Overview

1. Introduction to the research proposal
   a. The research proposal as a genre
   b. Audience
   c. Purpose
   d. Structure
   e. Style
2. Tips and Reminders
3. Q & A
Research Proposal

Audience
- Academic colleagues
- Multi-disciplinary committee

Purpose
- Demonstrate that you have a worthwhile project AND that you can do it

Style
- Mixture of various genres: academic, reflective, cover letter

Structure
- How to organize information for your reader
Multi-disciplinary: experts and non-experts
Discourse community: shared goals, values and conventions (Beaufort)
How do you convince them?

Demonstrate:
1. Credibility
2. Your investment in the project

Balance:
Demonstrate your capability without overstating.
## JUDGING CRITERIA

### CGS – Master’s

<table>
<thead>
<tr>
<th>Audience</th>
<th>Academic Excellence</th>
<th>50%</th>
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<tbody>
<tr>
<td>Academic Excellence</td>
<td>Academic record: Marks; program; awards; course load</td>
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<tr>
<td>Research Potential</td>
<td>critical thinking; initiative &amp; independence; work experience &amp; academic training for field; contribution, merit, originality, significance &amp; feasibility of project; research experience &amp; achievements</td>
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<tr>
<td>Personal Characteristics and Interpersonal Skills</td>
<td>work &amp; volunteer experience; project management; communication; involvement in academic life &amp; the community</td>
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## JUDGING CRITERIA
### NSERC - Doctoral

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<th>Personal Characteristics and Interpersonal Skills</th>
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<td></td>
<td>• Academic record</td>
<td>• Quality of research contributions to research</td>
<td>• The ability or potential to communicate scientific concepts clearly and logically in written and oral formats.</td>
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<td>• Scholarships and awards held</td>
<td>• Relevance of work &amp; training</td>
<td>• Professional and relevant extracurricular interactions and collaborations</td>
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<tr>
<td></td>
<td>• Duration of previous studies</td>
<td>• Significance, feasibility, and merit of proposed research, &amp; justification for location of tenure</td>
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<td></td>
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<td>• Ability to think critically, apply skills and knowledge, judgment, originality, initiative and autonomy</td>
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<td>• Enthusiasm for research</td>
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<td>• Determination and ability to complete projects on timely schedule</td>
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Multidisciplinary selection committees evaluate applicants solely on academic merit, measured by:

- past academic results, as demonstrated by transcripts, awards and distinctions;
- the program of study and its potential contribution to the advancement of knowledge;
- relevant professional and academic experience, including research training, as demonstrated by conference presentations and scholarly publications;
- two written evaluations from referees; and
- the departmental appraisal (for those registered at Canadian universities).

## JUDGING CRITERIA

### CIHR- Doctoral

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<th>Achievement Categories</th>
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<td>• Publication activity, Other research activity, Academic record</td>
<td>35%</td>
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<tr>
<td><strong>Characteristics and Abilities of the Candidate</strong></td>
<td>• Critical thinking, Independence, Perseverance, Originality, Organizational skills, Interest in discovery, Research ability, Leadership</td>
<td>40%</td>
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<tr>
<td><strong>Research Training Environment</strong></td>
<td>• Training program, Scientific activity, Research resources, Training record</td>
<td>25%</td>
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[http://www.cihr-irsic.gc.ca/e/33043.html#k](http://www.cihr-irsic.gc.ca/e/33043.html#k)
Demonstrate that you have a worthwhile project and that you can do it.

1. **Rationale – why?** The significance or value

2. **Review – where?** Situate it in existing research

3. **Outline – how?** Methodology, approach, materials, timeline
Purpose

Demonstrate knowledge of your field and knowledge of your problem

CARS Model

Based on Swales’ analysis of introductions to academic research articles
Move 1: Establish a territory
Move 2: Establish a niche
Move 3: Occupy the niche

(Swales 140-141)
CARS Model

Move 1: Establish a territory

“Research into alcohol use during pregnancy establishes that…”

“Military historians generally question the relationship between…”

“Maxwell’s work on Bourdieu’s theory of social capital establishes…”

“While scholars accept that… recent work by Boston and Jones has complicated this issue by suggesting…”

“Extensive research into ocular decay in aging populations has established that…”
**Purpose**

**CARS Model**

*Move 1: Establish a territory – General Guidelines*

- Do your research. Read widely to get a sense of the field. Talk to your advisor or potential committee members about your project.
- Consider the currency of the project. How much has been published? When? Ask yourself, is this research worth pursuing right now? Why?
- When writing, this section should be short, succinct, and specific. It both establishes your credibility as a researcher and justifies your project.
SIDEBAR: Developing your research question

Ensure you have a research question, not a topic

Question – Significance - Motivation
1. I am researching…
2. Because I want to find out…
3. In order to help my reader understand…

(Booth et al.)

(This is a conceptual framework, not a textual model.)
CARS Model
Move 2: Establish a Niche

“This research is complicated by Henry’s work on drug use during pregnancy, which suggests that…”

“However, the Canadian indigenous community, while a potentially significant source of data, has been largely ignored in these studies…”

“The existing research has failed to account for the presence of…”

“Recent work by Sanders et al. has demonstrated that… There is the potential to extend their work into… in order to…”

- Draw a new connection
- Extend existing work
- Fill a gap
- Make a counter-claim
- Apply existing methodology to an existing or new problem
CARS Model
Move 2: Establish a Niche – General Guidelines

- This is the move that establishes your research as distinct and relevant.
- Be as detailed and specific as possible, but stay concise.
- In terms of quantity, this portion should be longer than the first move.
- Be persuasive. Why is this relevant? What will it add to the field? What potential does it have? What might other researchers be able to do with it to further the field?
- State your exceptions to current research positively. Don’t trash the field and its scholars.
CARS Model
Move 3: Occupy the Niche

“In my study, I will demonstrate that…”

“My research will examine the links between…”

“I argue that…”

“My methodology adapts Sternum’s theories to… by…”

“I will begin by collecting…”

“During the initial phase, I expect to find…”
CARS Model
Move 3: Occupy the Niche – General Guidelines

- State your claim, argument, or hypothesis clearly.
- Include the anticipated outcome and its potential contribution.
- Be detailed but not too detailed. Provide the relevant information to demonstrate validity, but don’t overwhelm with minutiae.
- Describe and define what you will be studying and how you will access the data, subject matter, participants, etc.
- Be clear about your theoretical framework and/or methodology.
- Give a brief overview of the type and structure of the project, e.g. what kind of thesis it is and what will you include.
Your credentials and potential as a researcher:

Show your credibility and your investment in the project and your work.

- What have you done before?
- What are your goals?
- What do you hope to contribute?
- What motivates you?
Move 1: Establish a territory

Obesity is a growing public health problem. Globally, 500 million adults are obese and an additional 1 billion are overweight.\(^1\) Obesity rates have approximately doubled since 1980 and continue to increase in virtually all high, middle and low-income countries.\(^1\) Recent estimates indicate that one-quarter (25%) of adult Canadians are obese and an additional 37% are overweight, while more than one quarter of Canadian children and youth are either obese or overweight.\(^2;3\) The direct healthcare costs of obesity are estimated at more than $6 billion, or 4% of total health expenditures.\(^4\) Overweight and obesity are important contributors to chronic disease morbidity and mortality. In adulthood, excess body weight increases the risk of a range of chronic diseases, including cardiovascular disease and osteoarthritis, type 2 diabetes and certain types of cancers.\(^5\) The etiology of obesity is complex, with many factors being involved in its development.
Move 2: Establish a niche

Food consumed at restaurants and fast-food outlets accounts for a growing proportion of dietary intake among Canadians, and is believed to be an important contributing factor in the obesity problem. Several prospective studies have demonstrated that frequently eating at restaurants—particularly fast food restaurants—is associated with excess weight gain over time.\(^6,7,8,9\) Currently, Canadians receive little or no information regarding nutritional content of restaurant food. Menu labelling is a potentially effective population-level intervention to help reduce the prevalence of obesity and obesity-related chronic disease. In addition to changing consumer behavior, menu labelling also has the potential to promote the availability of healthier food options from the food service industry.\(^10\) To date, several studies have examined the impact of nutritional labelling interventions on calorie consumption in a naturalistic setting.\(^11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,28\) However, results from these studies have been mixed and study designs have been limited. None of these studies were conducted in Canada. Two recent reviews highlighted the scarcity of studies and methodological limitations of those that have been conducted, including a lack of “natural experiments”.\(^29,30\)
Move 3: Occupy the niche

The primary research that I will undertake during my PhD career will examine the impact of displaying nutritional information at the point-of-sale on consumer behaviour. The proposed research project will be a naturalistic study conducted in partnership with The Ottawa Hospital. The Ottawa Hospital Civic Campus has implemented a new nutrition promotion program in the cafeteria, which includes displaying nutritional information (including calories, saturated and total fat, and sodium) on digital menu boards. The hospital has also created a new health logo for products that meet a set of nutritional standards modeled after the Heart and Stroke Foundation’s Health Check™ Program\textsuperscript{31}, as well as the new nutritional standards to be implemented in Ontario schools.\textsuperscript{32} The same labelling program will be implemented in the Ottawa Hospital General Campus in the spring of 2012. The implementation of these policies provides an opportunity to conduct a quasi-experimental study of nutrition labelling in a naturalistic setting.
Move 1: Establish a territory

The obesity epidemic continues to be a leading issue in the health of Canadian children and youth, which is likely to continue in the future. Numerous health-related consequences of obesity have been documented in the literature, including cardiovascular problems, hypertension, type 2 diabetes, psychosocial problems and various forms of cancer. The increasing prevalence of obesity has been linked to physical inactivity and further supported by a positive association between sedentary behaviour and body mass index (BMI). Moreover, the influences of student
The obesity epidemic continues to be a leading issue in the health of Canadian children and youth, which is likely to continue in the future. Numerous health-related consequences of obesity have been documented in the literature, including cardiovascular problems, hypertension, type 2 diabetes, psychosocial problems and various forms of cancer. The increasing prevalence of obesity has been linked to physical inactivity and further supported by a positive association between sedentary behaviour and body mass index (BMI). Moreover, the influences of student and school-level variables have shown to have an effect on obesity. Recent literature has also noted the importance of the built environment and its influence on obesity. The built environment can be defined as the physical aspects of our lives, such as the neighbourhoods, roads, facilities, recreational areas and food sources, which influence our daily lives and may prove to be a fundamental contribution to the occurrence of obesity. However, limited research has been conducted in youth populations, with cross-sectional studies constituting most of the research. Furthermore, there have been no studies which have evaluated how changes in school programs and policies over time have influenced the built environment and subsequent changes in health status (i.e., obesity) in a representative sample of Canadian youth.
Move 3: Occupy the niche

The proposed research project will examine the link between the built environment and obesity using data from the COMPASS study: a prospective cohort study collecting hierarchical longitudinal data (2012-2016) from a convenience sample of 80 secondary schools and the ~50,000 grade 9 to 12 students attending those schools in Ontario and Alberta (CIHR MOP-
A classical problem in number theory is to calculate the density of a certain infinite set of prime numbers among all primes. For example, let \( S = \{ p : p \text{ is prime, } p \equiv 3 \pmod{4} \} \). Due to a famous result by Dirichlet, we now know that the density of this set among the set of all primes is \( 1/\varphi(4) = 1/2 \).

We then generalize this notion of density to fields, where we naturally consider prime ideals in the ring of algebraic integers in place of prime numbers. Let \( O_L \) and \( O_K \) denote the ring of algebraic integers contained in \( L \) and \( K \), respectively. Let \( L/K \) be a Galois extension with Galois group \( G = \text{Gal}(L/K) \) and discriminant \( \Delta_{L/K} \). Finally, let \( p \) be a prime ideal of \( O_K \) such that \( p \nmid \Delta_{L/K} \). We define the conjugacy class \( \sigma_p \subseteq G \) so that \( \sigma \in \sigma_p \) if and only if there is a prime ideal \( q \) of \( O_L \) lying above \( p \) such that \( \sigma(q) = q \) and for all \( \alpha \in O_L \) we have \( \sigma(\alpha) \equiv \alpha^{[O_K/p]} \pmod{q} \). Now that this notation has been described, we may give one of the most celebrated results in algebraic number theory. Namely, the Chebotarev density theorem [3], of which the prime number theorem and Dirichlet’s prime density result are a consequence. This result is summarized nicely in [2] and is as follows:

Let \( L/K \) be Galois and let \( C \) be a conjugacy class contained in \( G = \text{Gal}(L/K) \) as described above. Then the set \( S = \{ p : p \text{ a prime ideal of } O_K, p \nmid \Delta_{L/K}, \sigma_p \subseteq C \} \) has density \( d(S) = |C|/|G| \).
Several versions of this theorem can be found. In particular, Lagarias and Odlyzko [1] give an effective version of the Chebotarev density theorem for application to algebraic number fields. Let $K$ be an algebraic number field and $L$ be a normal extension of $K$ with Galois group $G$. Define $\pi_C(x, L/K) = |\{p : p \text{ is unramified in } L, \sigma_p \subseteq C, |O_K/p| \leq x\}|$ and let $R = |\pi_C(x, L/K) - (|C|/|G|)\text{Li}(x)|$. It is shown in [1], using the Chebotarev density theorem, that $R = o(x/\log x)$ as $x \to \infty$. 

Move 2: Establish a niche
Move 3: Occupy a niche

We intend to apply the Chebotarev density theorem, in a similar fashion as in [1], to extensions of function fields. That is, we consider a field $K$ which contains a field $F$ such that there is at least one $x \in K$ transcendental over $F$ so that $K/F(x)$ is a finite algebraic extension. It is our goal to produce a precise and explicit density result for such extensions of fields. While Chebotarev’s density theorem has been applied to function fields before, we intend to improve the currently given results by tightening bounds on a function field analogue of $\pi_C$ by reducing the currently given error terms.
Structure

- Depends on the agency application
- Use paragraphs effectively
- Subheadings are an option
- Tell a story!

1. OPENING PARAGRAPH (hook your reader)
   - Project summary: question/significance/motivation
   - Just enough background information

2. BODY PARAGRAPHS
   - More detail about the project and problem
   - Brief literature review – separate or integrated, but always justified through links to your project
   - Methodology
   - Credentials, goals, motivations
   - Why this university, this program, these people?
   - What will the funding help you do?
Discussion of annotated example

---

Established in culture

---

Theoretical framework

---

Secondary literature review

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Establishing credibility — goals and planned contributions to larger field

---

Brodier contribution

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Note on use of imagery as persuasive tactic

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Why Waterloo? This program. Why this research. What will use this research for?

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• Formal and academic, but accessible to non-experts
• Avoid jargon
• Be specific and succinct
• Signal to your reader that you are coming from a place of knowledge without explaining too much
The primary objective of the research project described herein is to use the available hierarchical longitudinal data from waves 1 to 3 of the COMPASS data to examine how changes in the built environment characteristics within or surrounding a school over time (i.e. greater access to recreational facilities, healthy food options and neighbourhood walkability) are related to changes in youth overweight or obesity over time. The secondary objectives are to examine if (a) the impact of the built environment on overweight and obesity differs by gender or by ethnicity, and (b) how changes in school programs or policies over time interact with built environment characteristics to impact overweight and obesity.
Style

- Link past experiences to your research potential
- Be persuasive – why are you the best person to do this work? Why now and why here, at this institution?
- Convey your excitement about the project!
Example 1: Positioning self as researcher

This project represents a collaboration with the Public Health Agency of Canada and The Ottawa Hospital. As a result, this project will also provide me with an opportunity to work with these stakeholders both in implementing the study and with disseminating the findings. Indeed, the Public Health Agency of Canada has indicated that they view the study as the first opportunity to collect evidence in an area of high priority for the Agency. We have been invited to present the findings to the Agency and they have indicated that the Chief Public Health Officer of Canada has expressed a particular interest. I have been directly involved in all aspects of this project to date, including the design of the study, the grant application, and working with our collaborators, and I look forward to the knowledge translation opportunities from disseminating the findings.
Example 2: Positioning self as researcher

The University of Waterloo, a leading Canadian institution in smart grid research, provides an excellent setting for my doctoral thesis to extend this research. Supervised by Dr. Parker, this proposed research, “Stimulating Residential Electricity Consumption Shifts Using Smart Grid Tools: An Analysis of Intervention Effectiveness on Consumer Engagement and Conservation Behaviour” aligns with SSHRC’s future challenge area of building understanding to leverage emerging technologies to benefit Canadians.
• Styles change across fields & disciplines
• Proposals must be both academically rigorous and personally persuasive

**Remember that you want to demonstrate two things:**

1. Your credibility based on (a) your description of your project and (b) your research record, your academic record, involvement, etc.
2. Your investment in and your fit for the project
How well you communicate is critical

- Proposal writing must demonstrate your command of language and the field.
- Position yourself as a scholarly colleague.
  Write to your equals, not to teachers / superiors.
- Write concisely. Each word counts and should drive your application further.
- Coherence, logic, and flow are created through a solid structure and good storytelling.
- Sentences should be varied to sustain interest.

Style
Use the following appropriately and sparingly

- Showing objectivity through nominalization.
  “A broad examination shows that…”
- Using the passive voice to emphasize process and de-emphasize the actor.
  “Sex workers are often characterized as victims by the public…”
- Definitions of words or terms. If used, incorporate the definition into the sentence.
  “Affect, defined here as embodied intensities beyond the articulation we call emotion, is a useful theory to…”
- Acronyms. If they are necessary, define them the first time.
  “The BASE (Bridge to Academic Success in English) students…”

(Shryer et. al.)
Final Reminders

- Start early! A solid grounding in research is key to your credibility
- Talk to your advisor and other people in the field about your proposal
- Look at other proposals in your department, if possible
- Ask others to read it: experts and non-experts – get feedback!
- Make sure your application is correct. Follow the instructions carefully
- If not this year, then next... revise and re-work it. Use the year as an opportunity to make it stronger
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• English conversation café
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Come to a drop-in:

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Signing up for a WC online account
References & Resources


Special thanks to Blake Madill, Lana Vanderlee, Jennifer Stefanczyk, and Bronwyn Lazowski for allowing us to use excerpts from their successfully funded proposals. These excerpts have been anonymized.
writing and Communication centre

I BRAINSTORM. I MAP. I PLAN. I DESIGN. I COMMUNICATE. I BRAINSTORM. I MAP. I PLAN. I DESIGN. I COMMUNICATE. I BRAINSTORM. I MAP. I PLAN. I DESIGN. I COMMUNICATE. I BRAINSTORM. I MAP. I PLAN. I DESIGN.

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