GENDER CONSIDERATION FOR GREEN DIGITAL TRANSFORMATION

PETER MORFEE

PRINCIPAL TECHNICAL ADVISOR

ENERGYSAFETY, WORKSAFE

NEW ZEALAND

Note from UNECE secretariat:

- *The author and the speaker of this presentation confirm that they have authorization to use all photos and visual elements.*
- *The material is either copyright-free or the author / speaker holds the necessary copyright.*
- *The UNECE will remove any material from its events and supporting websites if there is unlawful use of copyrighted material.*
- *The author / speaker takes responsibility for any infringements on copyright and holds the UNECE harmless to this effect.*

CONTEXT

This presentation will make use of data obtained from New Zealand over a period of 10 years and will focus on the safety of the use of electricity

Electricity has been chosen as it is the energy source that will increase in importance.

The presentation is intended to promote discussion

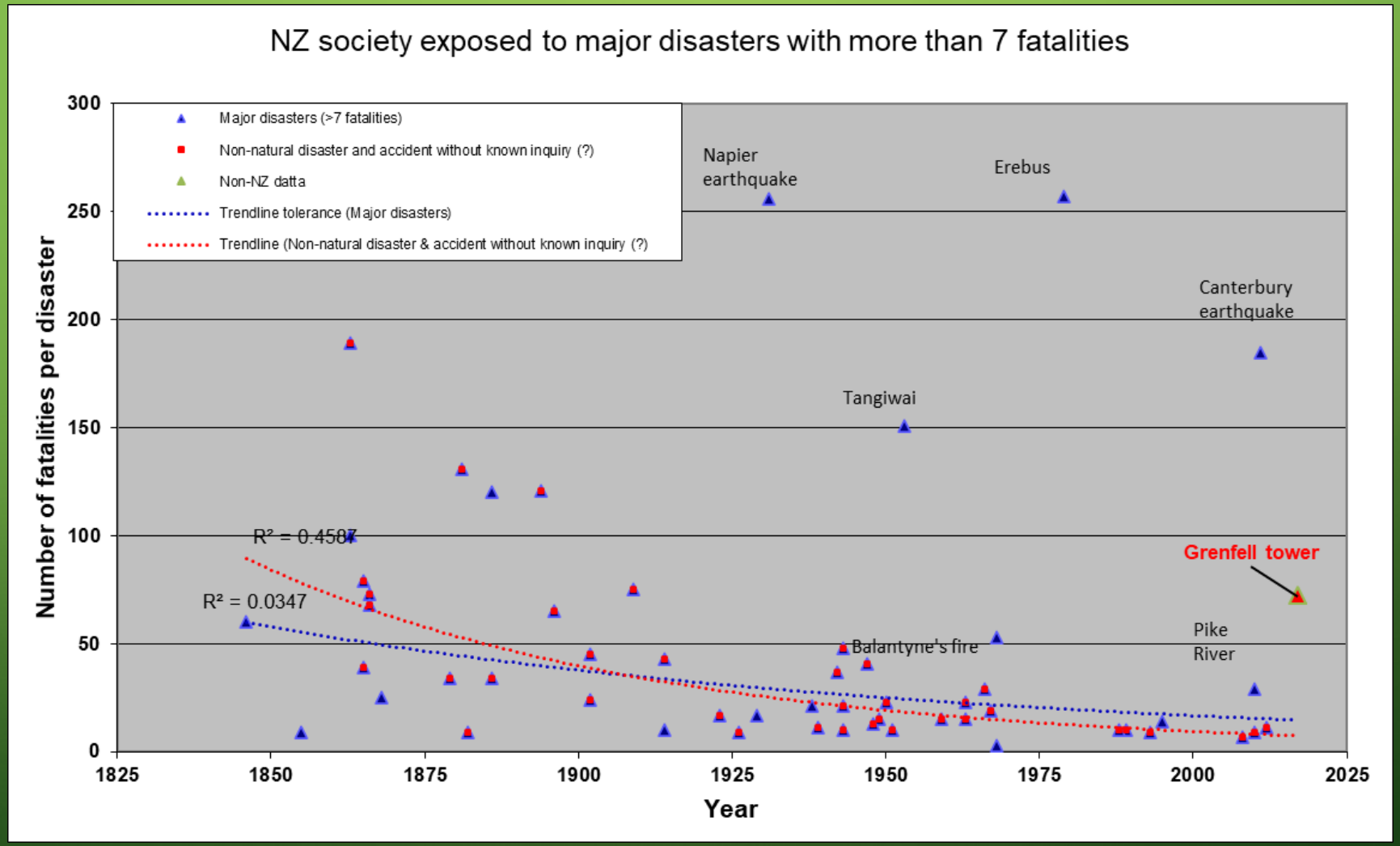
ELECTRICITY AS AN ENERGY SOURCE

The safety of Electricity continues to improve

But our tolerance for serious incidences reduces

And as we address climate change our usage of electricity will substantially increase

CHANGING TOLERANCE



IMPROVED SAFETY

So where can we get improved safety?

RCDs might be an answer . Could we make them more sensitive

In NZ we already require 10mA for schools while other applications use a 30mA tripping level

USAGE

But as we address climate change our usage of electricity will substantially increase

Do we normalise safety measurement for population or for energy consumption

Will incidents involving EVs be counted as vehicular or electricity incidents?

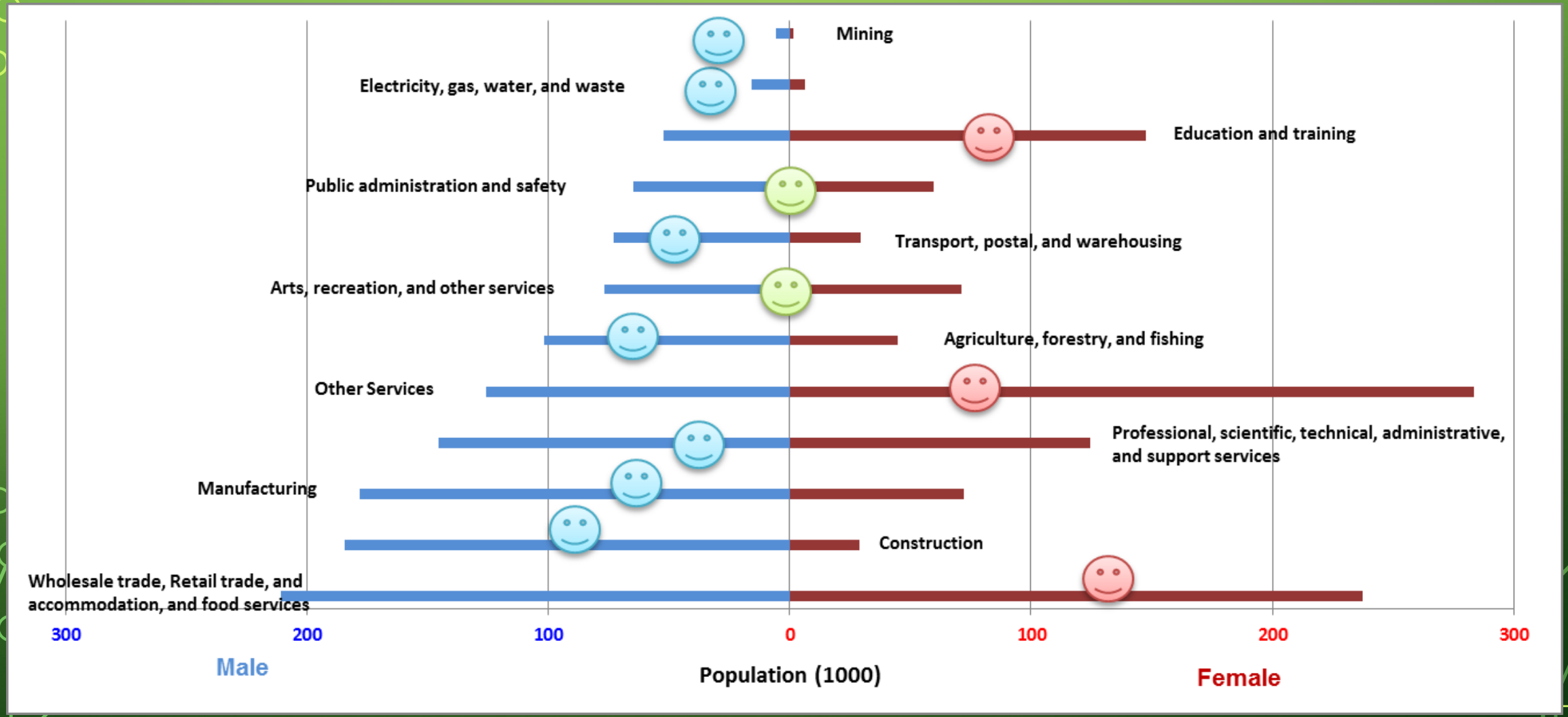
EXPOSURE TO HARM

New Zealand has gathered information regarding workplace injuries involving electricity and plotted these onto graphs separating males and females in various professions.

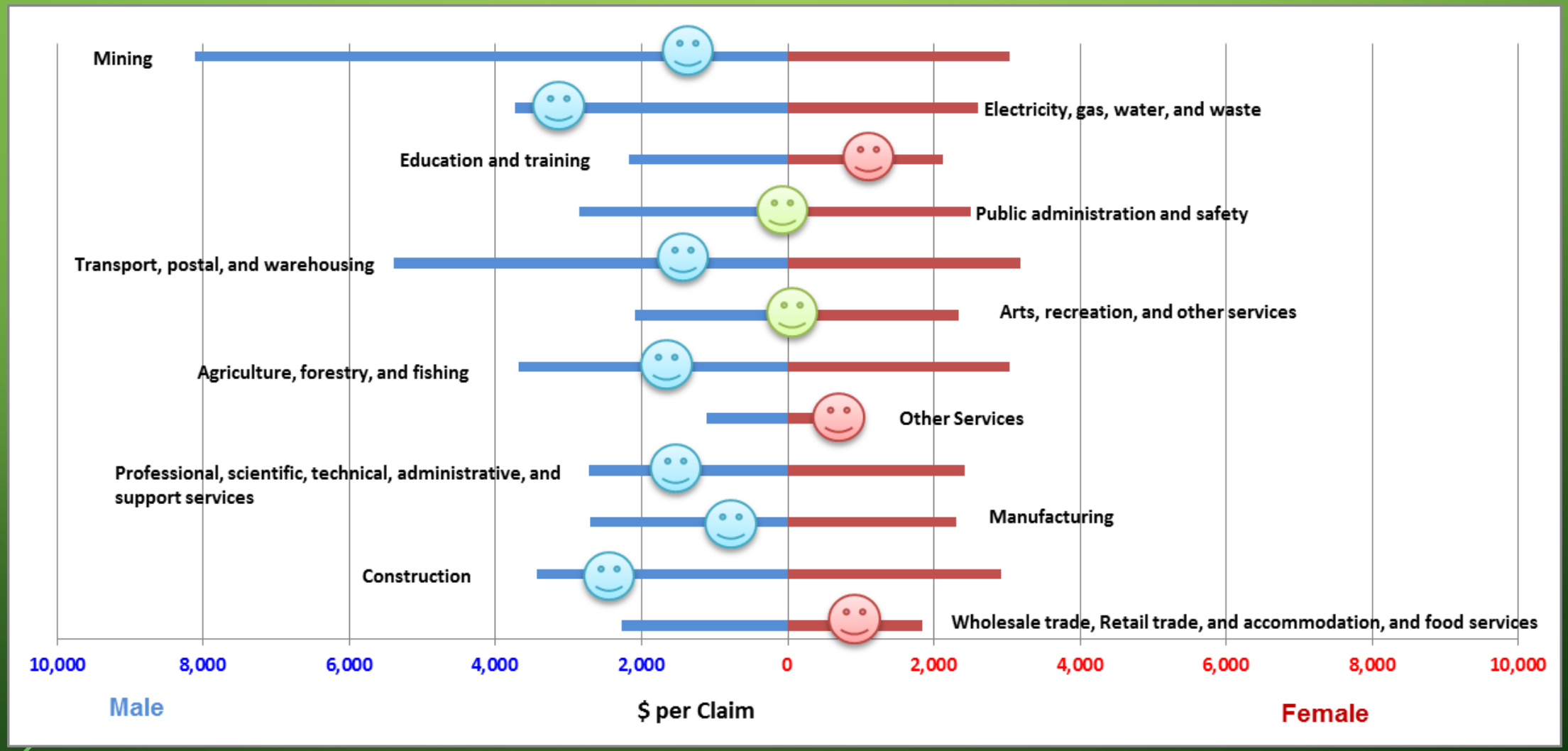
This information will be used as a benchmark to be applied as electricity becomes the more dominant energy source.

WHAT DOES THE CURRENT SAFETY RECORD LOOK LIKE

NZ Worker Population



NZ Worker Claim Costs ($)



ELECTRIC SHOCK DETECTION AND CONTROL

When it comes to electric shock there are internationally two methods of assessing safety:

- Ventricular Fibrillation (VF)
- Muscular let go

LET GO

The principal investigations were carried out in the USA by Dalzeil.

In his research, Dalziel focused on let go, giving rise to the use of 6mA GFCIs in the United States, while internationally, 30mA RCDs based on VF are employed in the IEC based safety regimes.

Dalziel's research, while establishing a viable benchmark, also identified differences between male and female reactions to electric shock identifying that females were less able to disconnect themselves

GENDER DIFFERENCES

When it comes to electric vehicles, the contact with a vehicle enlivened during charging is likely to be a grasping grip

This would suggest that the GFCI protection system would be advantageous for EV charging especially for women and girls

SAFETY IMPACT OF EV CHARGING

But the USA have had to allow 20 mA GFCIs for EVs as the charging supply to the EVs was found to trip the 6mA GFCIs

The USA have supplemented the safety by monitoring the earthing continuity

The IEC EV charging safety system has also adopted earth monitoring but continues to trip at 30mA

DISTRIBUTED GENERATION

Electricity generated by photovoltaic fittings is direct current

This has to be converted to AC to operate most appliances

This conversion results in an electricity supply that is not a smooth AC current but is distorted by the presence of other frequencies referred to as harmonics.

The presence of this distortion is likely to blind the existing RCDs

GENDER BALANCE

As we move into using more electricity, will a gender imbalance occur?

Is it time to build gender sensitivity into our safety regimes.

And not just gender balance in our committees.

But real consideration.

Thank You for your attention.