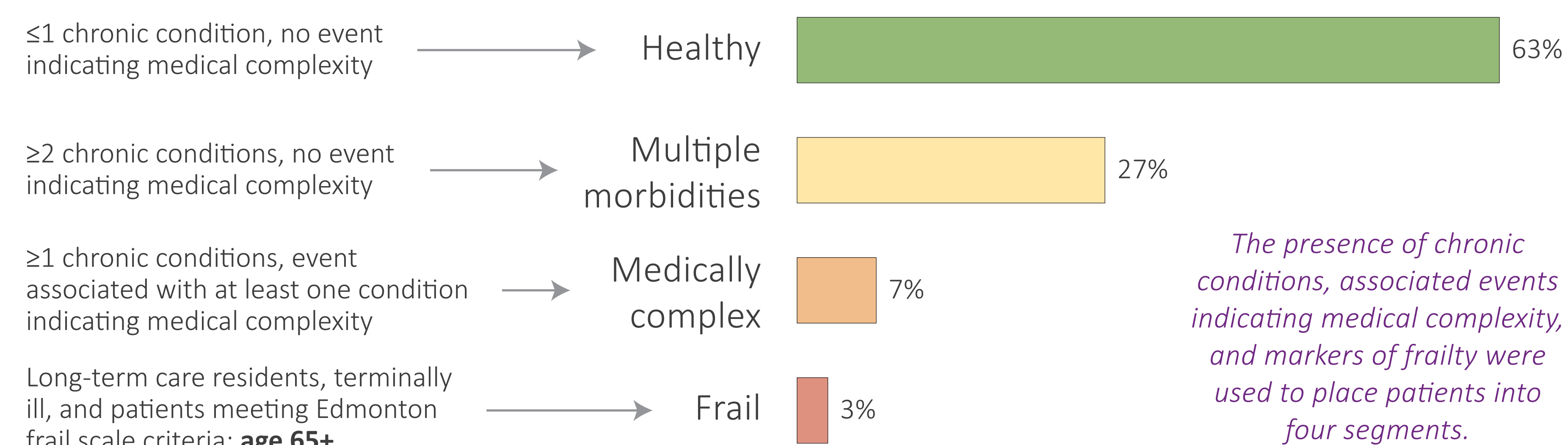
1. The **prevalence of 15 common chronic conditions** was calculated (1999-2014); defined as two diagnoses and/or one hospital admission associated with a condition over two years.
2. A definition of **medical complexity for each chronic condition** was developed; defined as the presence of (an) event(s) that might indicate the need for a greater diversity of services across the health care system on an ongoing basis.
3. Patients 65 and older who were long-term care residents, terminally ill, or met criteria related to the Edmonton frail scale were classified as **frail**.
4. The combination of chronic conditions, complexity, and frailty were used to group the population into four mutually exclusive segments: **healthy, multiple morbidities, medically complex, and frail**.

Population demographics, socioeconomic status, and mortality in 2013, and health care use and costs in 2014, were examined for each segment.

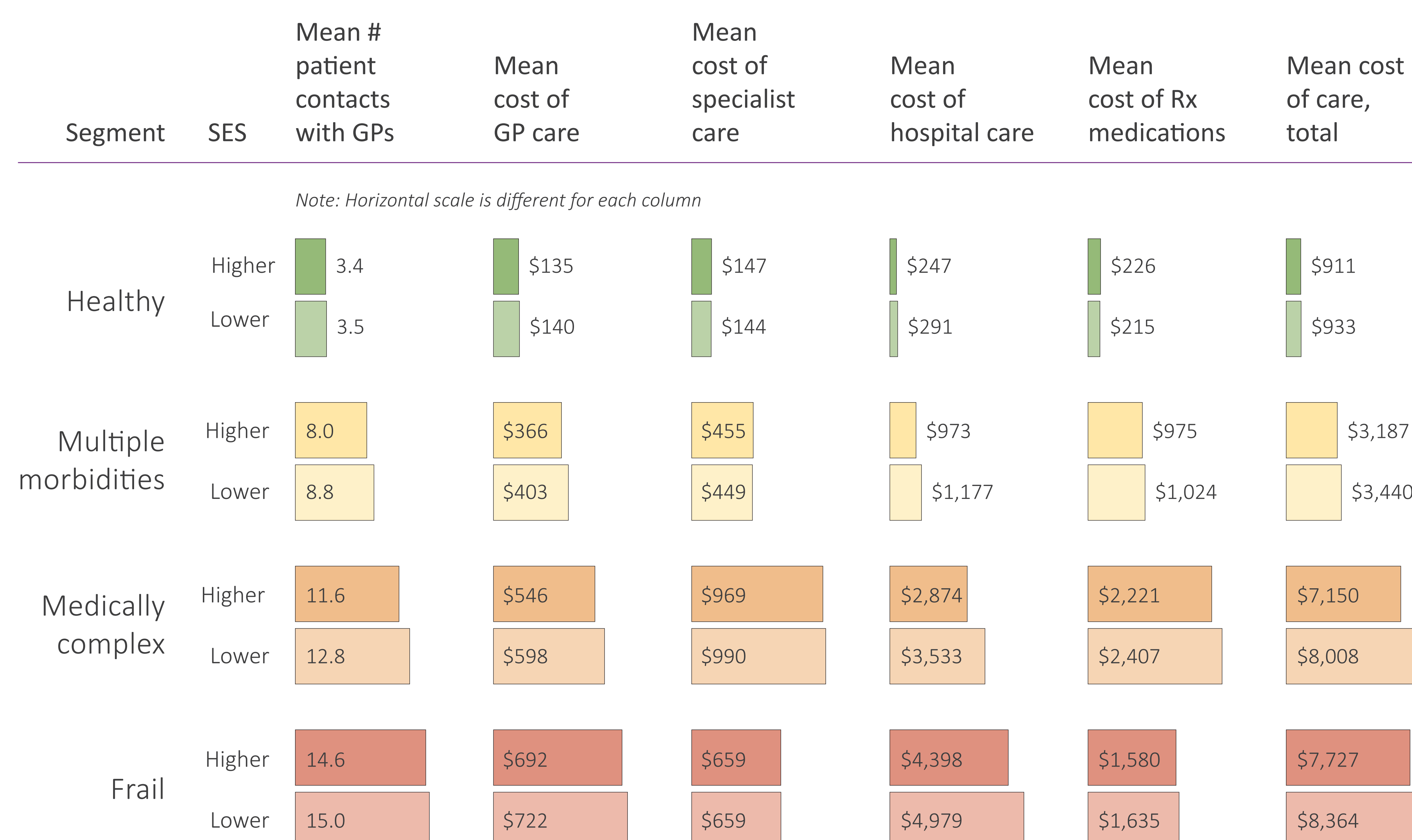
An Analysis Using Health Administrative Data in British Columbia, Canada

Population segments

Segment definitions and percent of population (≥18 years) in each segment, 2013

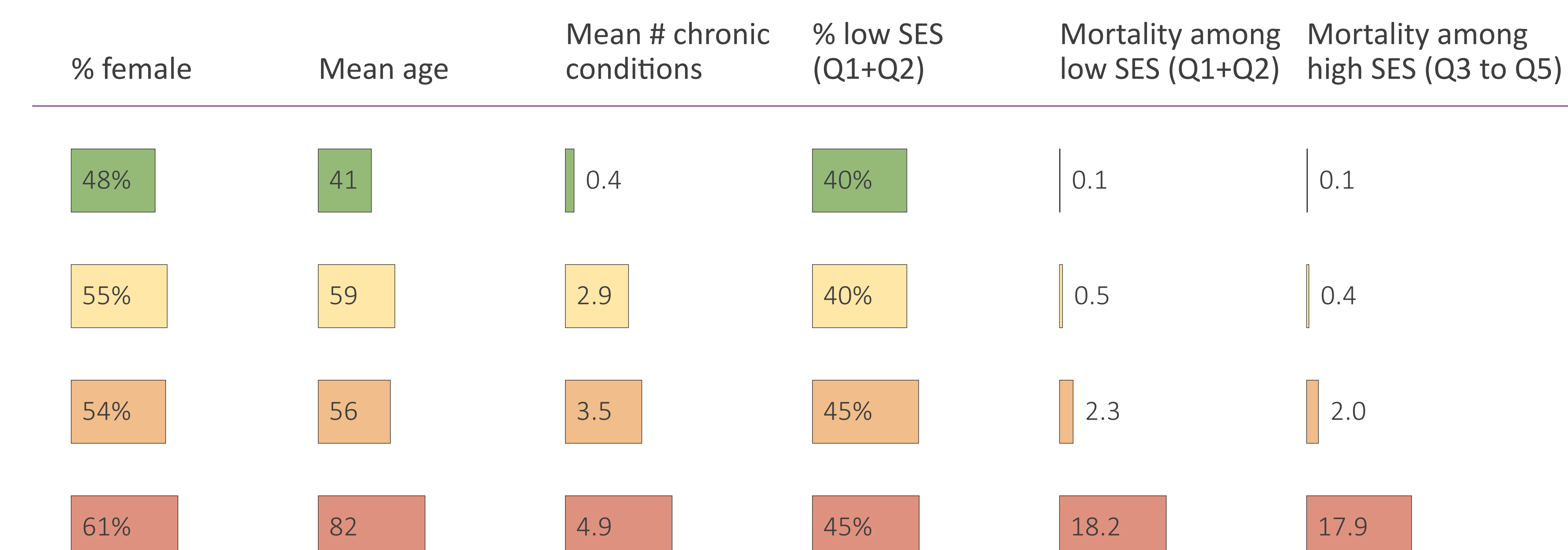


Use and cost of physician, hospital, and medication care in 2014, by segment and SES



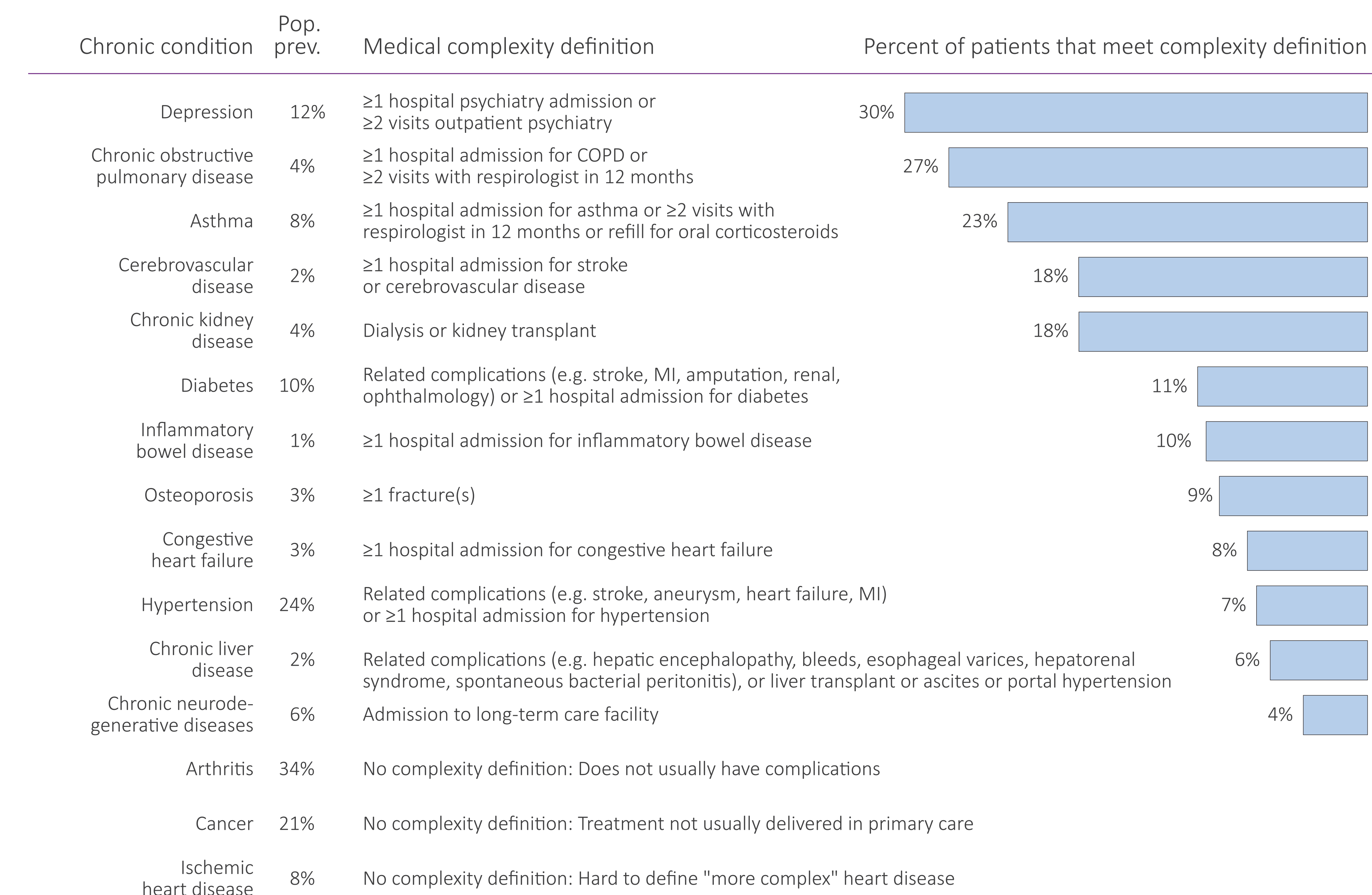
We hypothesized that the type and volume of health care use would be different for the four segments. On average, we found that healthy patients used a small amount of physician services and medications and had very few hospitalization-related costs. Patients with multiple morbidities used more services than healthy patients. Medically complex and frail patients had many GP visits and specialist and hospital-associated costs, especially medically complex patients.

Demographics, socioeconomic status (SES), and mortality, by segment



More details: Identifying medical complexity

Percent of BC population diagnosed with each of 15 chronic conditions, a definition of medical complexity for each condition, and percent of diagnosed patients meeting the complexity definition, 2013



Population prevalence: One hospital and/or two physician diagnoses over two years, cumulative over the period Apr. 1999 to Dec. 2013. Depression also requires treatment in 2013 to be counted. Medical complexity: Measured over 2007-2013.

Results

63% of the population 18 or older were classified as **healthy** (≤1 chronic condition, no event indicating medical complexity), 27% as having **multiple morbidities** (≥2 chronic conditions, no event indicating medical complexity), 7% as **medically complex** (≥1 chronic conditions, event associated with at least one condition indicating medical complexity), and 3% as **frail** (long-term care residents, terminally ill, and those meeting Edmonton frail scale criteria; age 65+).

Service use and costs increase across segments, with the lowest use/cost among the stable segment and the highest among the frail. Service use and cost are higher among those with low socioeconomic status (quintiles 1 and 2) compared to high socioeconomic status (quintiles 3 to 5).

Conclusion

We developed four population segments based on the presence of chronic conditions and health care events. Patterns of use suggest that our segments differentiate patients based on health care needs. Reporting by population segments is important if we want to provide meaningful and actionable information to primary care providers.

Next steps include using survey data from patients, practices, and providers to verify the segments' ability to capture the work of primary care.

Acknowledgements

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