*Global Social Venture Competition*

# OneWorld Medical Devices
# Vaccine Pac


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# Company Overview

**Company Mission**

Improve global health and social development efforts.

**Vaccine Pac**

The Vaccine Pac is a portable temperature-controlled transport and storage system for medical/disaster relief uses.

**OneWorldMD Management Team**

| | |
|---|---|
| Chief Executive Officer | Serena Cheng - MIT MBA |
| Chief Technical Officer | Ethan Crumlin - MIT M.E. |
| Chief Financial Officer | Geoff Becker - MIT M.E. |
| Manufacturing VP | Emily Smith - MIT M.E. |
| Public Relations VP | Amy Wong - MIT M.E. |

# Opportunity and Market Need

**There are over 4.3M[1] deaths from vaccine-preventable diseases each year**

**Vaccines**

- Vaccines must be maintained at 2-8ºC (36-46ºF)
- Inadequate safe supply in developing countries

**Vaccine Transport/Storage - urban to rural areas**

Transport: Current 'cold chain' severely outdated

- 30-50% wastage during outreach sessions

Storage: Inadequate, unreliable refrigeration methods at centers

- Additional wastage at outreach centers

[1] Estimate from the World Health Organization (January 2004)

# Market Size

## Market potential for ~200,000 vaccine transport units between 2007 - 2015

**Medical Outreach Centers**

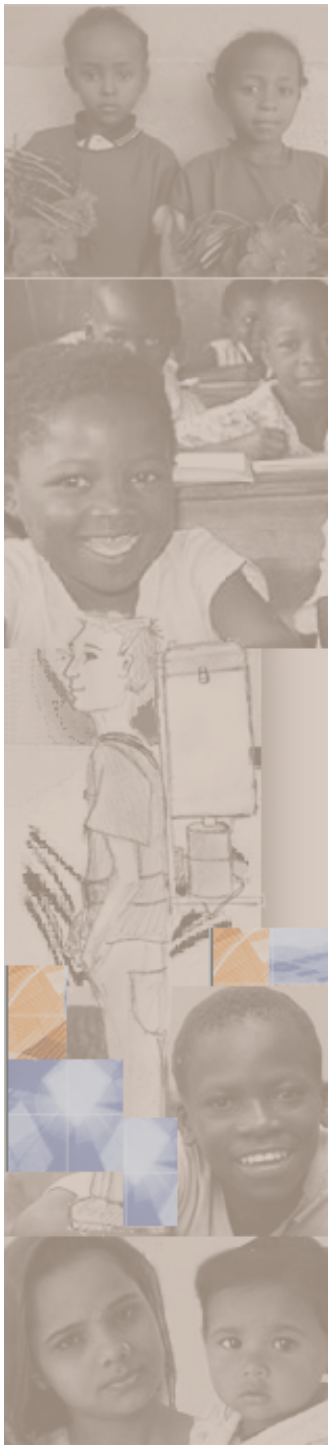
- 250,000 medical outreach centers worldwide

**Disaster/Epidemic Relief**

- Global aid organizations
  - Hurricane Katrina
  - Southeast Asia Tsunami
  - Avian Flu

**Other Immediate Medical Uses**

- Stationary vaccine storage unit
- Blood transporter

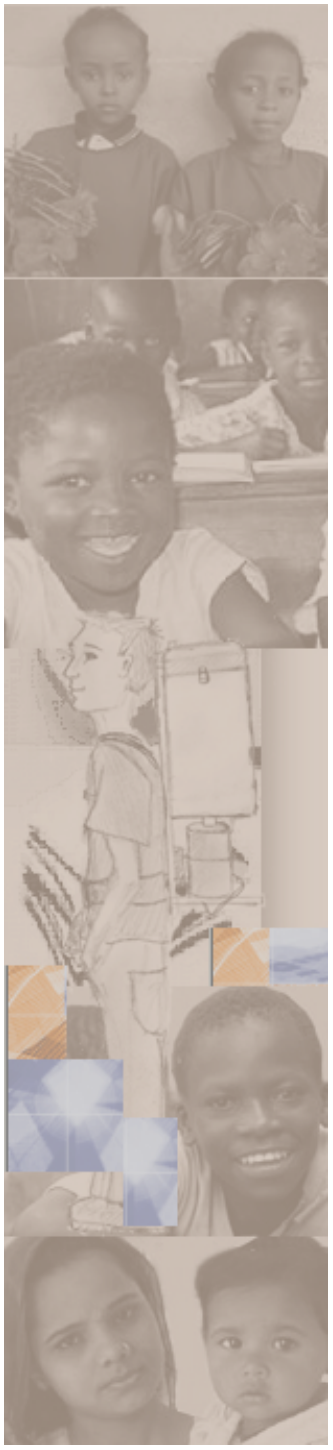


# Vaccine Pac Technology/Design

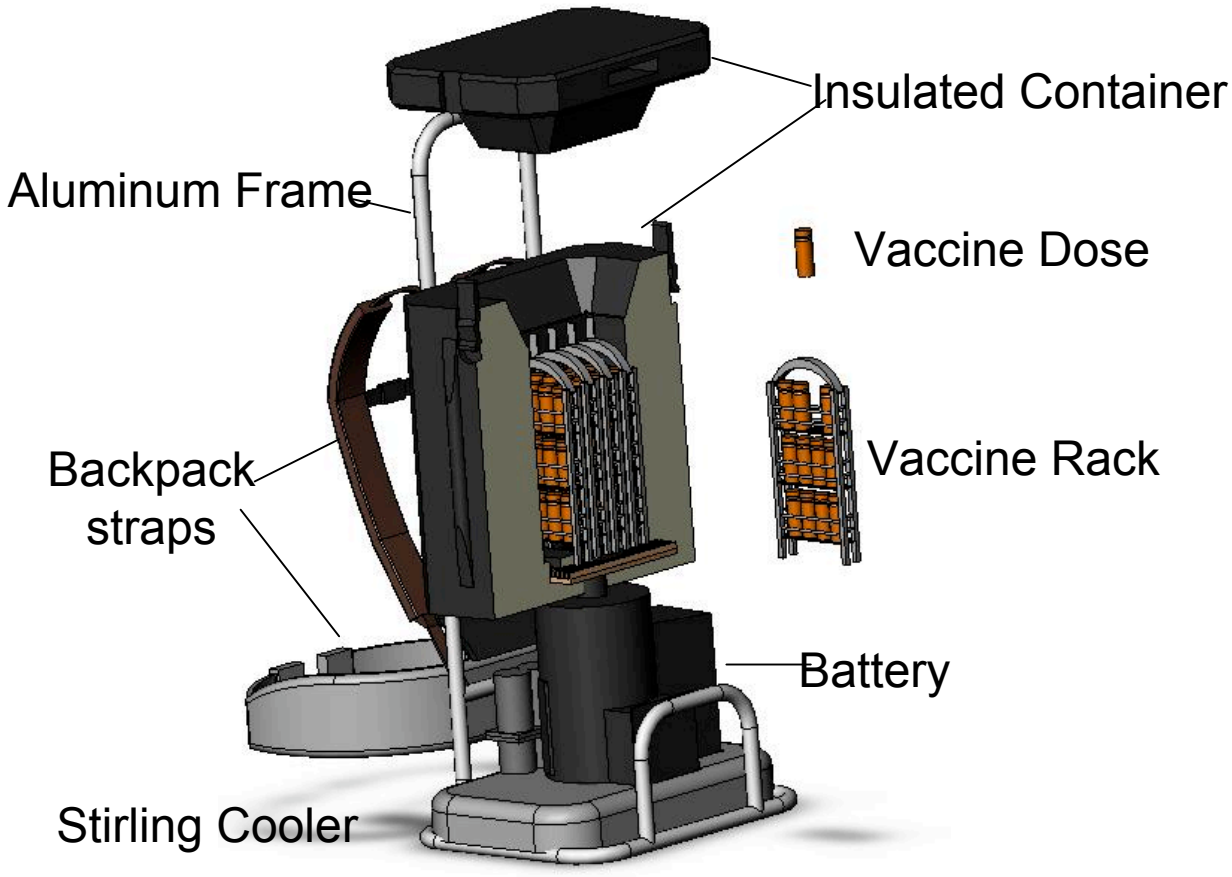
## Vaccine Pac Design (Patent Pending)

- World Health Organization (WHO) 'Cold Carrier' specifications
- Program for Appropriate Technology in Health (PATH) input
- Radical improvement over current outdated products

| Customer Need | Vaccine Pac Technology/Design |
|---|---|
| Temperature Control | ■ Stirling cooler, control system<br>■ Maintains 2-8°C for 18-24 hours |
| Portability | ■ <35lbs fully loaded<br>■ Powered by rechargeable battery |
| Longevity | ■ Holds ~1,200 vaccine doses<br>■ Variety of recharging options |
| Modularity | ■ Components easily re-arranged<br>■ Units stack for transport/storage |



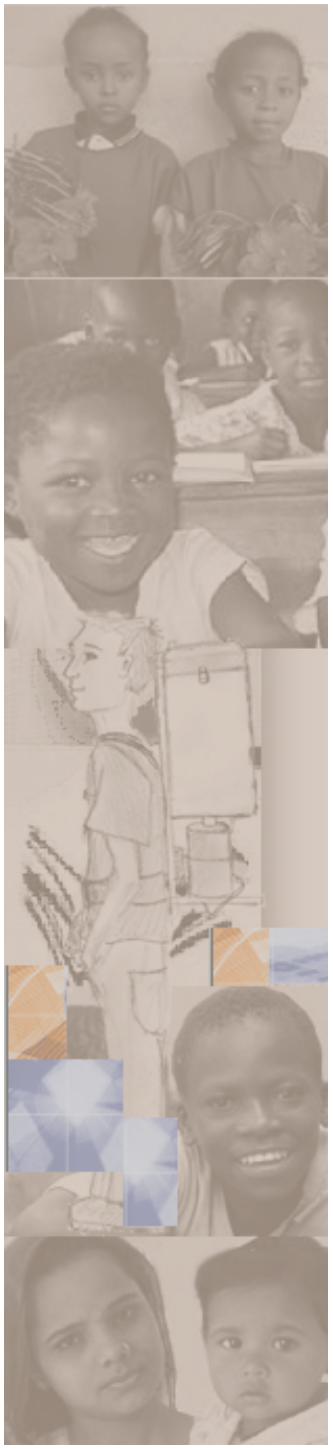
# Vaccine Pac Prototype



# Social Value Proposition

**OneWorld Medical Devices, with the Vaccine Pac…**

**…is saving lives and improving global health by significantly reducing the 4.6M vaccine-preventable deaths each year.**



# Impact Value Chain

**Inputs**

- Portable temperature-controlled unit
- Usage flexibility

**Activities**

- Volume production
- Distribution to developing countries

**Outputs**

- Vaccinating people otherwise not vaccinated
- Cost savings from reduced wastage

**Outcomes**

- Lives and DALYs saved
- Improved health

**Goal Alignment**

- Allows for more vaccine transport
- Allows for on-site vaccine storage

# Social Impact Indicators

**Quantitative Indicators**

1. Number of lives saved
2. Disability Adjusted Life Years (DALY)
3. Number of saved vaccines

**Qualitative Outcomes**

1. Improved quality of life
2. Local community economic development
3. Medical and workplace practices
4. Environmental benefits

# SIA Analysis Scope

| | |
|---|---|
| **Time Frame** | 10 years (2006-2015) |
| **Vaccine Pacs** | |
| Number produced | 192,700 |
| Product lifetime | 5 years (60 months) |
| Retail price | ~$1,000 |
| Wastage reduction | 30-50% to ~20% |
| **Major Diseases** (vaccine-preventable) | Tuberculosis<br>Pertussis<br>Polio<br>Diptheria<br>Measles<br>Tetanus<br>Malaria -- starting 2010 |

# First Order Analysis

**This analysis is based on the projected Vaccine Pac product placement and its reduction of vaccine wastage.**

**Direct monitoring**

1. Number of vaccines saved
2. Monetary savings of non-wasted vaccines
3. Additional people vaccinated

**Major assumptions**

1. Vaccine wastage reduced to 20%
2. 3 outreach sessions per month
3. 100 vaccines per session (same as current cold carriers)
4. Average cost $0.56 per vaccine

# First Order Analysis Results

## Yearly Results

| | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
|---|---|---|---|---|---|---|---|---|---|
| Vaccine Pacs | 800 | 4,980 | 7,920 | 10,000 | 12,000 | 30,000 | 30,000 | 30,000 | 30,000 |
| Related Products | 0 | 0 | 0 | 2,000 | 3,000 | 8,000 | 8,000 | 8,000 | 8,000 |
| Vaccines Saved | 320,000 | 4,624,000 | 10,800,000 | 18,000,000 | 24,400,000 | 41,200,000 | 56,400,000 | 68,400,000 | 68,400,000 |
| Cost Savings | $192,000 | $2,774,400 | $6,480,000 | $10,800,000 | $14,640,000 | $24,720,000 | $33,840,000 | $41,040,000 | $41,040,000 |
| Add'l People Vacc. | 16,000 | 231,200 | 540,000 | 900,000 | 1,220,000 | 2,060,000 | 2,820,000 | 3,420,000 | 3,420,000 |

## Overall Results: 2007-2015

| | |
|---|---|
| Vaccine Pacs/Related Products | 192,700 |
| Vaccines Saved | 292,544,000 |
| Cost Savings | $175,526,400 |
| Additional People Vaccinated | 14,627,200 |

## Vaccine Pac ROI

Vaccine Pac Retail Price ~$1,000

Vaccine Savings $3,081

**** Vaccine Pac pays for itself in ~20 months****

# Second Order Analysis

**This analysis is based on the World Health Organization deaths and DALYs data for vaccine-preventable diseases.**

**Major assumptions**

1. Deaths and DALYs extrapolated into the future
2. Vaccine deaths and DALYS have a linear trend
3. Vaccine Pac can reduce trend
4. Human productive years is age 20-60 years
5. Minimum value of a life is $500 GDP per capital

**Data sources**

- 2000-2002 Infectious Diseases data -- WHO
- Global Population Profile: 2002 -- U.S. Agency for International Development
- GDP per capita data -- U.S. Central Intelligence Agency

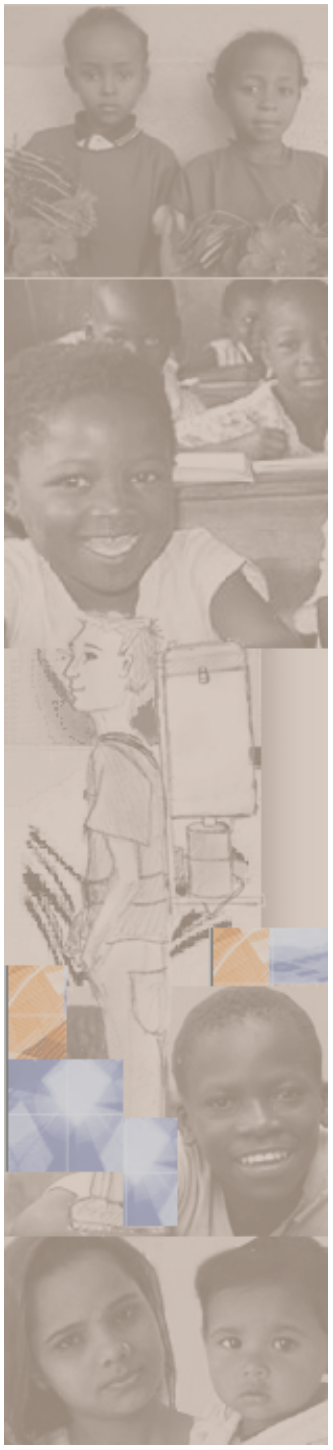
# Second Order Analysis

**Analysis key**

= World Population

= Vaccine-preventable deaths

= Vaccine-preventable DALYs

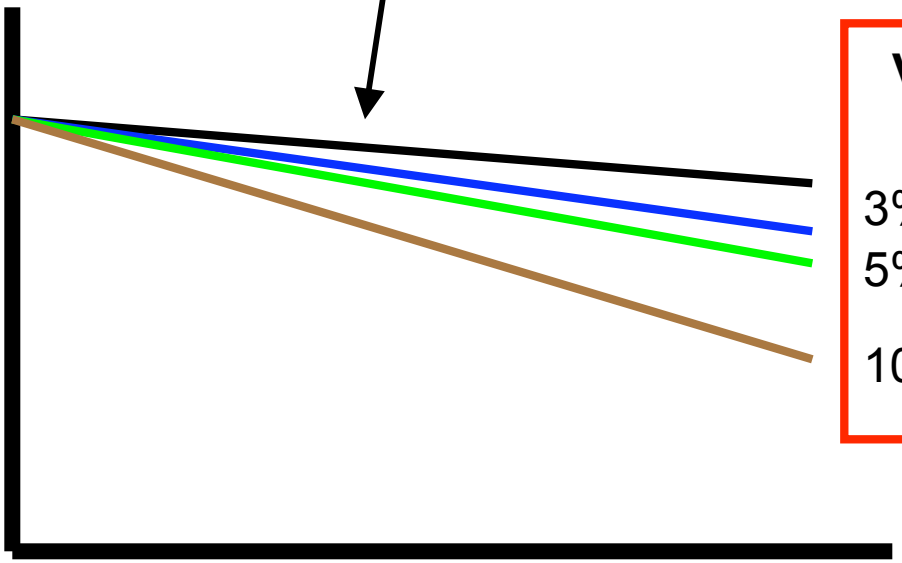


# Second Order Analysis

= normalized

Extrapolate for each year

Current Trend



**Vaccine Pac's influence**

3% impact

5% impact

10% impact

2000

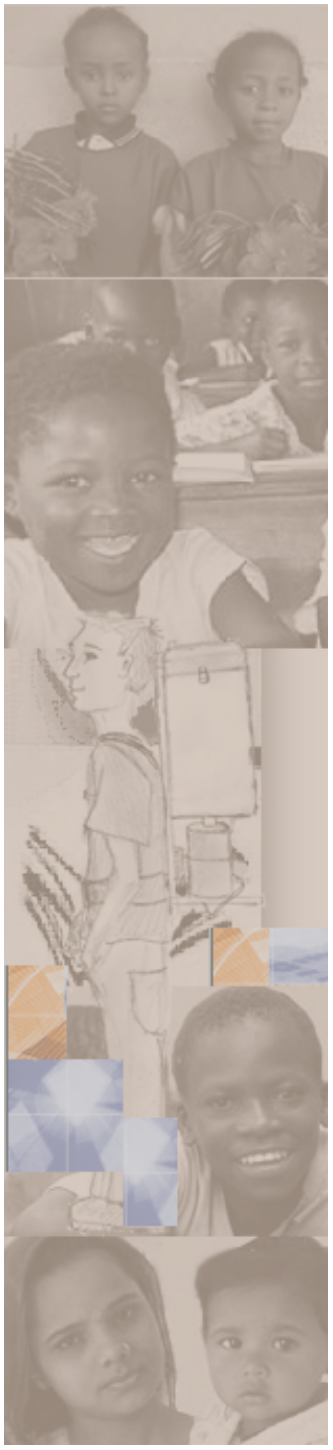
2030

Year

# Second Order Analysis Results

## Overall Results: 2007-2015

| Impact % | Deaths Prevented | Reduced Lost DALYs |
|---|---|---|
| 3% | 35,000 | 470,000 |
| 5% | 58,000 | 785,000 |
| 10% | 116,000 | 1,570,000 |



# Second Order Analysis

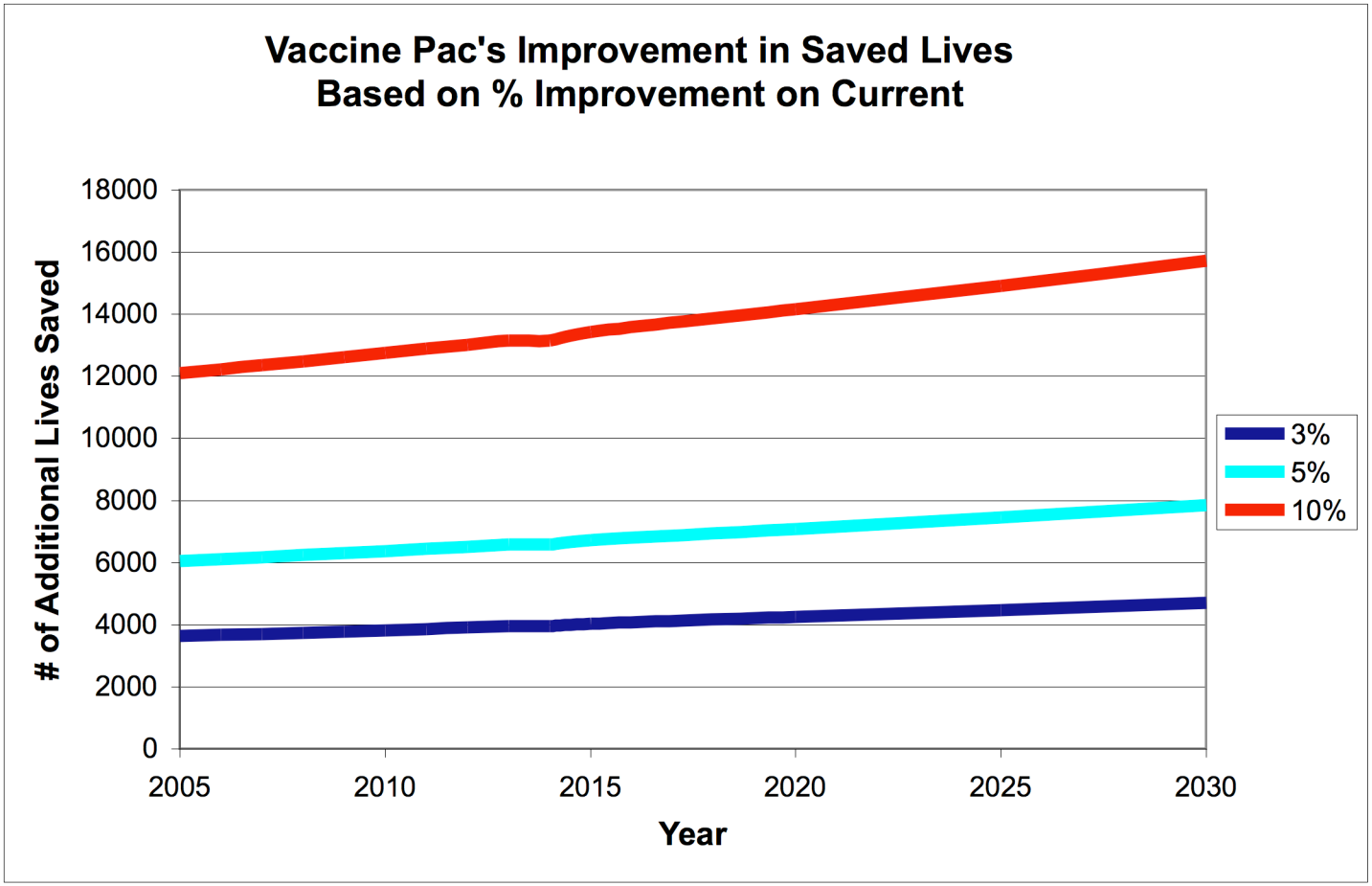
In order to monetize:

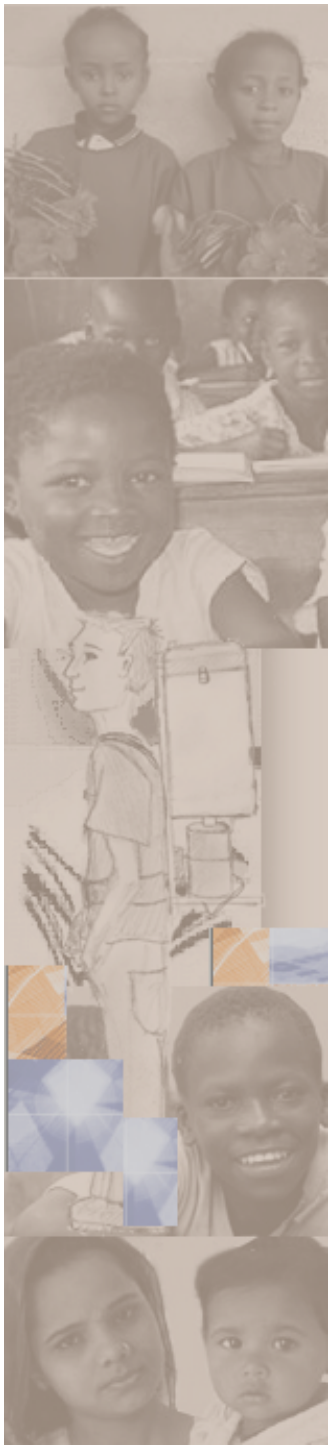
- Only consider working ages 20-60 years
- Minimum annual GDP per capita is $500

This yields lost earnings due to re-gained DALYs:

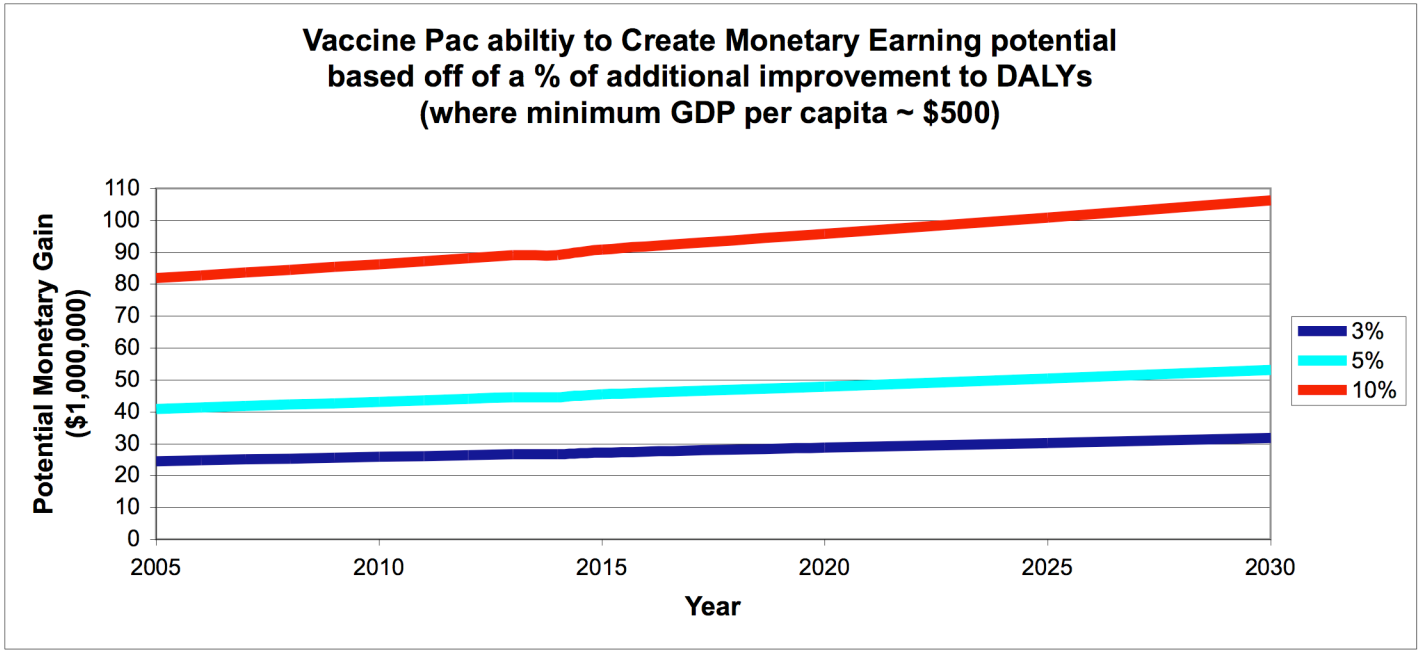
| Impact % | Reduced Lost DALYs | Re-gained Earnings |
|---|---|---|
| 3% | 470,000 | $235M |
| 5% | 785,000 | $393M |
| 10% | 1,570,000 | $785M |

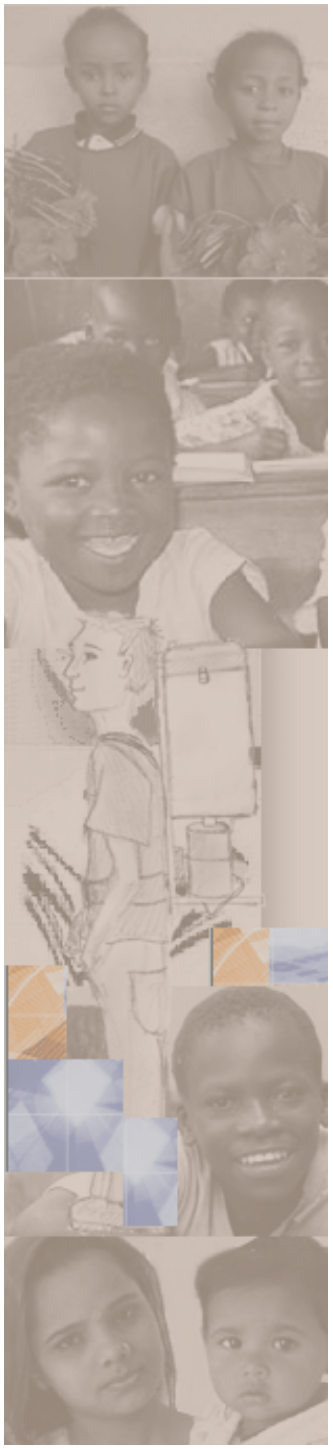
# Second Order Analysis Results





# Second Order Analysis Results





# Milestones and Next Steps

| Year | Milestones | Actions |
|---|---|---|
| **2006** | Secure seed funding<br>Field test | Competitions, grants<br>Partner PATH, UN |
| **2007** | Finalize design | Evaluation/field test |
| **2008** | Secure Series A funding<br>Reach profitability | Social investors<br>Sales and partnerships |
| **2009** | Sales, manufacturing<br>Volume production | Key full-time hires<br>Contract manufacturing |
| **2010** | Grow product portfolio | R&D related products |
| **2011** | Secure Series B funding<br>Increase profitability | Social investors<br>Technology licensing |
| **2012** | Grow organization | Management, technical |

# Thank-you!

*Special thanks to:*
*GSVC organization*
*Janet Handel and Anu Oza*