



MONASH University
Information Technology

FIT2079
Data visualisation

Unit Guide

Semester 2, 2014

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FIT2079 Data visualisation - Semester 2, 2014

Data visualisation is a powerful technique that allows us to use our visual system to understand data. Interactive data visualisation is now common in business, engineering and design and the social and physical sciences. This unit introduces the main kinds of information graphics and interactive visualisation systems and their areas of application. It investigates the reasons why visualisation can be effective and based on this students will gain experience in critically assessing data visualisations and in designing their own visualisations. Students will learn how to create visualisations with representative computer tools and gain experience in creating a data visualisation for an application domain of their choice.

Mode of Delivery

Clayton (Day)

Workload Requirements

Minimum total expected workload equals 12 hours per week comprising:

(a.) Contact hours for on-campus students:

- Two hours of lectures
- One 2-hour studio

(b.) Additional requirements (all students):

- A minimum of 8 hours independent study per week for completing lab and project work, private study and revision.

Unit Relationships

Prerequisites

Completion of 24 points at first year.

Chief Examiner

Professor Kim Marriott

Campus Lecturer

Clayton

Kim Marriott

Consultation hours: Friday 11-12 or by email appointment

Your feedback to Us

Monash is committed to excellence in education and regularly seeks feedback from students, employers and staff. One of the key formal ways students have to provide feedback is through the Student Evaluation of Teaching and Units (SETU) survey. The University's student evaluation policy requires that every unit is evaluated each year. Students are strongly encouraged to complete the surveys. The feedback is anonymous and provides the Faculty with evidence of aspects that students are satisfied and areas for improvement.

For more information on Monash's educational strategy, see:

www.monash.edu.au/about/monash-directions/ and on student evaluations, see:
www.policy.monash.edu/policy-bank/academic/education/quality/student-evaluation-policy.html

Previous Student Evaluations of this Unit

In response to student feedback the number of R lectures have been increased.

If you wish to view how previous students rated this unit, please go to
<https://emuapps.monash.edu.au/unitevaluations/index.jsp>

Academic Overview

Learning Outcomes

On successful completion of this unit, you should be able to:

- critically analyse data visualisations;
- create effective data visualisations;
- describe the main applications of data visualisation in business, engineering and design, and the social and physical sciences;
- describe the advantages, drawbacks and pitfalls of the visual presentation of data as compared to its presentation using other media.

Unit Schedule

Week	Activities	Assessment
0		No formal assessment or activities are undertaken in week 0
1	Introduction, origins of info graphics	Class room participation
2	Commonly used information graphics and their history	Class room participation
3	Information visualisation	Class room participation
4	Visual perception	Negotiate information visualisation project domain
5	Designing effective information graphics	Class room participation
6	Main steps and common tools for creating information visualisations; student presentations	1st short presentation of project
7	Creating visualisations with R I	Class room participation
8	Creating visualisations with R II	Class room participation
9	Introduction to D3	Class room participation
10	Advanced visualisations with R, Shiny and D3	Class room participation
11	Accessible graphics; student presentations	2nd short presentation for project
12	Revision; tour of CAVE2	Data visualisation and project report due
	SWOT VAC	No formal assessment is undertaken in SWOT VAC
	Examination period	LINK to Assessment Policy: http://policy.monash.edu.au/policy-bank/academic/education/assessment/assessment-in-coursework-policy.html

*Unit Schedule details will be maintained and communicated to you via your learning system.

Teaching Approach

Lecture and tutorials or problem classes

There teaching approach will be a mixture of lecture style presentations to initially present material and hands-on learning where you interact with fellow students in a laboratory workroom.

Assessment Summary

Examination (2 hours): 60%; In-semester assessment: 40%

Assessment Task	Value	Due Date
Data Visualisation Project	30% (1st presentation 5%, 2nd presentation 5%, design & implementation of visualisation 10%, project report 10%)	1st presentation Week 6; 2nd presentation Week 11; data visualisation and project report Week 12
	10%	

Unit Schedule

Classroom
Contribution

In various weeks throughout the
semester

Examination 1 60%

To be advised

Assessment Requirements

Assessment Policy

Faculty Policy - Unit Assessment Hurdles

(<http://intranet.monash.edu.au/infotech/resources/staff/edgov/policies/assessment-examinations/assessment-hurdles>)

Academic Integrity - Please see resources and tutorials at

<http://www.monash.edu/library/skills/resources/tutorials/academic-integrity/>

Assessment Tasks

Participation

Students will be expected to participate in discussions as part of their classroom contribution assessment.

• Assessment task 1

Title:

Data Visualisation Project

Description:

In this assignment you are to design and implement a data visualisation for a domain area of your choice. The domain area must be approved by the lecturer. The assignment has three main parts:

1. Critically review the kinds of information graphics and data visualisations currently being used in that and related domains and give a short 5-10 minute presentation to the class on the problem domain and current visualisations.
2. Design a data visualisation for the domain that you think is better than current approaches and implement this using either R or D3. Give a short 5-10 minute presentation to the class on your solution.
3. Write a report of approximately 3000 words. This should summarise your problem domain, provide a critical review of current approaches and describe your data visualisation with an explanation of why it is an effective visualisation.

Weighting:

30% (1st presentation 5%, 2nd presentation 5%, design & implementation of visualisation 10%, project report 10%)

Criteria for assessment:

Students will be assessed on a number of criteria:

- ◆ Comprehensiveness and quality of the critical review of related visualisations
- ◆ Effective use of data visualisation principles to design their visualisation
- ◆ Correctness and quality of their implementation
- ◆ Quality of the written and oral presentations

Due date:

1st presentation Week 6; 2nd presentation Week 11; data visualisation and project report Week 12

Remarks:

The project application domain for each student will be decided in Week 4 based on the interests and background of the student and negotiation with the lecturer.

- **Assessment task 2**

Title:

Classroom Contribution

Description:

Students will be expected to bring examples of data visualisations to the class and critically review them. They will also be expected to participate in classroom discussions.

Weighting:

10%

Criteria for assessment:

Classroom contribution will be assessed on a number of criteria:

- ◆ Application of Data Visualisation principles taught in the unit
- ◆ Quality of the critical analysis conducted
- ◆ Responding to other students comments in a constructive manner
- ◆ Frequency of contribution

Due date:

In various weeks throughout the semester

Examinations

- **Examination 1**

Weighting:

60%

Length:

2 hours

Type (open/closed book):

Closed book

Electronic devices allowed in the exam:

None

Learning resources

Monash Library Unit Reading List (if applicable to the unit)

<http://readinglists.lib.monash.edu/index.html>

Faculty of Information Technology [Style Guide](#)

Feedback to you

Examination/other end-of-semester assessment feedback may take the form of feedback classes, provision of sample answers or other group feedback after official results have been published. Please check with your lecturer on the feedback provided and take advantage of this prior to requesting individual consultations with staff. If your unit has an examination, you may request to view your examination script booklet, see

<http://intranet.monash.edu.au/infotech/resources/students/procedures/request-to-view-exam-scripts.html>

Types of feedback you can expect to receive in this unit are:

- Informal feedback on progress in labs/tutes
- Graded assignments with comments

Extensions and penalties

Submission must be made by the due date otherwise penalties will be enforced.

You must negotiate any extensions formally with your campus unit leader via the in-semester special consideration process: <http://www.monash.edu.au/exams/special-consideration.html>

Returning assignments

Students can expect assignments to be returned within two weeks of the submission date or after receipt, whichever is later.

Resubmission of assignments

Assignments cannot be resubmitted.

Assignment submission

It is a University requirement

(<http://www.policy.monash.edu/policy-bank/academic/education/conduct/student-academic-integrity-managing-pla>) for students to submit an assignment coversheet for each assessment item. Faculty Assignment coversheets can be found at <http://www.infotech.monash.edu.au/resources/student/forms/>. Please check with your Lecturer on the submission method for your assignment coversheet (e.g. attach a file to the online assignment submission, hand-in a hard copy, or use an online quiz). Please note that it is your responsibility to retain copies of your assessments.

Online submission

If Electronic Submission has been approved for your unit, please submit your work via the learning system for this unit, which you can access via links in the my.monash portal.

Examination material or equipment

Please see unit website.

Other Information

Policies

Monash has educational policies, procedures and guidelines, which are designed to ensure that staff and students are aware of the University's academic standards, and to provide advice on how they might uphold them. You can find Monash's Education Policies at:

www.policy.monash.edu.au/policy-bank/academic/education/index.html

Key educational policies include:

- Student Academic Integrity Policy and Student Academic Integrity: Managing Plagiarism and Collusion Procedures ;
<http://www.policy.monash.edu/policy-bank/academic/education/conduct/student-academic-integrity-policy.h>
- Assessment in Coursework Programs;
<http://www.policy.monash.edu/policy-bank/academic/education/assessment/assessment-in-coursework-po>
- Special Consideration;
<http://www.policy.monash.edu/policy-bank/academic/education/assessment/special-consideration-policy.ht>
- Grading Scale;
<http://www.policy.monash.edu/policy-bank/academic/education/assessment/grading-scale-policy.html>
- Discipline: Student Policy;
<http://www.policy.monash.edu/policy-bank/academic/education/conduct/student-discipline-policy.html>
- Academic Calendar and Semesters; <http://www.monash.edu.au/students/dates/>
- Orientation and Transition; <http://intranet.monash.edu.au/infotech/resources/students/orientation/>
- Academic and Administrative Complaints and Grievances Policy;
<http://www.policy.monash.edu/policy-bank/academic/education/management/complaints-grievance-policy.h>

Faculty resources and policies

Important student resources including Faculty policies are located at

<http://intranet.monash.edu.au/infotech/resources/students/>

Graduate Attributes Policy

<http://www.policy.monash.edu/policy-bank/academic/education/management/monash-graduate-attributes-policy.h>

Student Charter

www.opq.monash.edu.au/ep/student-charter/monash-university-student-charter.html

Student services

The University provides many different kinds of support services for you. Contact your tutor if you need advice and see the range of services available at <http://www.monash.edu.au/students>. For Malaysia see <http://www.monash.edu.my/Student-services>, and for South Africa see <http://www.monash.ac.za/current/>.

Monash University Library

The Monash University Library provides a range of services, resources and programs that enable you to save time and be more effective in your learning and research. Go to www.lib.monash.edu.au or the library tab in [my.monash](#) portal for more information. At Malaysia, visit the Library and Learning Commons at <http://www.lib.monash.edu.my/>. At South Africa visit <http://www.lib.monash.ac.za/>.

Disability Liaison Unit

Students who have a disability or medical condition are welcome to contact the Disability Liaison Unit to discuss academic support services. Disability Liaison Officers (DLOs) visit all Victorian campuses on a regular basis.

- Website: <http://www.monash.edu/equity-diversity/disability/index.html>
- Telephone: 03 9905 5704 to book an appointment with a DLO; or contact the Student Advisor, Student Community Services at 03 55146018 at Malaysia
- Email: dlu@monash.edu
- Drop In: Equity and Diversity Centre, Level 1, Building 55, Clayton Campus, or Student Community Services Department, Level 2, Building 2, Monash University, Malaysia Campus