

**McGill University**  
**Department of Sociology**  
**Sociology 622 – Event History Analysis**  
**Fall 2021**

**Professor:** Céline Le Bourdais  
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**Office Hours:** Monday 15:00 – 16:30 and by appointment  
**Seminar / Lab:** Peterson Hall Room 310      **Time:** Monday, 11:35 – 14:25

**Required text:**

Cleves, Mario, William Gould and Yulia V. Marchenko. 2016. *An Introduction to Survival Analysis Using Stata*, Revised 3<sup>rd</sup> Edition. STATA Press. College Station, TX.

**Other Material:**

Online articles noted in Syllabus, lectures and exercises on *myCourses*.

**General description and objectives:**

This course is designed to introduce students to the practical application and interpretation of event history analysis (also known as survival analysis and hazard/risk analysis) in the social sciences. Event history analysis refers to a set of statistical methods used to analyze change from one state to another in longitudinal data that are able to explicitly model time dependence and the effects of independent variables on the timing and likelihood of the transition. Social life is replete with such transitions: examples on individual level include such things as marriage, births, divorce, entry into the labor market and entry into college.

The course will cover the basics of the method and data structure, and implementation using the software package STATA. Substantive topics will include parametric, semi-parametric and non-parametric models, as well as extensions to the analysis of multiple events and dealing with unobserved heterogeneity (frailty). Each topic will be explored through a combination of substantive examples, mathematical formulation, and practical application using STATA.

Students will become familiar with the logic of longitudinal analyses, and of event history analysis in particular. They will become comfortable with the evaluation and critique of empirical research employing event history analysis and will become competent in the application of standard and advanced methods of this type of analysis.

**Evaluation:**

Learning statistical analyses requires constant reading and practice. Consequently, first there will be both laboratory exercises and homework assignments. These are designed to give you experience with the materials and methods covered in the readings and during the lecture and

discussion portions of the seminar. The second component of the evaluation will be in the form of a proposal for a research project using either Statistics Canada 2017 General Social Survey or another survey tailored to your project. The third component will be the completion of the research project itself.

**Homework Assignments:** There will be **four (4)** homework assignments, which will be worth **15%** a piece. Dates of distribution and collection are noted below in the tentative calendar of dates.

**Project Proposal:** The project proposal will identify a research question and ancillary hypotheses involving a theoretical/substantive problem that can be addressed through event history analysis, and include a brief literature review (at least three journal articles that use event history analysis concerning their topic, or one similar enough substantively or methodologically to inform their research). The project proposal is due on **November 15** and is worth **10%**.

**Research Project:** The research project should take the form of a journal article and contains: 1) an introduction to the problem; 2) a brief literature review; 3) a statement of the aims of the analysis; 4) a description of the data source to be used, and construction of data analysed (generated variables, analytic sample selection); 5) a results section that will begin with simple life table description and then proceed with event history analysis; and 6) a discussion/conclusion. Students should also note explicitly limitations of their analyses in this section. The paper is due **December 16** and is worth **30%**. On the last day of class (December 6), students will be invited to present their research (a short 15-minute presentation).

### **Right to submit in English or French written work that is to be graded:**

*In accord with McGill University's Charter of Students' Rights, students in this course have the right to submit in English or in French any written work that is to be graded (approved by Senate on 21 January 2009).*

### **Academic Integrity:**

*McGill University values academic integrity. Therefore, all students must understand the meaning and consequences of cheating, plagiarism and other academic offences under the Code of Student Conduct and Disciplinary Procedures (see <http://www.mcgill.ca/students/srr/honest/> for more information) (approved by Senate on 29 January 2003).*

### **Policy Concerning the Rights of Students with Disabilities:**

*If you need any accommodation, please contact the Office for Students with Disabilities (<http://www.mcgill.ca/osd/> 398-6009). You may also contact me directly. I will make every effort to accommodate you.*

## Course Outline & Schedule

Week 1	<b>September 13</b>	Introduction: Longitudinal Data and Analysis. Stata and Data Sets
Week 2	<b>September 20</b>	Basic Concepts in Survival Analysis: Event, Timing, Spell, Censoring and Truncation
Week 3	<b>September 27</b>	Life Tables and Survivor Functions
Week 4	<b>October 4</b>	Maximum Likelihood Estimation and Parametric Models
Week 5	<b>October 14</b>	Parametric Models Continued: Changing Hazards with Time in Exponential Models; Piecewise Exponential Model
Week 6	<b>October 18</b>	Discrete Time Models
Week 7	<b>October 25</b>	Semi-parametric (Proportional Hazard) Models
Week 8	<b>November 1</b>	Time Varying Covariates and Interactions: Exponential and PH Models
Week 9	<b>November 8</b>	Non-Proportionality, Stratification and Interaction
Week 10	<b>November 15</b>	Specification/Model Selection/Residual Analysis
Week 11	<b>November 22</b>	Competing Risks
Week 12	<b>November 29</b>	Repeated Events and Data Construction
Week 13	<b>December 6</b>	Special Topics/Review. Presentation of students' research.

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### Calendar of Exercises and Papers

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	Distributed	Due
Exercise 1	September 27	October 4
Exercise 2	October 14	October 21
Exercise 3	October 18	November 1
Exercise 4	November 8	November 22
Project Proposal		November 15
Research Project		December 16

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## Schedule and Readings

- 1. Introduction** (September 13)  
Longitudinal data and analysis. Presentation of class data sets.  
**Introduction to Stata:** Basic Commands, Help, [UCLA guide to STATA](#)
- 2. Basic Concepts in Survival Analysis: Event, Timing, Spell, Censoring and Truncation** (September 20)  
Cleves et al., Chapters 1 & 4, Chapter 6 for lab  
[Clark, T.G., M.J. Bradburn, S.B. Love and D.G. Altman. 2003. "Survival Analysis Part I: Basic Concepts and First Analyses". \*British Journal of Cancer\* 89: 232-238.](#)
- 3. Life Tables and Survivor Functions** (September 27)  
Cleves et al., Chapter 8  
Proulx, Christine. 2016. "The provision of unpaid care across cohorts and genders: A Research Note". *Canadian Studies in Population* 43(3-4): 272-286. ([available on myCourse](#)).
- 4. Maximum Likelihood Estimation and Parametric Models** (October 4)  
Cleves et al., Chapters 12 (p. 231-243), 13 (p. 247-250; 256-284)  
[Vuchinich, Samuel and Jay Teachman. 1993. "Influences on the Duration of Wars, Strikes, Riots, and Family Arguments". \*The Journal of Conflict Resolution\* 37\(3\): 544-568.](#)
- 5. Parametric Models Continued: Changing Hazards with Time in Exponential Models; Piecewise Exponential Model** (October 14)  
Blossfeld, Hans-Peter, Katrin Golsch and Götz Rohwer. 2007. *Event History Analysis with Stata*. Taylor & Francis. New York. Chap. 5: Piecewise Constant Exponential Models. ([available on myCourse](#))  
Pacaut, Philippe, Céline Le Bourdais and Benoît Laplante. 2011. "The Changing Impact of Conjugal Status and Motherhood on Employment across Generations of Canadian Women". *Canadian Studies in Population* 38(3-4): 105-132. ([available on myCourse](#)).
- 6. Discrete Time Models** (October 18)  
Allison, Paul D. 1984. *Event History Analysis – Regression for Longitudinal Event Data*. Sage. Newbury Park. Pp. 14-22. ([available on myCourse](#))  
[South, Scott J. 2001. "Time-Dependent Effects of Wives' Employment on Marital Dissolution". \*American Sociological Review\* 66\(2\): 226-245.](#)
- 7. Semi-parametric (Proportional Hazard) Models** (October 25)  
Cleves et al., Chapters 9.1-9.2, 10.1-10.2  
[Stewart, Susan D. 2002. "The Effect of Stepchildren on Childbearing Intentions and Births". \*Demography\* 39\(1\): 181-197.](#)
- 8. Time Varying Covariates: Exponential and PH Models** (November 1)  
Cleves et al., Chapter 10.5

Gillepsie, Brian Joseph. 2020. "Adolescent Intergenerational Relationship Dynamics and Leaving and Returning to the Parental Home". *Journal of Marriage and Family* 82(3): 997-1014.

**9. Non-Proportionality, Stratification and Interaction** (November 8)

Cleves et al., 9.3, 10.4, 11.1

Le Bourdais, Céline, Hélène Desrosiers and Benoît Laplante. 1995. "Factors Related to Union Formation Among Single Mothers in Canada". *Journal of Marriage and the Family* 57(2): 410-420.

**10. Specification/ Residual Analysis/ Weights** (November 15)

Cleves et al., Chapter 11.2

Other reading TBA

**11. Competing Risks** (November 22)

Cleves et al., Chapter 17

Mernitz, Sara E. 2018. "A cohort comparison of trends in first cohabitation duration in the United States". *Demographic Research* 38(66): 2073-2086.

**12. Repeated Events and Data Construction** (November 29) – Invited lecturer: Ana Fostik (Statistics Canada)

Cleves et al., Chapters 9.4, 15.1

Hamplová, D., C. Le Bourdais and B. Legendre. 2021. "Partners' Relative Income and the Risk of Union Dissolution in Two Institutional Contexts". *European Sociological Review* 37(4): 525-540.

**13. Special Topics/Review; Students' presentation** (December 6)