Resolution of the ethical trolley problem

Abstract: We evaluate the trolley problem. While neither outcome is tautologous, the lesser of two evils is chosen as the ethical resolution because resulting values from one logic table are closer to the ideal state of tautology. In other words, while both outcomes are *non* tautologous fragments of the universal logic VŁ4, the *relative* value of the results implies the ethical choice.

We assume the method and apparatus of Meth8/VŁ4 with T̶autology as the designated proof value, **F** as contradiction, N as truthity (non-contingency), and C as falsity (contingency). The 16-valued truth table is row-major and horizontal, or repeating fragments of 128-tables, sometimes with table counts, for more variables.
(See ersatz-systems.com.)

LET   ~ Not, ¬ ; + Or, ∨, ∪; - Not Or; & And, ∧, ∩, · ; \ Not And;
      > Imply, greater than, →, ⇒, ↦, ≻, ⊃, ⊢, ⊨, → ;
      < Not Imply, less than, ∈, ≺, ⊂, ⊬, ⊭, ←, ≲;
      = Equivalent, ≡, :=, ⟺, ↔, ≜, ≈, ≃; @ Not Equivalent, ≠, ⊔;
      % possibility, for one or some, ∃, ◊, M; # necessity, for every or all, ∀, □, L;
      (z=z) T as tautology, ⊤, ordinal 3; (z@z) **F** as contradiction, ∅, Null, ⊥, zero;
      (%z>#z) N as non-contingency, Δ, ordinal 1;
      (%z<#z) C as contingency, ∇, ordinal 2;
      ~(y < x) (x ≤ y), (x ⊆y); (A=B) (A~B).
      Note for clarity, we usually distribute quantifiers onto each designated variable.

From: en.wikipedia.org/wiki/Trolley_problem

The trolley problem is a thought experiment in ethics. The general form of the problem is this: You see a runaway trolley moving toward five tied-up (or otherwise incapacitated) people lying on the tracks. You are standing next to a lever that controls a switch. If you pull the lever, the trolley will be redirected onto a side track, and the five people on the main track will be saved. However, there is a single person l[a]ying on the side track. You have two options:

1. Do nothing and allow the trolley to kill the five people on the main track.
2. Pull the lever, diverting the trolley onto the side track where it will kill one person.

Which is the more ethical option?

Remark 1.: The modal attributes of variables for the thought experiment are the necessity of main and side rails, the possibility of people, and the possibility of death.

We map the problem to avoid the case of no people on rails as:

If the total number of possible people on the necessary main and side rails is not zero, then the total number of possible deaths from the necessary rails is not zero.   (1.1)

LET p, q, r, s: person, train of death, main rail line, side rail line

$$(((\%p\&\#r)+(\%p\&\#s))@(p@p))>(((\%q\&(\%p\&\#r))+(\%q\&(\%p\&\#s)))@(p@p)) ;$$

<div align="center">TTTT TCTT TCTC TCTC</div>

(1.2)

Remark 2.: We pose the ethical question as two states of affairs.

If Eq.1.1, then if more possible people are on the necessary main rail than possible people on the necessary side rail, then what is the relative truth table result of the necessary side rail implying the necessary main rail; and

(2.1.1)

$$((((\%p\&\#r)+(\%p\&\#s))@(p@p))>(((\%q\&(\%p\&\#r))+$$
$$(\%q\&(\%p\&\#s)))@(p@p)))>(((p\&r)>(p\&s))>(\#s>\#r)) ;$$

<div align="center">TTTT TTTT CTCC TTTT</div>

(2.1.2)

If Eq.1.1, then if more possible people are on the necessary main rail than possible people on the necessary side rail, then what is the relative truth table result of the necessary main rail implying the necessary side rail;

(2.2.1)

$$((((\%p\&\#r)+(\%p\&\#s))@(p@p))>(((\%q\&(\%p\&\#r))+$$
$$(\%q\&(\%p\&\#s)))@(p@p)))>(((p\&r)>(p\&s))>(\#r>\#s)) ;$$

<div align="center">TTTT CTCT TTTT TTTT</div>

(2.2.2)

Eq. 2.1.2 and 2.2.2 are *not* tautologous. For Eqs. 2.1.2 and 2.2.2 respectively, the unique row results are CTCC and CTCT. Because CTCT is closer to a tautologous row of TTTT than is CTCC, we choose Eq. 2.2.2 as the preferred outcome to resolve the trolley problem. This means the ethical choice is made to throw the switch toward the side rail, thereby minimizing death. We note that this thought experiment resolution cannot be generalized properly to alphabetical issues of morality such as abortion, capital punishment, euthanasia, and gender choice.