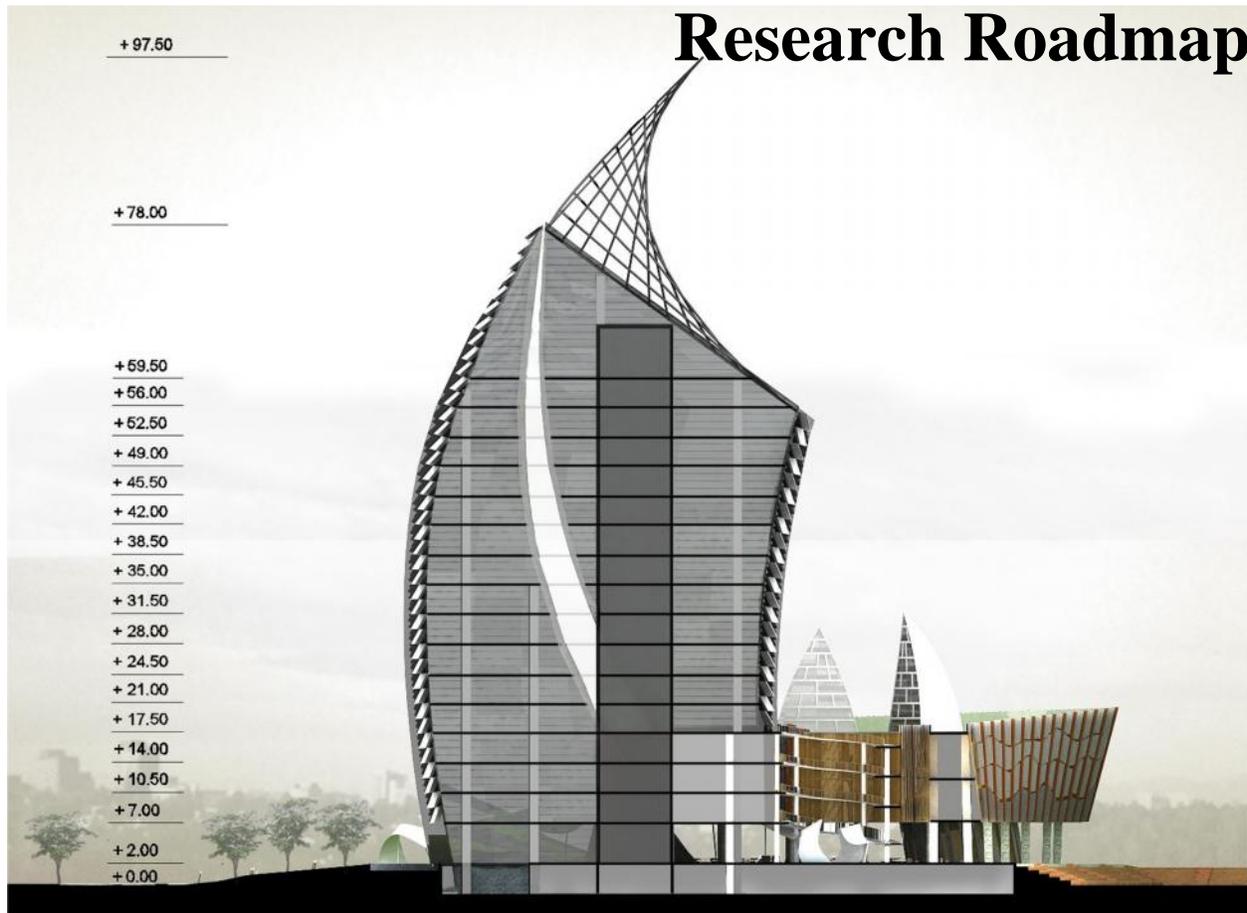




Statistical Laboratory Research Roadmap



Program Studi Statistika
Fakultas Matematika dan Ilmu Pengetahuan Alam
Universitas Negeri Makassar
2016

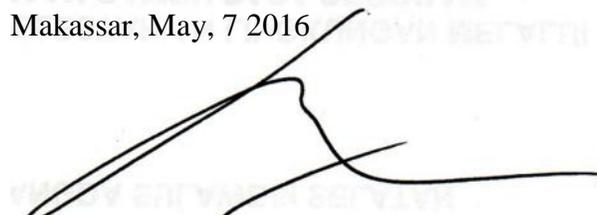
Introduction

I am delighted to provide an introduction to the Statistical Laboratory Research Roadmap 2016, our contribution to the global research agenda. In this publication, we have continued to develop the processes by which ideas are captured and presented. My team has consulted extensively with statistics global research and business leaders, our skills networks and indeed with the whole firm through an internet. As a result we have a picture which provides a time-ordered, prioritized list of key research themes under an ‘umbrella’ with five spokes and headings. Each of these contains our ‘hot topics’; namely (1) statistical theory, (2) statistical applications on economics and business, (3) statistical applications on health and environment, (4) statistical applications on education and government, and (5) statistical computation.

The trends emerging in the roadmap are interesting. Increasingly, knowledge gaps involve cross-disciplinary topics, often socio-technical and systems-level in context. Examples include the design of systems to satisfy behavioral objectives or provide-whole life services. Basic themes of sustainability and energy technologies remain, however.

The research roadmap is intended to provide a guide for our internal and external research programs and to stimulate discussion with our university, public and private sector research partners. We hope it will interest students and faculty members that will explore collaborative research or want us to assist our organization’s research agenda.

Makassar, May, 7 2016



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Research Roadmap

About this document

In this roadmap, students and faculty members will be introduced to the idea of research, what it can do for them, and how to start research at Statistics Department.

Introduction to research

What exactly is “research”? Of course, research in different fields is different in terms of methods, day-to-day work, and end goals. The general idea of research is to assess the status quo, create a new way of thinking or way of doing something, testing and refining this idea, putting the idea into play in the real world, and communicating the results.

Why research? Simply put, research allows us to work at the cutting edge of a field or combination of fields. Students often come away from a research experience with a deeper understanding of the material they learned in courses and real-world problem solving skills. In some areas such as the sciences (including statistics), research experience is critical to progressing to the next stage of education or work. Additionally, knowledge transfer is important in passing the learning from research, through interpretation, to practice.

Do I need prior experience to begin research at Statistics Department? Generally, no. Many students begin research without any experience. Since most students have not had the opportunity to conduct research at the highest levels, professors and graduate students mostly look for potential in students and are usually more than willing to train undergraduate students. Particular research positions may require background experience. For example, even basic chemical synthesis can be dangerous; therefore beginning researches should have some background experience. *What exactly is “research”?* Of course, research in different fields is different in terms of methods, day-to-day work, and end goals. The general idea of research is to assess the status quo, create a new way of thinking or way of doing something, testing and refining this idea, putting the idea into play in the real world, and communicating the results.

Where can I get involved in research? Research often takes place outside of the traditional lab environments. Statistics students engage in research in the library, centers throughout campus, and take part in fieldwork. An ‘umbrella’ with five spokes and headings, each of these contains our ‘hot topics’:

1. STATISTICAL THEORY

Fundamental or ‘basic’ research: is more generic, longer term research to move the boundary of a technology area. Research on this heading commonly by library, reading articles on specific topic and make a report to show deep understanding about the topic. Possibly, in this research there are some improvements or critical arguments about the topic. This heading include: **binomial process, Poisson process, and Marcov process.**

2. STATISTICAL APPLICATIONS ON ECONOMICS AND BUSINESS

Applied research: focuses on developing and demonstrating a technology solution. Statistical applications on economics and business research should focus: **marketing, policy analysis on business and economic, investment.**

3. STATISTICAL APPLICATIONS ON HEALTH AND ENVIRONMENT

Applied research: focuses on developing and demonstrating a technology solution. Statistical applications on health and environment research should focus: **systematic reviews randomized controlled trials, trials without randomization, cohort (longitudinal) studies, case-control studies, cross-sectional studies, health reproduction, environmental problems, and climate change.**

4. STATISTICAL APPLICATIONS ON EDUCATION AND GOVERNMENT

Applied research: focuses on developing and demonstrating a technology solution. Statistical applications on education and government research should focus: **teaching statistics, cost-effectiveness studies, and official statistics.**

5. STATISTICAL COMPUTATION

Statistical computing research should focus: **statistical modeling:** *check for variations in the, response variable given explanatory variables;* **multivariate statistics:** *look for structure in the data,* and **Monte Carlo process**

References

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