Potentially avoidable hospitalizations (PAH) and rehospitalizations (PAR) as indicators of health care quality

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Ambulatory Care Sensitive Conditions

ACS Conditions	Proportion of PAH in %
Angina	15.28
Asthma	3.40
Cellulitis	5.79
Congestive heart failure	8.68
Convulsions and epilepsy	5.63
Chronic obstructive pulmonary disease	12.79
Dehydratation and gastroenteritis	9.96
Dental conditions	0.52
Diabetes acute complications	1.04
Ear, nose and throat infections	3.33
Gangrene	0.15
Hypertension	3.19
Influenza and pneumonia	12.58
Iron or other nutritional deficiency anaemia	2.18
Nutritional deficiency	0.00
Other vaccine preventable diseases	0.15
Pelvic inflammatory disease	1.21
Perforated/bleeding ulcer	5.06
Pyelonephritis	9.07

What have we learned about PAH from Swiss data?

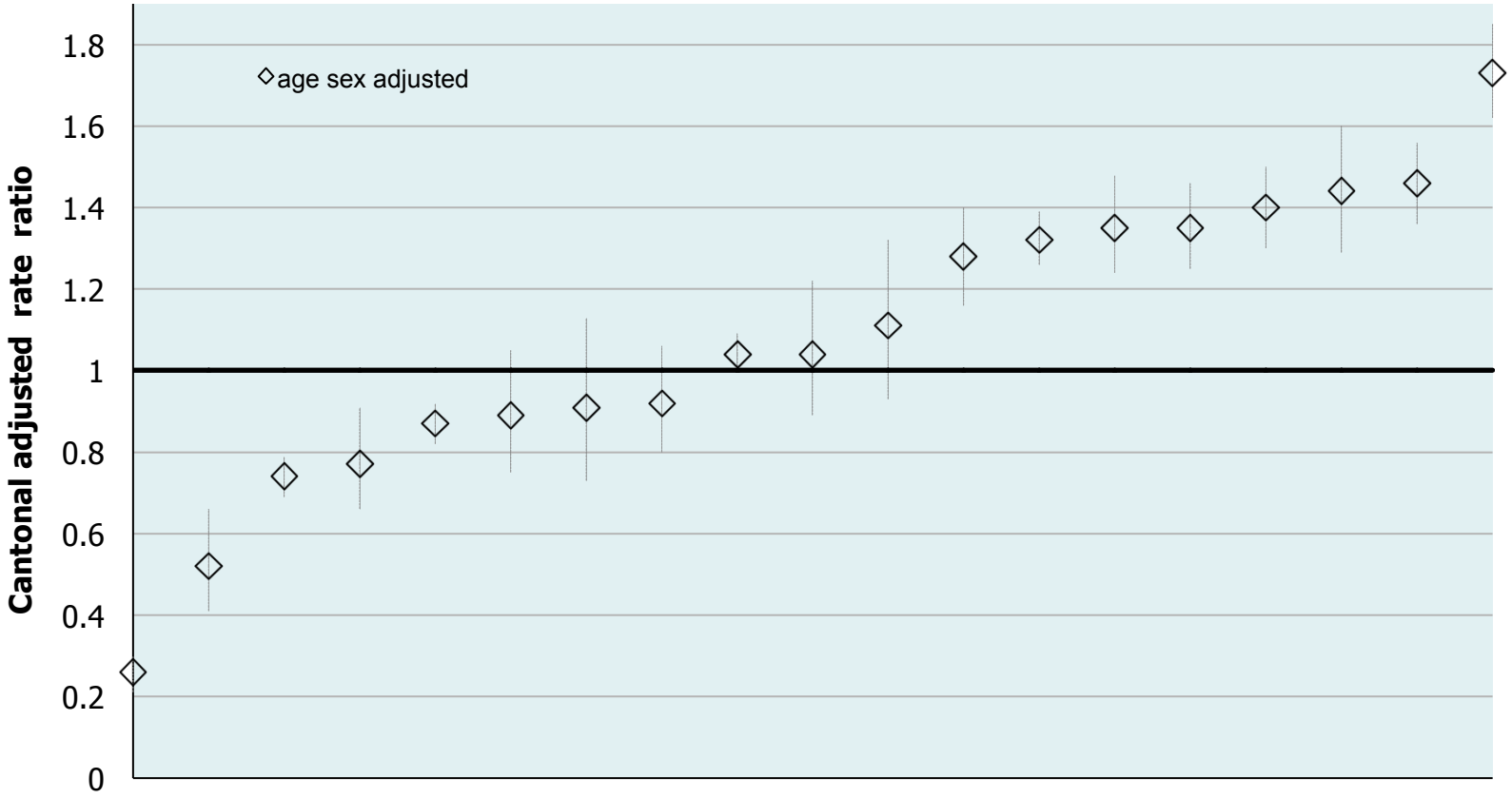
- Exclusion criteria
- Adjustment on health status
- Cautious interpretation

PAH: Exclusion criteria

- 25% of cases identified by inpatient main diagnoses were removed by applying exclusion criteria identifying surgery or severe co-morbidities justifying a hospitalization.

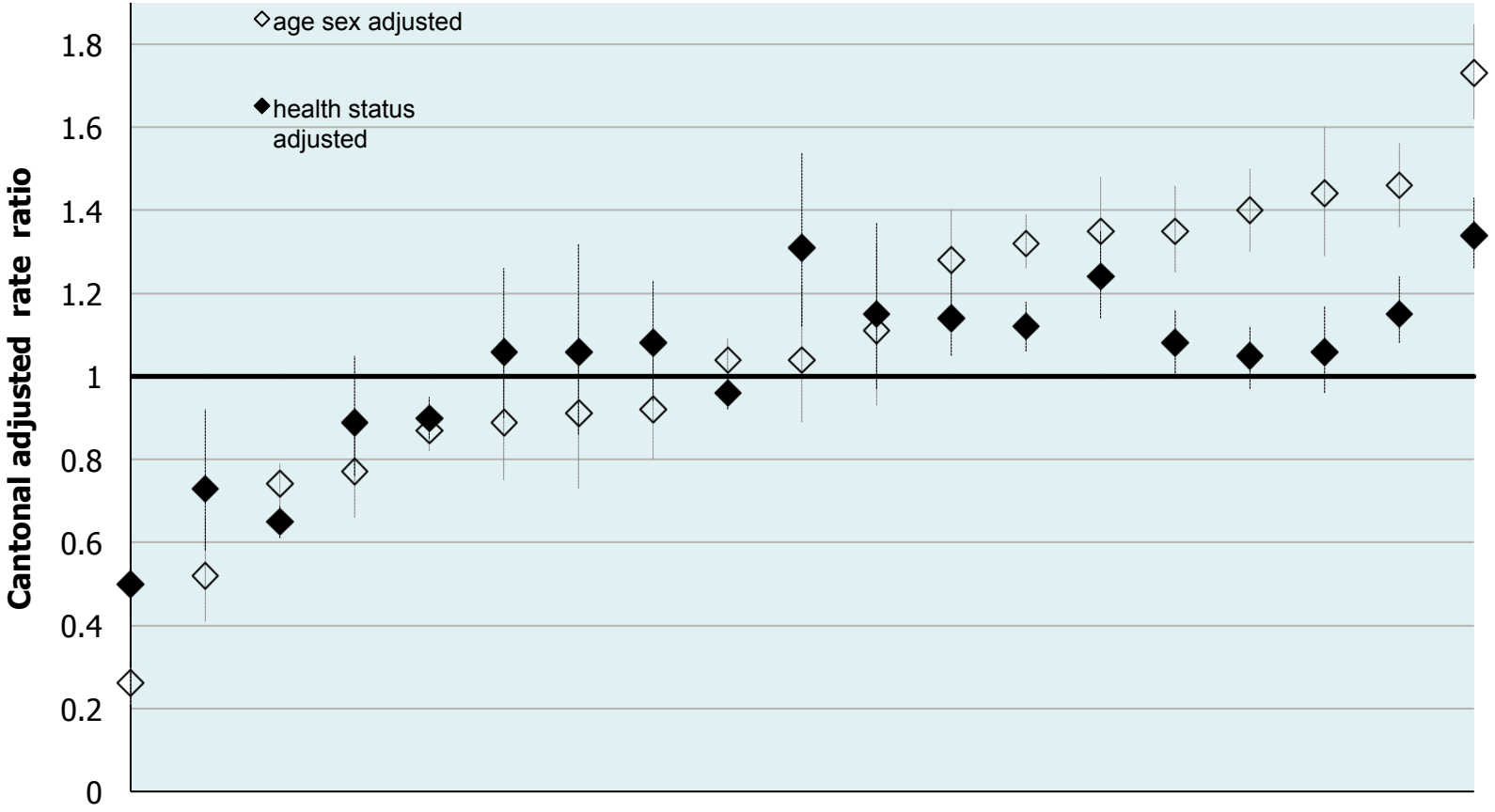
PAH: Adjustment of rates per canton

- Age and sex



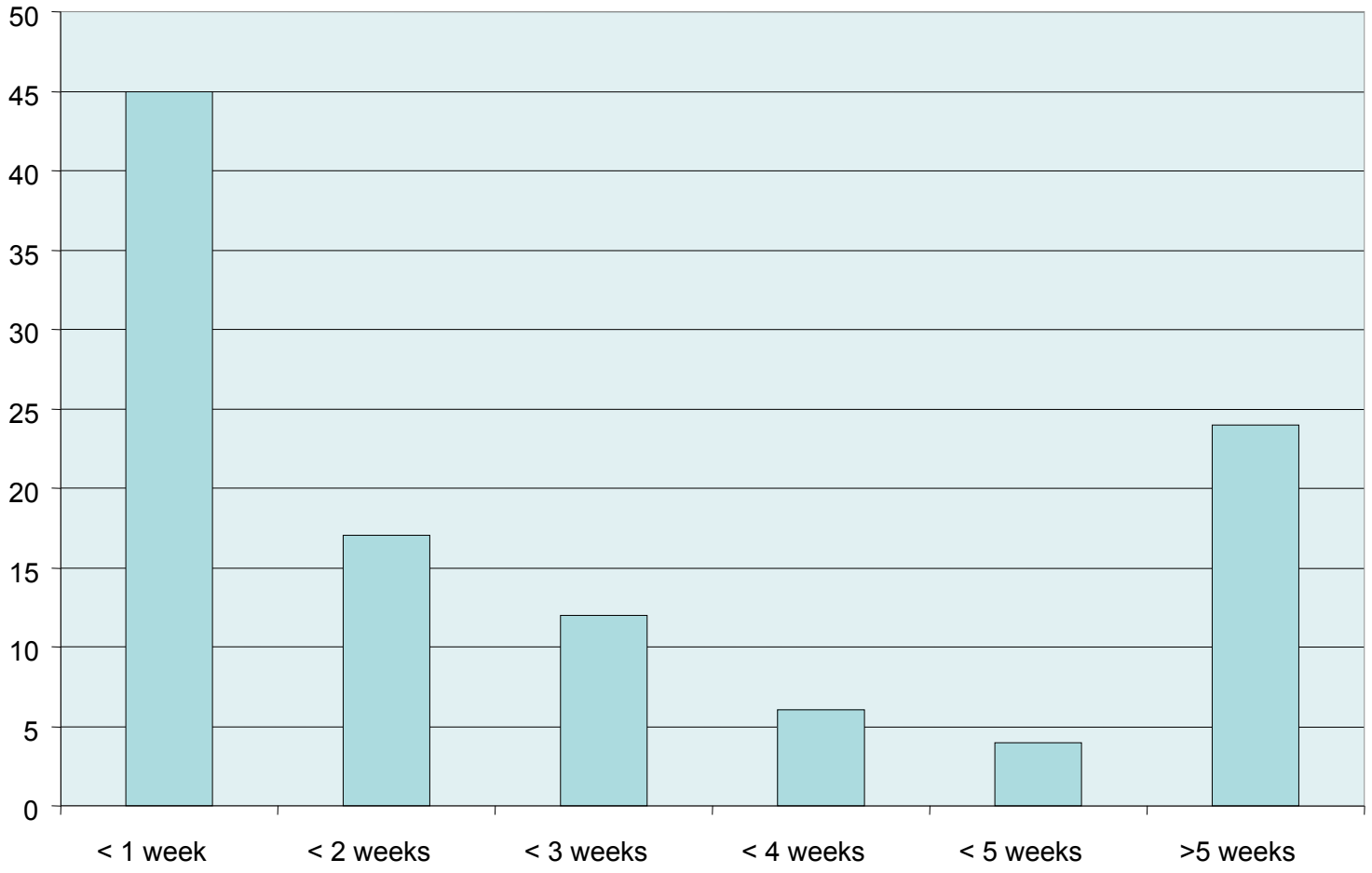
PAH: Adjustment of rates per canton

- Health status (inpatient diagnoses, morbidity based on pharmacy data and physician visits)



PAH: cautious interpretation

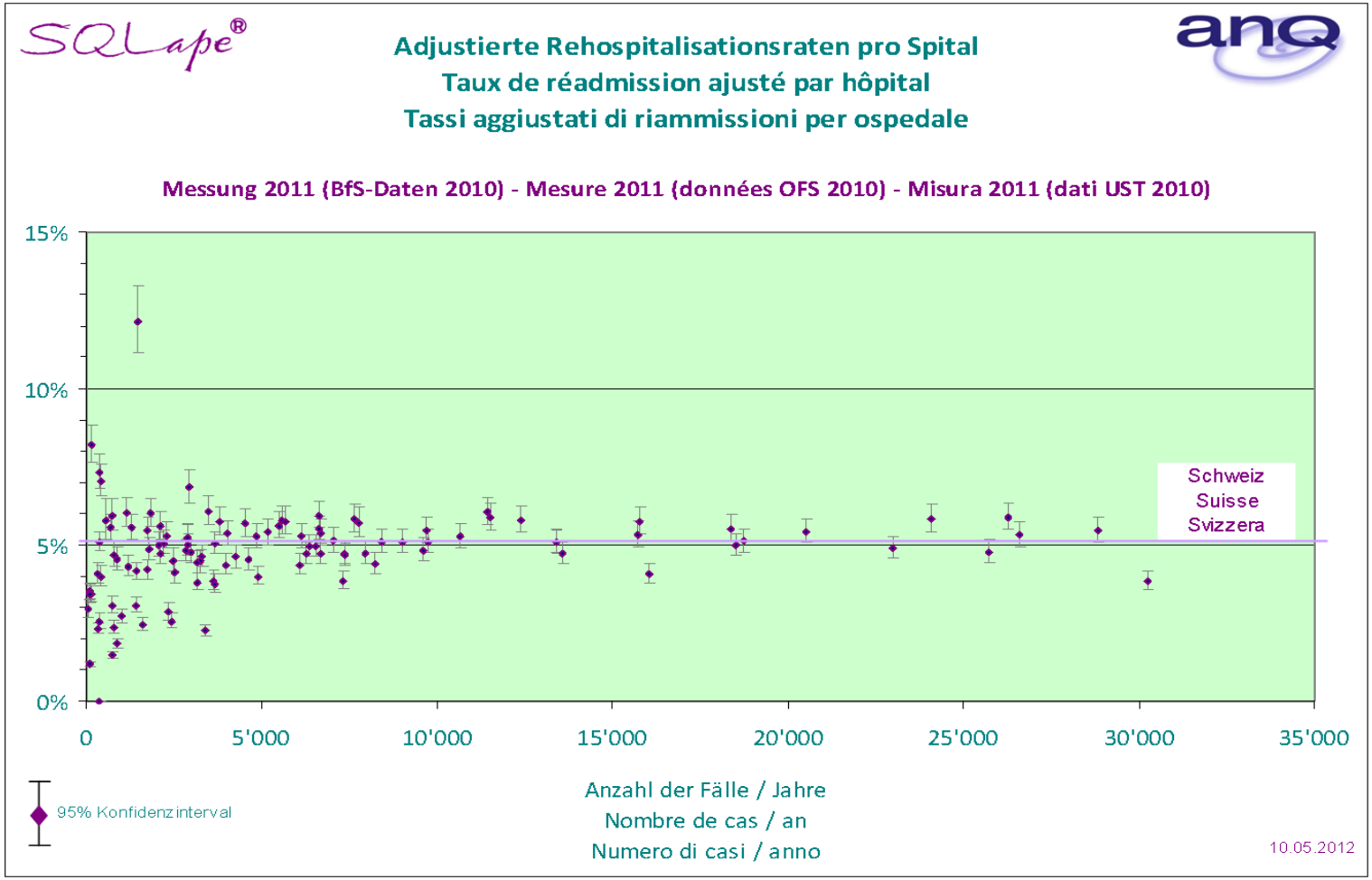
- Delay between the last visit and the hospitalization for diabetes



Potentially avoidable rehospitalizations

Commonly used definition	Unplanned readmissions at 30 days / total discharges
Indicator used in Switzerland (ANQ)	
Numerator	Main issue : planned ≠ foreseen Examples : - delivery, transplantation = foreseen but unplanned - complications are often planned but unforeseen
Denominator	All discharges are not eligible for a readmission: - transfers - death - foreigners - healthy newborns (no discharge preparation) Time to event

PAR: adjusted rates per hospital



PAR: cautious interpretation

Readmission causes	Clearly avoidable		Potentially avoidable	
Complication of surgical care	43		65	(16.7)
Complication of non surgical care	6		11	(2.8)
Drug related adverse event	14		37	(9.5)
Missing or erroneous diagnosis or inappropriate therapy	11		11	(2.8)
Premature discharge	21		21	(5.4)
Other inadequate discharge	9		9	(2.3)
Failure of post discharge follow-up care	-		19	(4.9)
Inadequate patient behavior	-		15	(3.8)
Relapse or worsening of a previously known condition	-		196	(50.3)
Social readmission	-		6	(1.5)
Total (%)	**104**	**(26.7)**	**390**	**(100.0)**

What makes a “good” quality indicator?

	Criteria
1. **Important** ✓	large number of patients, high risk condition
2. **Accurate** *	sensitivity and specificity of case screening (numerator) definition of at risk population (denominator)
3. **Unbiased****	no selection bias
4. **Comparable** ***	expected values
5. **Precise**	statistical uncertainty
6. **Reliable** ✓	same results on repeated measures (data quality)
7. **Secure** ✓	automatized algorithm no threaten to medical privacy
8. **Feasible to collect** ✓	routinely collected data
9. **Available** ~	delay of reporting
10. **Relevant**	variations , opportunity for improvement
11. **No perverse incentives** ✓	improvement in the indicator without improving care

* Is the hospitalization avoidable

** Identification of morbidity

*** performance of prediction models

Conclusion

- Morbidities inferred from drugs : promising approach

- Integrating all electronic data recorded during clinical care (billing data, pharmacy data, inpatients diagnoses) for building ambulatory indicators

- Strong rules protecting the privacy of information

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- Halfon P, Eggli Y, Matter M, Kallay C, van Melle G, Burnand B. Risk-adjusted potentially avoidable reoperation rates computed from routine data. **J Clin Epidemiology** 2007; 60(1):56-67.
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