



Effective health surveillance in mining: Blood lead levels in open and underground mines.

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Introduction

- Apology
- Lead levels
- Challenges of developing health policy
- Questions

A comparison of blood lead levels in an open and underground lead mine

- Study performed in 2012 retrospectively comparing (then) current blood lead levels with baseline employment levels to assess change over time.
- Aim to determine whether there was an overall trend in order to assess the adequacy of control measures.
- Determine if there was a differential risk between open and underground lead mining operations.

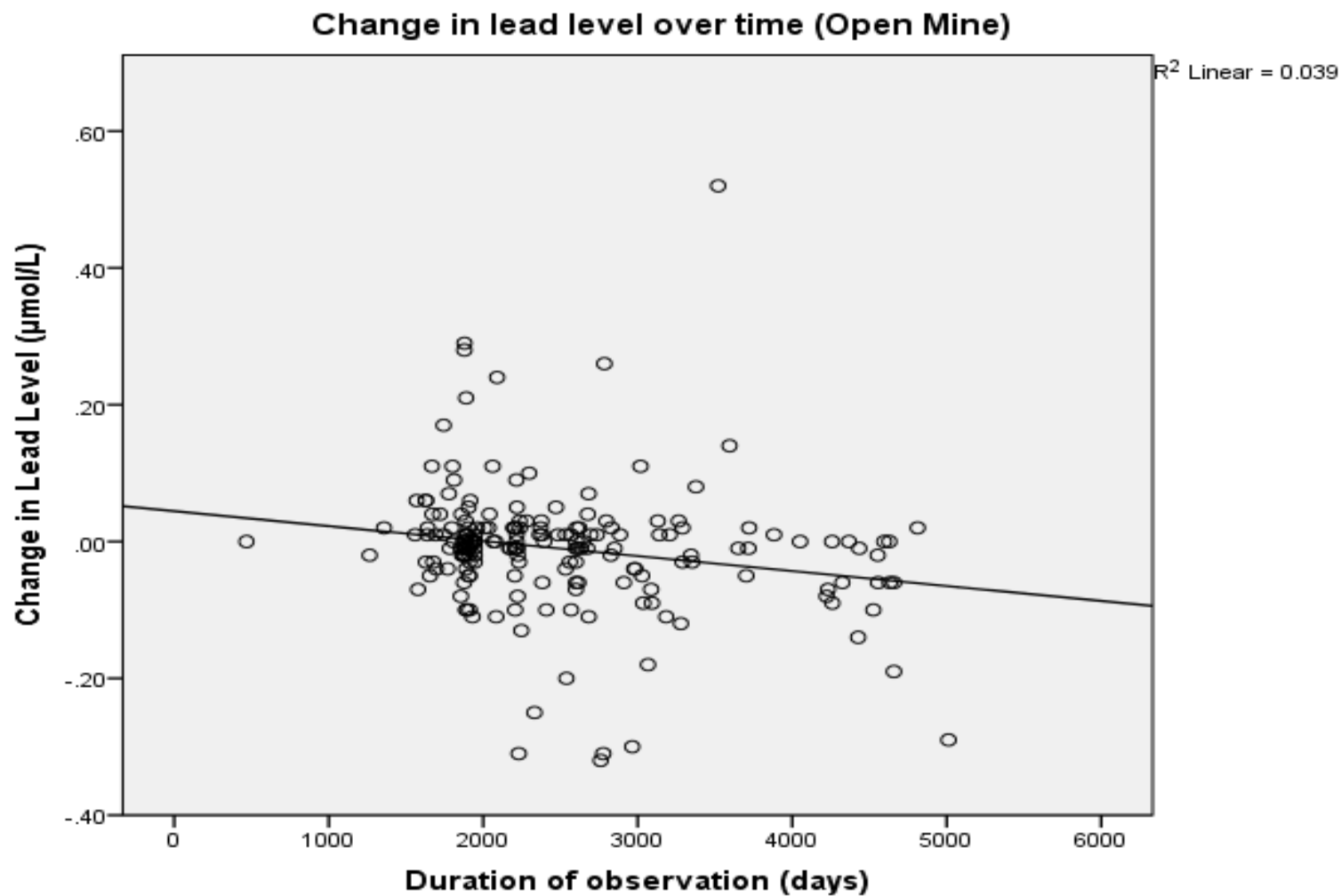


Results

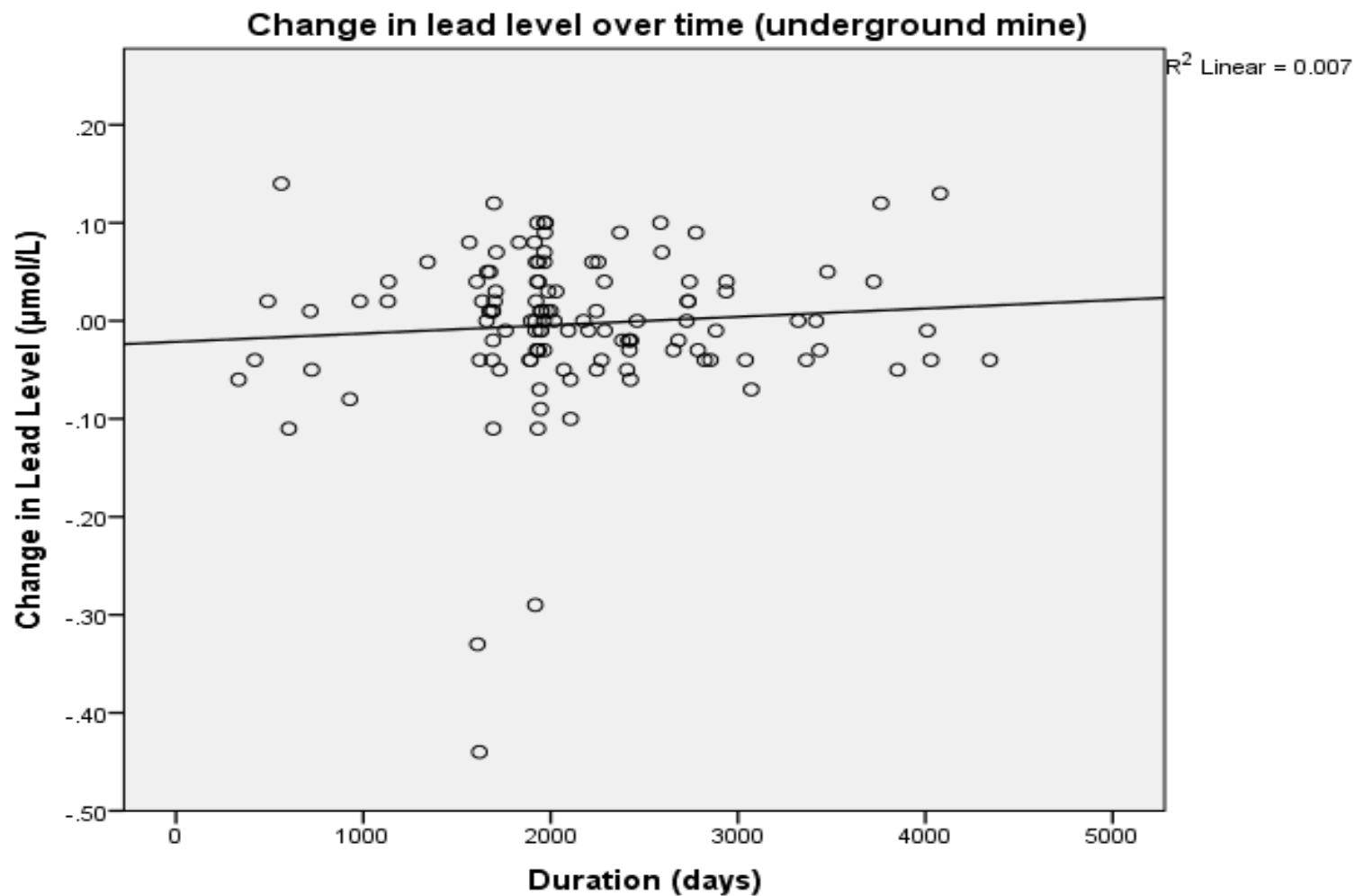
Demographics:

	Open	U/ground
Number	197	120
% male	93.30%	75%
Mean Age	42.41	43.69
Std dev	10.62	11.32
range	22-68	23-68
Mean duration (months)	83.61	71.41
Std dev	28.3	25.48
range	16-167	12-145

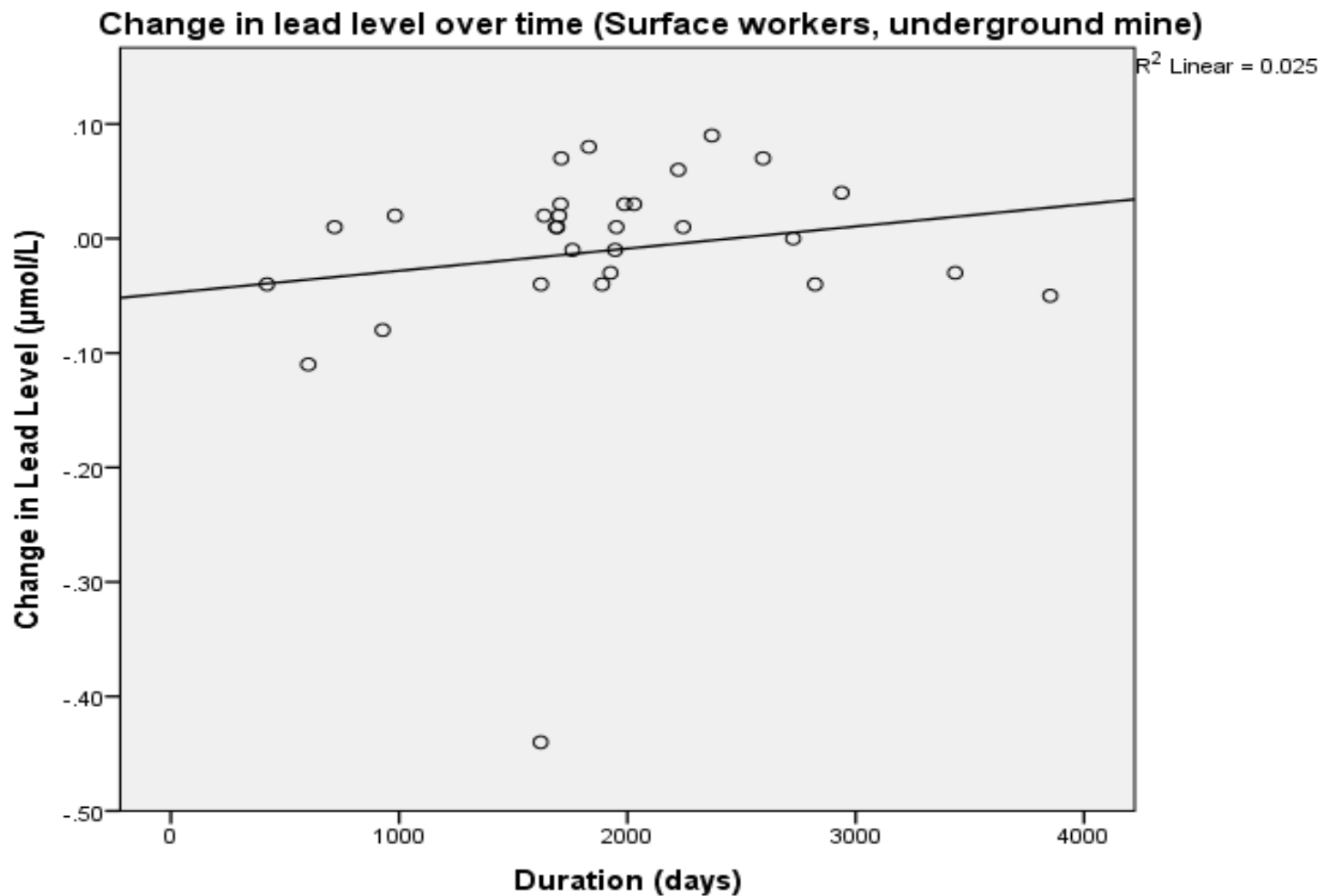
Results



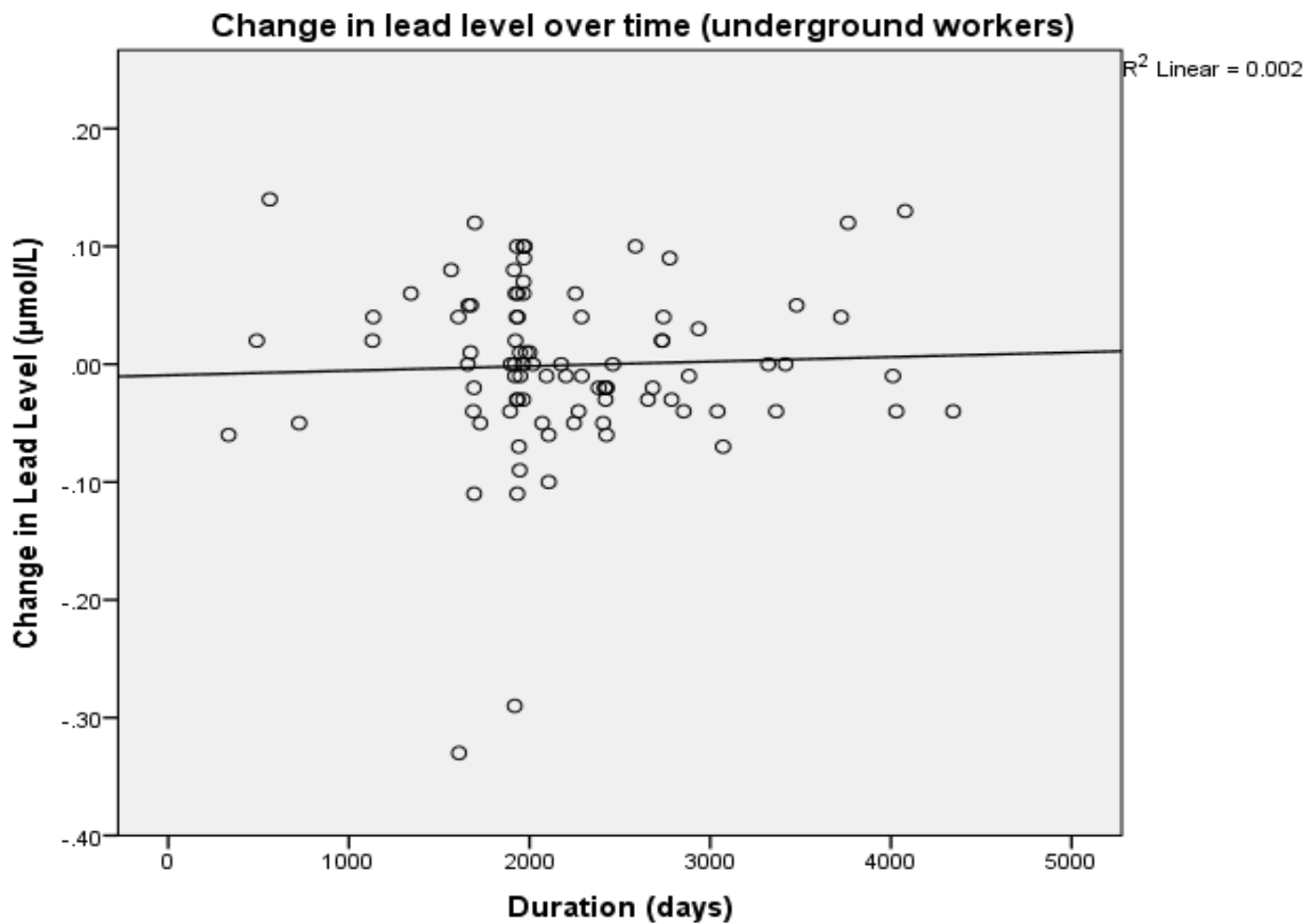
Results



Results



Results



Results Summary:

- Statistically significant negative correlation in open-cut mine
- No statistically significant correlation in underground mine
- No statistically significant difference between the two mines

Limitations:

- Generalisability
- Exclusions
- Survivor effect

Comparing different risks:

Lead is a well controlled risk: Why?

- Strong motivation for control - Legislative mandate
- Known health effects, proportional to exposure
- Easily definable
- Readily measured
- Well understood control measures.



Comparing different risks:

Compared with other occupational health problems, ie Fatigue:

- ? Motivation for control
- ? Health effects
- ? Definition
- ? Ability to measure and quantify
- ? How to control

What is required for effective planning?

- Clearly define and understand the issue
- Examine options
- Communicate with stakeholders and develop the plan
- Enact, monitor and ?enforce
- Review and modify

Clearly define and understand the issue

- What is the specific problem?
- Why is it important?
- What is the motivation for change?
- How important? (quantify where possible)
- Identify the cause(s) and highlight the modifiable ones

Examine options

- **Hierarchy of control:**

- Elimination
- Substitution
- Engineering
- Administrative
- PPE

- **Are options reasonable? Are they**

- Legal?
- Ethical?
- Acceptable – to management, workers, unions, community, Govt?

Communicate with stakeholders and develop plan

- **Identify stakeholders, for example**
 - Management
 - SHE staff
 - Workers
 - Unions
 - Community
 - Government agencies
- **Discuss the plan(s) including**
 - Motivation and goal
 - Requirements from each party
 - Listen to concerns and address where possible
 - Timetable
 - ?consequences if applicable.

Enact, Monitor and ?Enforce

- **Implement policy**
 - Allow lead time
 - Expect that there will be difficulties

- **Monitor**
 - Understand what needs to be measured
 - Database and statistical analysis

- **Enforce**
 - Enough warning, education, retraining
 - Grace period

Review

- **Accept that it will not be optimal first go.**

- **If it didn't work:**
 - **Good plan poorly implemented?**
 - **Poor plan?**
 - **Potentially good plan but with unintended consequences?**

- **Be honest with results**
 - **To yourself and others.**

- **Don't give up**

