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More on the Robust Solution for Epidemiology: Nineteenth-Century Quebec

Paul TE Cusacki*

Brealey Drive, Peterborough, 77432, Infrobright, Canada

Abstract

Here we consider the Robust Solution as applied to the cholera epidemic in Lower Canada (Quebec) in 1832. We find that the mathematics from that procedure provides the mathematical foundation or the study. The rate of growth of the virus must be kept below 14% to terminate the spread of the disease.

Keywords: Energy; Time; Density; The bell normal; The golden mean parabola

Introduction

This paper is an examination of the mathematics already well-established as the Robust solution. We use this solution applied to the cholera epidemic, particularly in what is toddy, Quebec-Montreal and Quebec City. The data was found in Bilson's book, A Darkened house, Cholera in nineteenth Century Canada. Some figures come from the Saint John Cholera epidemic 1854 [1-3]. We begin there.

In Saint John, 1854,

1103 deaths from Cholera/pop. 30,000=1/e=e^-t=E

In Quebec 1832-33:

3451/X=1/e

X=1269=rho=density ~ 4/Pi

1269=78.8 deaths/1000.

In Montreal, there was a cholera death rate of 74/1000. In Quebec City, Twas a cholera death rate of 82/1000. Average (74+82)/1000=41/1000 [4,5].

Now rho/c=126.9/2.9979=0.4235 ~ Pi-e=0./4233.=Resistance to Disease=Rd

[Deaths/1000]=rho

Rho/c=cuz

Rho/c* Pi=Space s

And, from Astro-theology mathematics:

The cross-product vector is:

S=|E||t|cos theta

Resistance to death=(Vd) (Cycle)cos (Cycle)

=e*(40% of a cycle) cos (1 rad)

=58.75%

58.75%=Pi=54.18%

1-54.18%=45.82% ~ 45.7=death rate in the entire province of Quebec

1-58.75%=41.25%

Cf Average Death rate above=41/1000.

Re=rho v/Nu

(127(0.8415)/0.27=395

395=S.D.=Sqrt [(1/N) SUM (X-Xbar/S.D)]Let S.D.=Re=395, and solving:

1560 N=G X^3-X^2-X

2/3((0.4)^3-(0.4^2)-0.4-1560 N=0

N=1

S.D.=Sqrt {1/1*(X-Xbar)^2

S=0.6

Sigma=0.3

1-0.3<=Mew<=1+0.3

Standard Normal:

Phi=1/Sqrt(s*2Pi) e^-1/2 (X-0.7)/0.3)^2

X=0, 1.4 for mew=0.7

X=t=1+t

1.4=1+t

T=0.4=1 rad=1/2Pi

Mew=1.4+/-1]/2

Mew bar=1.2

1.2 * c^2=1.08=Z score for 85.99% 1/85.99=116.29=Mass no of elements in the periodic table.

1-0.8599=0.14=14% minimum profit to sustain growth.

Finally,

E=Mc^2

***Corresponding author:** Cusack P, Brealey Drive, Peterborough, 77432, Infrobright, Canada, Tel: (506) 214-331; E-mail: St-michael@hotmail.com

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$=(1/e)((2.997929)^2$

$=3.3063$

$E=1/t$

$t=1/E=1/3.3=0.302$

Root for the Bell Normal.

$\Phi=1/\sqrt{(\sigma 2\pi)}\ e^{-1/2\ [(X-1.30/1.30)]^2}$

Root $X=t=3.02$

$1/c=Mc^2$

$1=Mc^3$

$=99.125=1/1.009 \sim 1.01=E$

$E=\Phi$

Roots $X=0,\ 1.4$

$0 \leq X \leq 1.4$

$1-0.8599=0.1401$

$Z=1.08$

$1/81.99=116.29$=Mass of final element in periodic table.

$Y=e^{-t\cos t}$

$116.29=e^{-t}\cos t$

$Y=1/e=E$

Refer to Figure 1.

$t^2={}^2-1=0$

$dE/dt=2t-1=1$

$2=1$

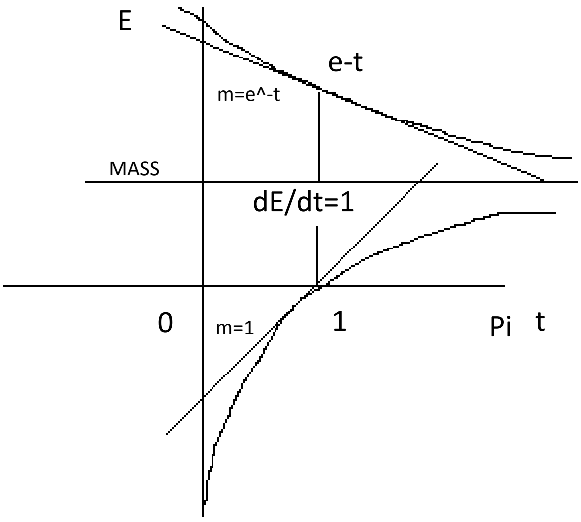

Figure 1: Energy vs. time.

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$E=1/e^{-t}$

$E=1/e^{-1}=2.718=Y$

At $t=0$, $\mathrm{Ln}\ t=0$

$t=1$

At $t=\pi$

$\mathrm{Ln}\ \pi+cuz=2.568 \sim \pi/2=t/2$

$t/2=1/2=E_{min}=-1.25$

And

$\mathrm{Ln}\ \pi+0.4233=1/e^t$

$G \sim 6.54=1/e^t$

$e^t=0.1529=1-\sin 1$=Moment

$1-0.1529=0.8471$

$\sin^{-1}(0.8471)=57.89°=1.01$ rads=E.

Conclusion

Like every other two pole problem (infected or not infected) the two-pole solution works to solve problems in epidemiology. Keeping the growth rate below 14% will terminate a pandemic.

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