

DEVELOPING EFFECTIVE POSTER PRESENTATIONS

STUDENT RESEARCH CONFERENCE



Australian
National
University

ANU Academic Skills



Australian
National
University

The Australian National University acknowledges, celebrates and pays respect to the Ngunnawal and Ngambri people of the Canberra region and to all First Nations Australians on whose traditional lands we meet and work, and whose cultures are among the oldest continuing cultures in human history.

Learning outcomes

By the end of the session students will be able to:

- 01 *Review and discuss* the SRC poster presentation requirements
- 02 *Analyse* the features of effective poster
- 03 *Appraise* poster(s) using the SRC judging criteria
- 04 *Develop* their own poster

Let's chat

What's the purpose of your poster?



Image created using Microsoft Copilot. Original prompt "Create an image of a student with a poster presentation at a conference" refined by instruction "make the poster more prominent".

Poster purpose

To communicate in visual form, important information about your research and why it matters

Posters play an important role in:

- Disseminating your research at conferences
- Helping you network with other scholars
- Attracting interest and feedback on your research

SRC requirements

An academic poster is a unique type of visual communication tool that is used primarily in the academic and research fields. Differing from other types of posters, an academic poster is **designed to present complex research methods and findings** in a **concise and visually appealing format**. It often includes **graphs, charts, and other visual aids** to help convey the information effectively. The language used in an academic poster is typically **formal and precise**, reflecting the **scholarly** nature of the content. An academic poster is targeted at a specialised audience, usually peers or experts in the field. At SRC, the posters will be viewed by **the judges, student peers, and other members of the ANU community**. The success of an academic poster is measured by its **ability to communicate clearly and effectively** complex information.

Generally, people spend very little time looking at posters...

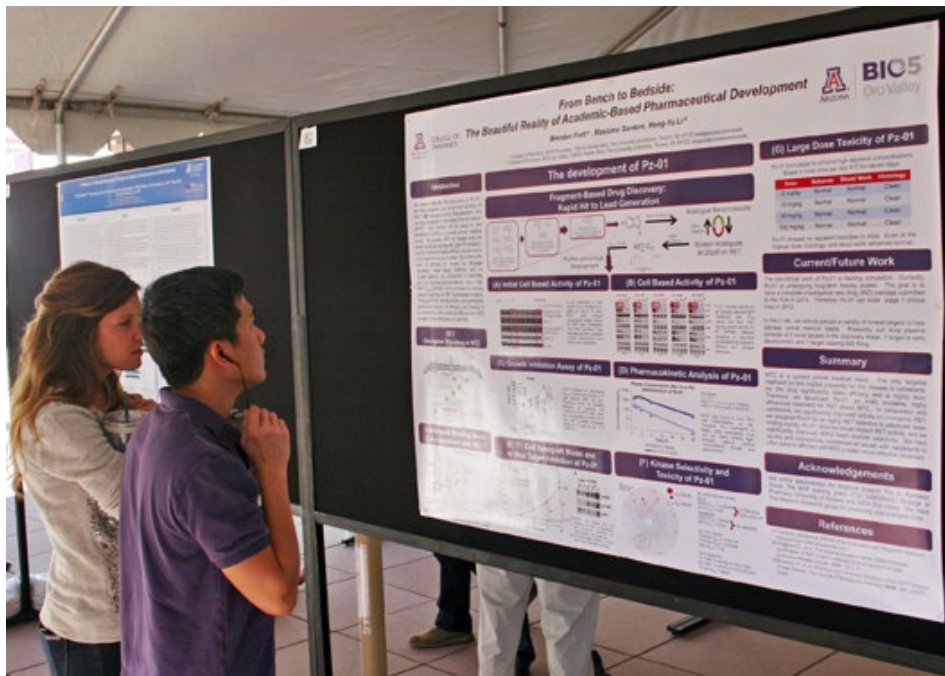


Image from: <http://www.pharmacy.arizona.edu/stories/bulletin/cop-researchers-go-beyond-frontier>

Let's chat



What makes a poster effective?

How can we encourage people to spend more time considering our work?

#1 tip for an effective poster

Your main point needs to be super clear - you need to “hook” the audience immediately

How?

- » Have a clear message
- » Draw attention to the significance of your work



Other tips for an effective poster

- » Balance text and graphics/tables/figures

(50/50)

- » Use blank space effectively

- » Make sure it is easy to read from a distance

1.5 to 2 metres

- » Don't use chunks of text – use bullet points and limit each to 2-3 lines

Remember to include name, university email address and reference list/ bibliography

O⁶-Benzylguanine Inhibits Tamoxifen Resistant Breast Cancer Cell Growth and Resensitizes Breast Cancer Cells to Anti-Estrogen Therapy

Joshua Smith¹, George C Bobustuc¹, Rafael Madero-Visbal¹, Jimmie Colon¹, Beth Isley¹, Jonathan Ticku¹, Kalkunte S. Sruvengalur and Santhi Kunduri¹

¹Cancer Research Institute of M.D Anderson Cancer Center Orlando ²Texas Tech University Health Sciences Center, Amarillo, TX



Abstract

Endocrine therapies using anti-estrogens are least toxic and very effective for breast cancer, however, tumor resistance to tamoxifen remains a stumbling block for successful therapy. Based on our recent study on the involvement of the DNA repair protein MGMT in tamoxifen resistant ER+ breast cells, we investigated whether MGMT overexpression modulates tamoxifen (TAM) activity in ER+ breast cancer cells. We found that MGMT overexpression in ER+ breast cancer cells significantly increased TAM resistance. Conversely, MGMT inhibition in ER+ breast cancer cells significantly increased TAM sensitivity. These findings suggest that MGMT inhibition may provide a novel and effective approach for overcoming tamoxifen resistance.

Posters rarely need abstracts

Introduction

Recent advances in breast cancer research have identified key pathways involved in the repair of DNA damage induced by chemotherapeutic agents. The ability of cancer cells to recognize DNA damage and initiate DNA repair is an important mechanism for therapeutic resistance and has a negative impact on therapeutic efficacy. A number of DNA-damaging agents are used in breast cancer therapy. The most commonly used treatment for patients with ER+ breast cancer is tamoxifen. However, tumor resistance to tamoxifen remains a major clinical problem. To date, the mechanism of tamoxifen resistance is not fully understood. We have previously shown that MGMT overexpression in ER+ breast cancer cells significantly increases TAM resistance. Conversely, MGMT inhibition in ER+ breast cancer cells significantly increases TAM sensitivity.

Small text on grey background

Results

Prolonged Treatment of Tamoxifen Increases MGMT Expression: We developed a tamoxifen resistant MCF-7 cell line by using prolonged treatment of tamoxifen on the parental ER-positive breast cancer cell line, MCF-7. We found that MGMT expression in ER+ breast cancer cells significantly increased TAM resistance. Conversely, MGMT inhibition in ER+ breast cancer cells significantly increases TAM sensitivity.

Bullet points not used

Transcriptional Regulation Between MGMT and p53: Previously, it was reported that p53 negatively regulates MGMT in breast cancer cells. Therefore, we addressed whether or not silencing the p53 enhances endogenous MGMT transcription. Tamoxifen resistant MCF-7 cells were transfected with either p53 siRNA (p53-si) or MGMT siRNA (MGMT-si) (Fig. 2A) and as expected, knocking down MGMT decreased MGMT transcription whereas in p53 siRNA levels were unaffected in MGMT knockdown cells (Fig. 2B). These results confirm that p53 can regulate MGMT at the transcriptional level.

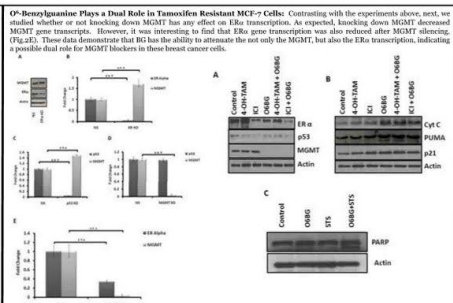


Figure 1. (A) Tamoxifen plays a dual role in tamoxifen resistant MCF-7 cells. Tamoxifen treatment of ER+ breast cancer cells significantly increased TAM resistance. Conversely, MGMT inhibition in ER+ breast cancer cells significantly increases TAM sensitivity. (B) MGMT overexpression in ER+ breast cancer cells significantly increased TAM resistance. Conversely, MGMT inhibition in ER+ breast cancer cells significantly increases TAM sensitivity. (C) MGMT overexpression in ER+ breast cancer cells significantly increased TAM resistance. Conversely, MGMT inhibition in ER+ breast cancer cells significantly increases TAM sensitivity. (D) MGMT overexpression in ER+ breast cancer cells significantly increased TAM resistance. Conversely, MGMT inhibition in ER+ breast cancer cells significantly increases TAM sensitivity.

O⁶-Benzylguanine Modulates Transcriptional Targets in Tamoxifen Resistant Breast Cancer Cells: The effect of combination therapy on endogenous MGMT mRNA levels was assessed. Quantitative real-time PCR (qRT-PCR) revealed that anti-estrogens (TAM/ICI) increased the MGMT expression while the combination therapy decreased it compared to control levels. ERα transcription was decreased compared to controls with all these treatments (Fig. 3A). Surprisingly, p53 and PUMA mRNA was significantly increased in the presence of combination treatments (Fig. 3B, C). These results suggest that p53 mediated target gene transcription was altered by the drug combinations in breast cancer cells (Fig. 3B-C).

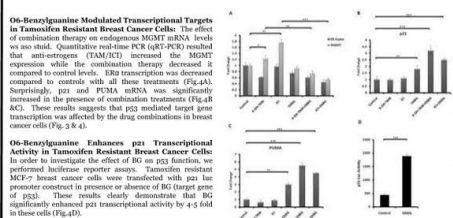


Figure 2. MGMT and p53 transcriptional activity in tamoxifen resistant breast cancer cells. (A) MGMT mRNA levels were significantly increased in tamoxifen resistant MCF-7 breast cancer cells. (B) p53 mRNA levels were significantly increased in tamoxifen resistant MCF-7 breast cancer cells. (C) PUMA mRNA levels were significantly increased in tamoxifen resistant MCF-7 breast cancer cells. (D) Cyt c mRNA levels were significantly increased in tamoxifen resistant MCF-7 breast cancer cells.

O⁶-Benzylguanine Inhibits Tamoxifen Resistant Breast Cancer Cell Growth and Increase Resistant Breast C

Crammed; no white space

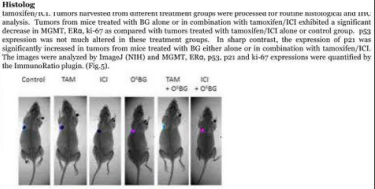


Figure 3. Tamoxifen modulates transcriptional targets in tamoxifen resistant breast cancer cells. (A) MGMT mRNA levels were significantly increased in tamoxifen resistant MCF-7 breast cancer cells. (B) p53 mRNA levels were significantly increased in tamoxifen resistant MCF-7 breast cancer cells. (C) PUMA mRNA levels were significantly increased in tamoxifen resistant MCF-7 breast cancer cells. (D) Cyt c mRNA levels were significantly increased in tamoxifen resistant MCF-7 breast cancer cells.

O⁶-Benzylguanine Enhances p53 Transcriptional Activity in Tamoxifen Resistant Breast Cancer Cells: In order to investigate the effect of ERα and p53 function, we performed luciferase reporter assays. Tamoxifen resistant MCF-7 breast cancer cells were transfected with p53 luciferase reporter construct in presence or absence of ERα target gene p53. These results clearly demonstrate that ERα significantly enhanced p53 transcriptional activity by 4-fold in these cells (Fig. 4D).

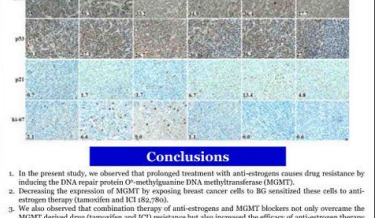


Figure 4. O⁶-Benzylguanine enhances p53 transcriptional activity in tamoxifen resistant breast cancer cells. (A) p53 luciferase activity was significantly increased in tamoxifen resistant MCF-7 breast cancer cells. (B) p53 mRNA levels were significantly increased in tamoxifen resistant MCF-7 breast cancer cells. (C) p53 protein levels were significantly increased in tamoxifen resistant MCF-7 breast cancer cells. (D) p53 transcriptional activity was significantly increased in tamoxifen resistant MCF-7 breast cancer cells.

Conclusions

- In the present study, we observed that prolonged treatment with anti-estrogens causes drug resistance by inducing the DNA repair protein O⁶-methylguanine DNA methyltransferase (MGMT).
- Increasing the expression of MGMT by exposing breast cancer cells to ERα sensitized these cells to anti-estrogen therapy (tamoxifen and ICI) (Fig. 2B).
- We also observed that combination therapy of anti-estrogens and MGMT blockers not only overcame the MGMT derived drug (tamoxifen and ICI) resistance but also increased the efficacy of anti-estrogen therapy by decreasing estrogen receptor expression and restoration of the functional activity of p53 in tamoxifen-resistant breast cancer cells.
- Combination therapy inhibited tamoxifen resistant breast tumor growth. In vivo.

Acknowledgements

We would like to thank the Florida Department of Health, Breast Cancer Research Program for their kind funding of this project.

Is this a good poster?

What is the main message?
Why should the audience care?
Why is this research significant?
All other details are irrelevant if I'm not hooked!



SRC Poster Presentation Judging Criteria

Scale:

1 ←-----→ 5

Excellent

Criteria:

1. Clearly states the research question, problem or issue
2. Provides relevant context needed to understand research importance
3. Makes good use of visuals (images, graphs etc.)
4. Indicates what was found and its significance
5. Is legible, flows well and is not overcrowded

INTERNET INEQUALITY: THE IMPACT OF HOME INTERNET ACCESS ON SCHOOL SUCCESS

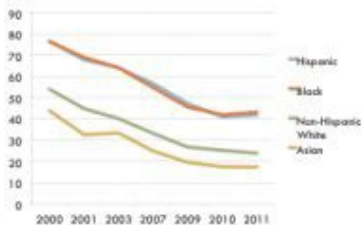
— Department of Economics — The University of Texas at Austin

ABSTRACT

In addition to a wide education gap between Hispanic and non-Hispanic White students, there also exists a persistent gap in home internet access between these groups. In my research, I identify a link between these two trends by analyzing data from the Current Population Survey. My research shows that lower rates of home internet access contribute to educational gaps between ethnic groups and that home internet access relates to higher school success.

BACKGROUND

Percent of Households Lacking Internet Use, by Race and Ethnicity



- Total internet access has increased but gaps in access persist between race/ethnic groups
- Factors affecting access include income, ethnicity, age, and level of education
- Previous studies suggest both positive and negative effects of home computer access on education



Source: Developmental Education

METHODOLOGY

DATASET

Used cross-sectional data on students ages 13-17 from the 2009, 2010, and 2012 Current Population Surveys

SUCCESS ESTIMATOR

Generated a variable measuring grade retention to estimate school success for each student

REGRESSION MODEL

Employed an Ordinary Least Squares regression model to identify correlations between internet access and school success

RESULTS

- Hispanic students are significantly more likely to be below grade level than their White peers
- Differences in school success are mostly attributed to income
- Some differences can be explained by differences in access to home internet
- Students who lack internet access, regardless of race or income, have lower success in school



CONCLUSION

Home internet access has a significant effect on school performance, and it explains some difference in educational outcomes between first generation Hispanics and Whites. While increased home internet access may decrease grade retention and dropout rates, it is unlikely to affect gaps in school success between different racial and ethnic groups

I would like to thank [redacted] and the UT Department of Economics for supporting this research project

What about this?

- What works?

- What doesn't?

Image from: <https://au.pinterest.com/pin/290411875951607565>

Enhancing Cultural Exchange via Augmented Reality

Sean Holland, Instructional Designer & Dan Darrow, Term Instructor of Spanish



Background

- 38 university students from Japan
- 2-week summer session
- Academic conversation with Alaskan focus
- 3 hours per day, M-F
- Five year history of program
- Students spend free time taking trips

Platform



- Developed at University of Wisconsin
- Free
- iOS

Feedback

How can the game be improved?

- Will connection
- Get items and points faster
- Make the tutorial more detailed
- "I want to use the items in the game"
- Improve the note function
- Android version needed

What did you like most about the game?



Gameplay

- Groups of two
- Devices shared
- 90 minute sessions

Tutorial



Main Game



Goals

- Leave classroom
- Get to know campus
- Replace paper scavenger hunt
 - Increase opportunities for interaction
 - Allow L1 as framing tool, L2 for interaction
- Access L2 production of classmates
 - Benefit from the exploration of others
 - Open-ended exploration rather than channeled action.

1. Location Trigger

- GPS location based trigger
- Hidden from view
- Differing radii

2. Task

- Engage physical world
- Conversation in-app
- Ask strangers for help
 - Through the lens AR
 - Solve a puzzle
 - Do simple math

3. Creation

- Artifact creation
- Publish a note
- Document a conversation

AR Targets



5. Points

- Receive points that stay with players globally
- Tiered badges awarded based on total points

4. Gear

- Receive culturally relevant items

Future Iterations



Conclusions

Strengths

- Students got outside
- Multiple modes of real world engagement
- Unscripted free play
- Notebook resulted in deep engagement

Weaknesses

- Wifi unreliable
- iOS limitation
- Necessity of preloading media
- Design bugs and idiosyncrasies

About the Presenters:

Sean Holland, Instructional Designer
UAF Learning & Distance Education
sholland@uaf.edu

Daniel Darrow, Term Instructor of Spanish
UAF Department of Foreign Languages & Literatures
ddarrow@uaf.edu

Sources:

Schulman, S., Thorne, S., Lakota, D., Mees, J., Holland, S., Hodson, C., Martelle, W., & Wilson, K. (2018, May). Let's Walk and Talk: An Exploratory Study of University ESL Students Playing an Augmented Reality Scavenger Hunt Game. Paper presented at CALICO (Computer Assisted Language Instruction) Conference, Portland, AZ.

What about this?

- What works?

- What doesn't?



Where to start?

1. Read the instructions to work out key requirements (e.g. poster size, word limit, formatting etc.)
2. Work out your key message/finding and significance
3. Think about how you can communicate this message visually
4. Plan your poster layout in advance
5. Implement your ideas
 - » software?
 - » design – your own? a template?

Design ideas

Use bold (not underlining), text size and bullets

Image from: <https://www.canva.com/templates/EAFf2ORMpis-fast-changes-on-the-earth-s-surface-activity-research-poster-in-violet-grey-orange-hand-drawn-style/>

Sample Answer

Fast Changes on the Earth's Surface

HOW DOES A VOLCANO SHAPE THE EARTH?

Introduction

Patterns of rock formations across the world hold information about the changes the Earth has gone through over time.

Research Question

How did volcanic eruptions change the Earth's landscape and how did they keep a record of the Earth's story?

Methodology

- Study the available information in books.
- Browse reputable science websites like the official websites of universities and organizations.
- Observe photos taken by scientists.

Findings

Here are some of the major findings:

1. Lava that flows from volcanoes when it erupts hardens over time.
2. Volcanoes can erupt multiple times.
3. Lava flows and hardens at different times and creates layers of rock.
4. As lava flows, it destroys what crosses its path, including plants and animals. Their remains can turn into fossils.
5. In some places, the lowest layer has fossils of shells and fish.
6. Not all volcanoes can be found on land.

Observations

The rock layers show a pattern of the area's change from ocean to dry land across millions of years.

Conclusion

With the continuous activity of volcanoes, changes on the Earth's surface will continue. Scientists continue to study rock formations and layers and discover new information.

References

"Volcanoes Throughout Time." Great Science Site, 1 Jan. 2022. www.reallygreatsite.com.

Generally, the width of the poster

Limit use of colour - 2 or 3 max

- Black on white or white on black are easiest to read
- Avoid red and green text

Columns assist readability



Using graphics

Is this graphic effective?

Why? Why not?

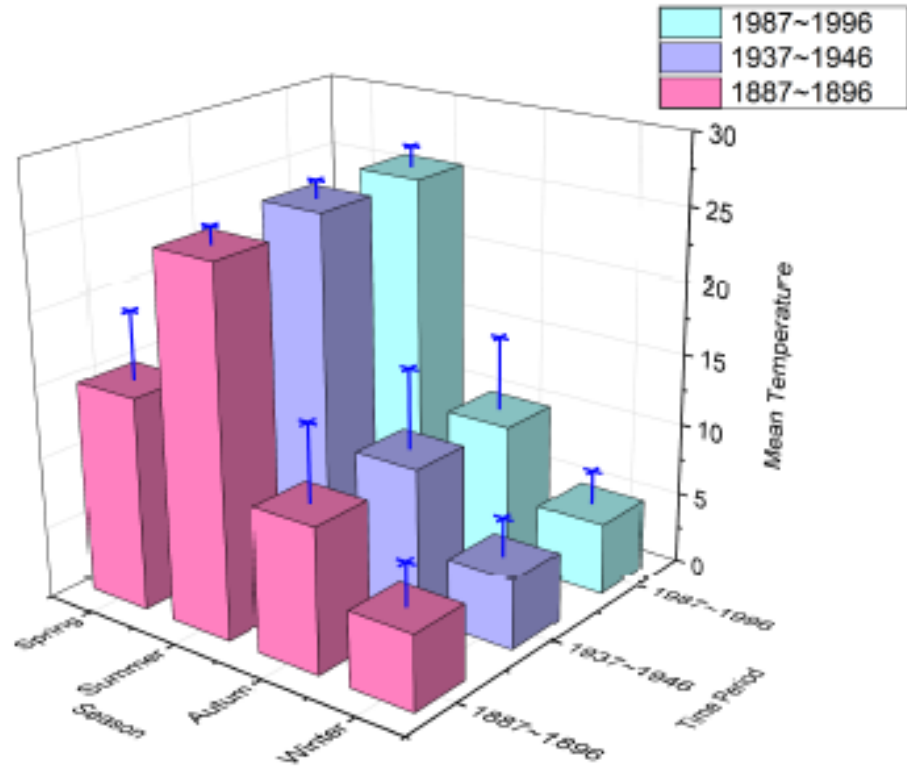


Image from: <https://www.originlab.com/doc/en/Origin-Help/3DBar-Graph-with-ErrBar>

Using graphics

Is this graphic effective?

Why? Why not?

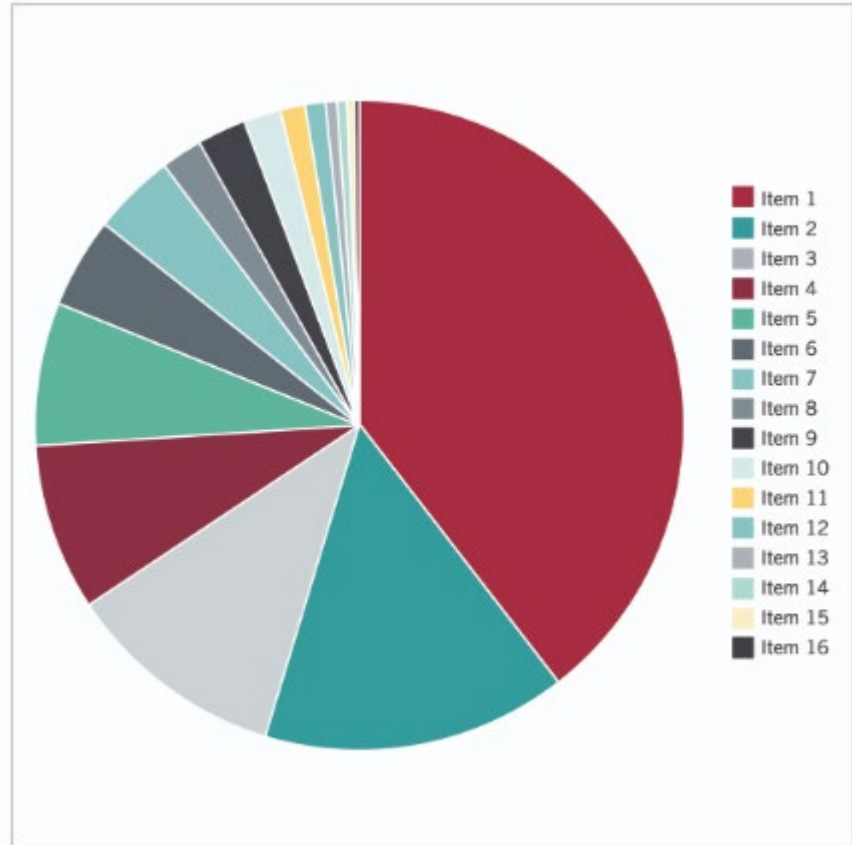


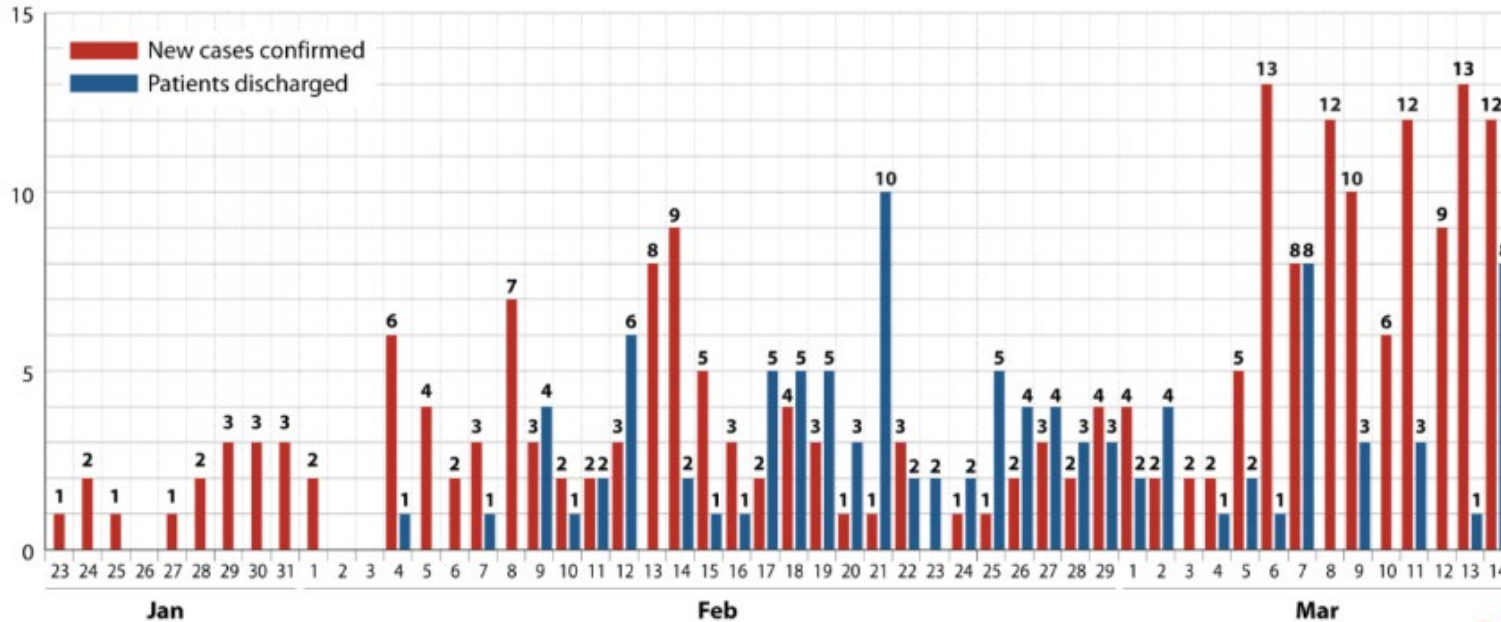
Image from: <https://online.hbs.edu/blog/post/bad-data-visualization>

Using graphics

Is this graphic effective?

Why? Why not?

COVID-19 IN SINGAPORE NEW CORONAVIRUS CASES AND NEWLY DISCHARGED



As of Mar 14

Infographic by Rafa Estrada Source: Ministry of Health

Image from: <https://analytical.com/blog/covid19-in-charts>



Using graphics

Is this graphic effective?

Why? Why not?

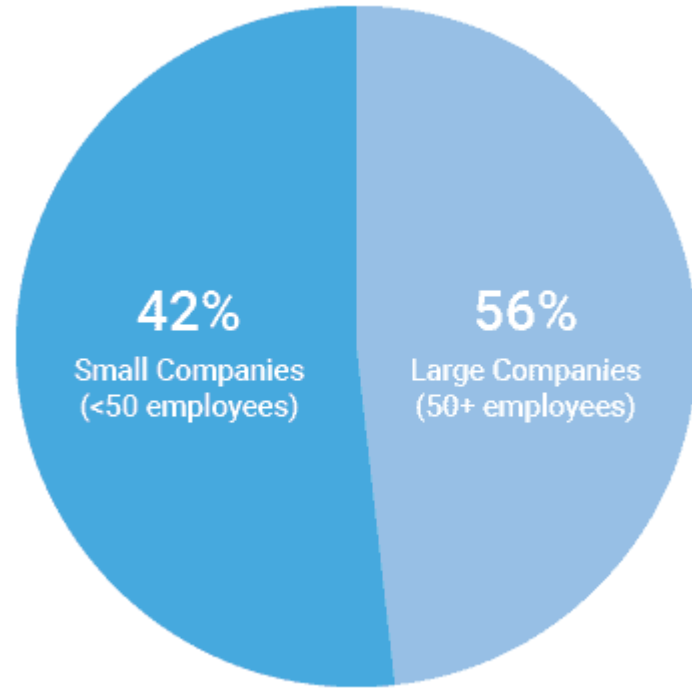


Image from: <https://www.oldstreetsolutions.com/good-and-bad-data-visualization>

Using graphics

Is this graphic effective?

Why? Why not?

Issues - Grouped by Assignee

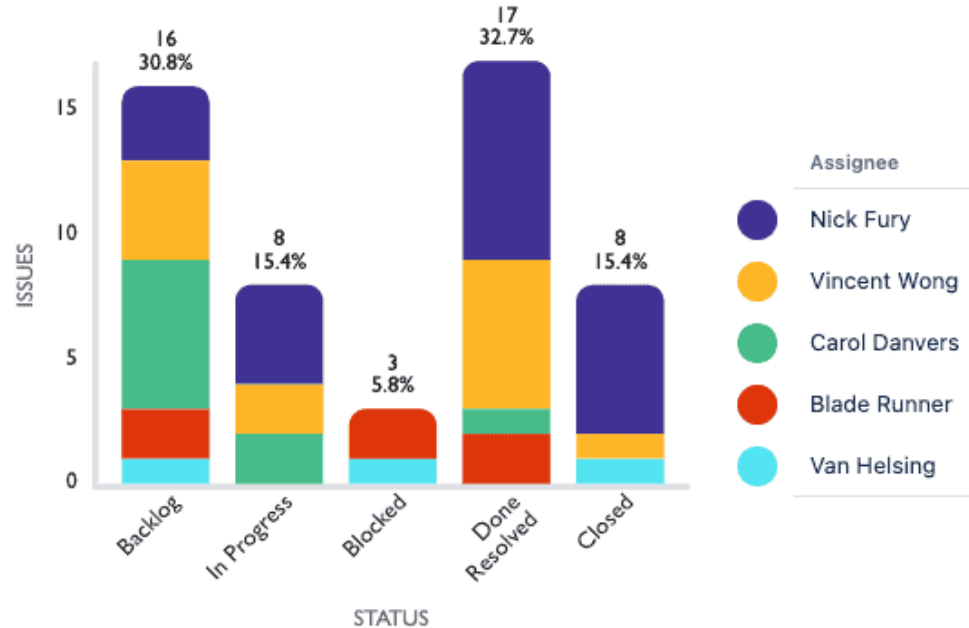


Image from: <https://www.oldstreetsolutions.com/good-and-bad-data-visualization>

Producing your own graphics

- PowerPoint, Excel, Microsoft Power BI
- GenAI
 - » Microsoft Copilot

N.B.: Any use of GenAI to create images, graphs, charts or other visuals must be acknowledged.

e.g. Image created using Microsoft Copilot. Original prompt “Create an image of a student with a poster presentation at a conference” refined by instruction “make the poster more prominent”.

e.g. Chart created using Microsoft Copilot.

Edit for effectiveness and accuracy

- Check for:
 - » clarity of message
 - » unnecessary text
 - » grammatical and spelling errors
 - » layout – headings, spacing, margins
- Print off your poster in A3
 - » Can you read from 2 metres?

Finally

Preparing to present

- Presentation skills – next week
- 3-minute thesis session

OVER TO YOU



THANK YOU

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ANU Library Academic Skills

T 6125 2972

E academicskills@anu.edu.au

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ANU Student Life

E student.life@anu.edu.au

W www.anu.edu.au/students/student-life/student-communities



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