A Total–Harm–Minimization Framework for Developing Expedient and Low–Risk Return–to–the–Workforce Policies During the COVID–19 Pandemic

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Executive Summary

Objective: Define a framework to develop a Total–Harm–Minimization policy to address the COVID–19 crisis in consideration of both economic and health risks.

We describe a framework that is tolerant to the uncertainty in our current knowledge of COVID–19 that: (a) requires a very small number of assumptions; (b) involves minimal mathematical modeling; and (c) may result in acceptably low community health risk, given (a) and (b).

KEY FEATURES OF THE FRAMEWORK

- May be implemented promptly at the local level at relatively low cost.
- Requires only minimal modeling of epidemiology or the structure of the financial systems.
- Conserves scarce COVID–19 virus tests which are currently in short supply.
- Immediately leverages available health data to risk–stratify the population, while additional critical data–gathering projects proceed.
- Optimizes objectives of workforce return and infection minimization (prior to approved vaccination), by prioritizing:
  - Continued physical separation for knowledge workers.
  - Clearing “contact” employees in order of their impact on functional, social & economic utility activities.
- Less likely than many other approaches to worsen the severity or duration of the COVID–19 pandemic, while also advancing progress towards herd immunity to achieve system–wide “all–clear.”

This framework, of course, accommodates adjustments/extensions informed by successes in other U.S. or global contexts.

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Note to reader: This material is CONFIDENTIAL. While we believe that the concepts outlined in this note provide a useful framing for this problem, the details of their implementation and execution are beyond the scope of this work and, in some cases, beyond the current working group’s detailed knowledge. As such, this is not intended as a recommendation or policy proposal. In this draft, we prioritize expediency in circulating for comment the broad strokes of the framework over detailed debate and analysis.
An Overview of a Total–Harm–Minimization roadmap for developing return–to–the–workforce policies

OVERARCHING GOAL

It is critical to resume economic activity and social interaction while minimizing risks of further viral contagion, despite current incomplete epidemiological data on COVID–19.

RISK MANAGEMENT FRAMEWORK (See Figure 1)

Prioritizing return–to–the–workforce:

• Identify industries and companies that have large functional or economic impact.

• Identify members of the workforce within these industries who may return to work soon because remote work is not feasible;\textsuperscript{a} \textbf{and}

  (a) risk of transmission deemed acceptably low due to the presence in their blood of an effective antibody post–
  infection\textsuperscript{b}; or

  (b) either

  – negative COVID–19 virus test confirmed (and re–validated daily) at physical access point;\textsuperscript{c}
  – effective models are developed to reliably predict which individuals will tolerate exposure with acceptably
  low health consequences (e.g., on the order of the seasonal flu).\textsuperscript{d}

\textsuperscript{a}See, e.g., Dingel, J. and B Neiman (2020), “How Many Jobs Can be Done at Home?”
\textsuperscript{b}See, e.g., Le Page, M. (2020) “Will a home antibody test for covid–19 really be a game changer?”
\textsuperscript{c}Note that pooled testing procedures can substantially increase throughput speed and lower cost in many cases. See, e.g., Bilder, C. R. and J.M. Tebbs (2012). “Pooled testing procedures for screening high volume clinical specimens in heterogeneous populations.” for an overview.
\textsuperscript{d}see, e.g., Stein, R.M., (2005). “The relationship between default prediction and lending profits: Integrating ROC analysis and loan pricing.” for details of using rankings or models to determine greenlight cut–offs and an example from economics.

Figure 1: Triage, prioritization and monitoring of employee return–to–the–workforce policies

An example outline showing some of the worked–out detail for applying the framework can be found in the document entitled An Example Outline for Applying the Total–Harm–Minimization Framework for Developing a Return–to–the–Workforce Policy.
A Five Step Framework

1. Background Information Compilation
   - Compile background information on (a) COVID-19 incidence, recovery and mortality; and (b) economic and demographic profiles of employees.

2. Ranking of Employees
   - Rank population of asymptomatic individuals for testing based on likelihood of having conferred immunity and economic impact of return to workforce.

3. Precision Testing and Clearance of Employees
   - Conduct targeted testing for COVID-19 antibodies (not virus) based on ranking in Step 2.

4. Back to Work Under Local Policy (with monitoring)
   - Formulate policy based on results of testing, including roll-back plan and monitoring protocol for returned workers.

5. Implement Policy in Staged Fashion with Monitoring
   - Implement policy in stages with monitoring.

Figure 2: Conceptual schematic of policy development framework

Step 1: Compile background information on (a) COVID-19 incidence, recovery and mortality; and (b) economic and demographic profiles of employees.
Step 2: Rank population of asymptomatic individuals for testing based on likelihood of having conferred immunity and economic impact of return to workforce.
Step 3: Conduct targeted testing for COVID-19 antibodies (not virus) based on ranking in Step 2.
Step 4: Formulate policy based on results of testing, including roll-back plan and monitoring protocol for returned workers.
Step 5: Implement policy in stages with monitoring.