

# A Guide For COVID-19 Maker Efforts for Personal Protection Equipment (PPE) Shortages

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*Over the last week as a nation we have learned a lot! I personally have learned a lot as I see how this unseen enemy has affected my local community, my region, my state and as a nation. Even more how it can spread. It is nasty one to defeat and reduce the spread! Over the last week I've been taking mental notes on strategies that might work in a coordinated effort between Makers and Manufacturing to bring Personal Protective Equipment (PPE) to our communities to reduce the spread and give us a pace that our healthcare systems can handle. This write-up is a collection of those mental notes to coordinate together Maker Efforts with Manufacturing Efforts. We can MAKE A DIFFERENCE if we work together and have a plan.*

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# We Are Who We Are

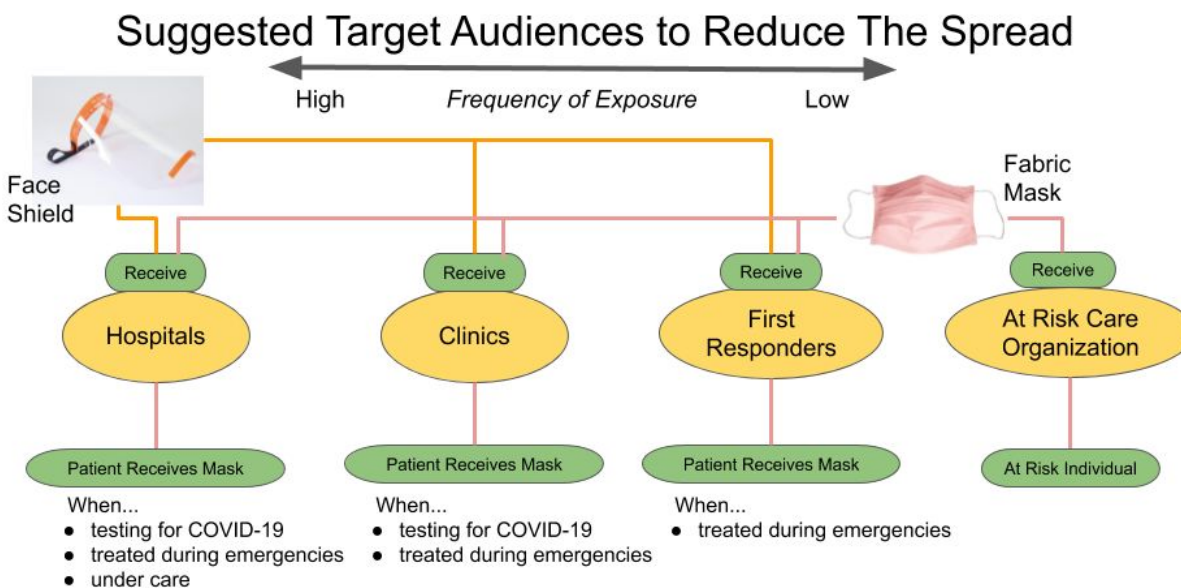
As Makers we have talents that we can bring to the table within this COVID-19 pandemic. We are agile and can adapt to what we can make. We love making at home or in our local community makerspace...and yes, we do like our space, so social distancing is not a problem. ;-)  
We can create items based on a new design or a pattern. Our only limitation is that we are individuals that work with our hands and thus we can only produce so much...unless we team up!

We have many businesses in our area and across the nation that can manufacture things in bulk much faster than we can. Once they have been retooled they can keep up the pace and energy to make enough Face Shields and Fabric Masks. The manufacturing of these items also reduces the variances in what is produced which is what the medical industry needs long-term.

Let's be true with what we are good at and leverage each of our strengths to reduce the spread!

# Targeted Products

With COVID-19 the more PPE, the better. Especially the PPE that controls the *travel* of this virus from an positive COVID person...and to those that have a higher exposure to COVID-19 like our frontlines healthcare providers. Therefore, I recommend a focused Maker Effort on two critical products: Face Shields and Fabric Masks. Together our end goal is to have an excess of each of these items



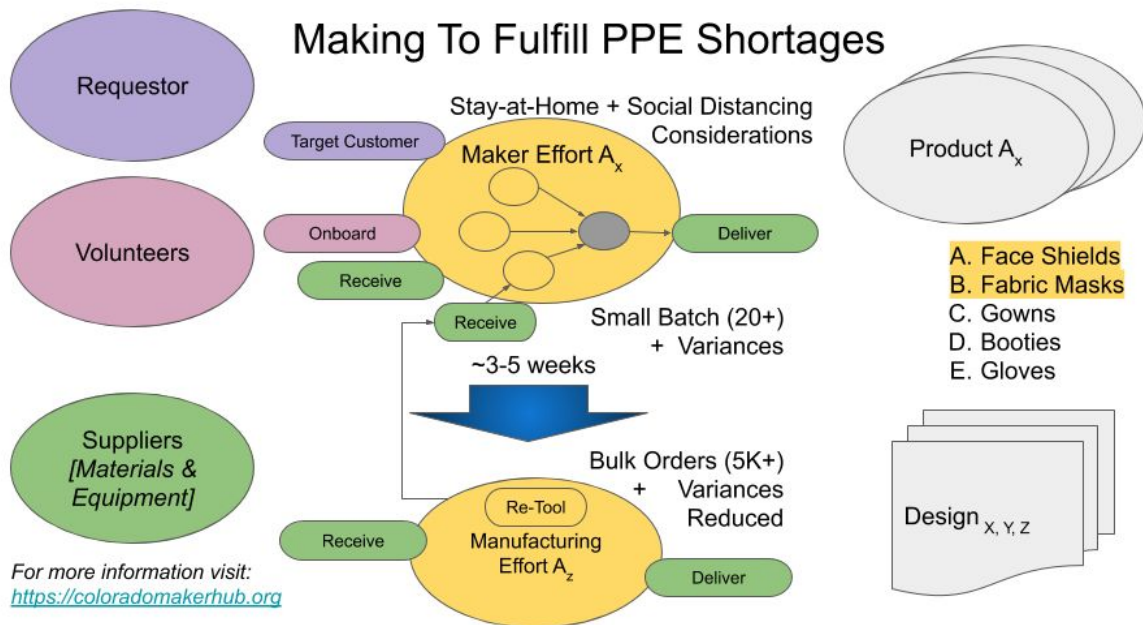
For more information about why these are suggested, visit: <https://coloradomakerhub.org>

# Target Your Audience

There are two key aspects of the audience we are targeting with these products: (1) Those on the frontlines that have the highest exposure to COVID-19 and (2) their patients. My recommended set of target audiences would be: (1) hospitals, (2) clinics (3) first responders and (2) organizations that are aware of and can distribute to individuals at risk like the elderly or immunocompromised. For hospitals, please note that if you are not getting confirmation from a hospital that they will accept either a Face Shield or Fabric Mask for their team members on the frontlines, I would suggest you offer them Fabric Masks to give to patients that *might have* COVID-19 to reduce the spread through the air to their team members. This includes those coming in for testing! Provide them a mask when they leave and are awaiting the test results. More about what hospitals are looking for in what they receive is discussed below. Don't push your product onto them and follow-up with the next target audience on your list. Don't forget the clinics and first responders in your area that have a high exposure to COVID-19!

# Get Out Batches, Transition To Bulk

So the journey together as a region is to get PPE out quickly to our healthcare workers and community to some acceptable level of quality as a *Maker Effort* for designated Product<sub>A</sub> to a Design<sub>x</sub> to fill the need until our *Manufacturing Effort* can retool to close the gap on the demand of Product<sub>A</sub> to a Design<sub>y</sub>. A perfect example is the [N95 masks with 89% filtration of 0.02-Micron particles that can be done through a Manufacturing Effort](#). But the *Maker Effort* can fill the gap until the better mask N95 is available. The Center for Disease Control notes that [Fabric Masks are a crisis response option when other supplies are not available](#).



The diagram above shows an overview of the typical supply chain processes in making a product like a mask. But it shows two options for making the mask: a *Maker Effort* and *Manufacturing Effort*. The key to a region's planning during this COVID-19 epidemic will be in coordinating the supply chain and *changing the lanes* as a Product transitions from a Maker Effort to Manufacturing Effort. The region will then need to decide whether it should focus the Maker Effort to another Product<sub>B</sub> or change to a broader target audience. This balance of supplies to overcome shortages to the needs during this pandemic will be the measure of success and a road to economic recovery.

# How You Make Is Important

If the recipient of your product is an individual team member at a hospital, how you make is important! This includes the materials that you will use in the product and how you made the product. You will hear terms like Standard Operating Procedure and how did you make this. Sorry, but they are not asking because they are impressed with your work. For one they don't want to bring in COVID-19 into their facility. Even foremost, they are making sure that the item you are making can be sanitized within their environment to be reused over and over. Don't take these detailed questions personally! Be ready to provide the information as requested. They'll probably ask you to provide all of this information on a sheet of paper that is within the bag of items you are offering.

For all of these concerns mentioned above it is highly recommended your Maker Effort have clear instructions for each task and have standard operating procedures for the safety of the makers involved in the different tasks. Somewhere in the process, typically at the end, there should be a sanitizing step since the parts might have had multiple handoffs.

# It Must Be Accepted And Design Should Not Vary

We have mentioned Product<sub>A</sub> with a Design<sub>x</sub> and Design<sub>y</sub> both in the paragraphs above and shown in the diagram. Clear directions and focus on one Design<sub>x</sub> for Product<sub>A</sub> will be key to a region's Maker Efforts. This is for both the team of makers and the medical organization that is accepting the product from the Maker Effort.

The medical industry does not adapt well to change, especially if there is a pandemic and a new virus to understand! So as a Maker Effort we MUST have one message and one design that we can offer. This doesn't mean we can't prototype early on to offer options that can be accepted by the medical organization. But once a medical organization has accepted a Design (with its materials) a Maker Effort should lock it down and don't vary the end-product. Customizations are not what they want, especially if they have to sanitize the PPE items they do have during the shortage. *Differences in materials* can wreak havoc since they need to know the methods and solutions to sanitize what we are giving them.

## Change in Target Audience or Product

The first target audience that should be the focus in this COVID-19 pandemic should be the healthcare frontline providers. They are the ones that have the highest exposure to COVID-19. If we are not able to keep them healthy, we are reducing our forces to battle this pandemic. But as *Manufacturing Efforts* start to come online for some of the critical need shortages, the target audience or product for Maker Efforts can be transitioned.

Or the Maker Effort may change to a different PPE Product that is still having a shortage like gowns, booties or even assembling ventilators that have been tested and accepted by your local medical community.

## Changing The Lanes

As mentioned above the coordination of the supply chain processes as communicated to the community will be key as the *lanes change*. I should mention that there will probably be many different Maker Efforts that will spring up. As a region we want our community to come together to get involved and make an impact. Communication is key in how together you will make a difference. Showing progress with metrics, communicating when products *change lanes* and when *Maker Efforts* transition to the next product gap that will make a difference. Consistent requests to the community for PPE Items, Volunteers and even supplies should be a concerted effort as the plan progresses...and communication back to those that have submitted a response will be key to keeping them engaged as a community.

## A Tactic To Handle the Supply Shortages

We are all fighting for all the supplies to make these PPE items. I don't have the answer but I can offer a tactic for us all to use...and the higher up in our community from city, county, region, state to nationwide, the better! If we can get the demand for supplies focused and organized, the supplies can not get to where it needs to go for the higher PPE needs And this doesn't mean that we ignore those that aren't a hotspot, but to manage the percentage each area receives based on their level of intensity.

As a first step contact all the Fabric Mask Making Efforts in your city. Get organized, collaborate and share resources. This could also be done around the Face Shield Maker Efforts. I would strongly advise leveraging your local makerspaces at this time. Most are nonprofits already. They already have a location to receive deliveries. Many even have card access to those shipping carriers so it isn't required for an individual to receive the items in-person during these times of social distancing. Just get active and help them organize the

supplies...I'm sure many of their makerspace members are making PPE items as fast as they can and are looking for this type of help.

As a side note, due to the lockdowns many of these makerspaces have closed, awaiting to be allowed to reopen their doors to their community. I would advise contacting them via email, phone or leave a message taped to their door. They would love your help right now.

## Get Organized

If you haven't already, get organized! I have seen many teams already running with the Maker Efforts and delivering successfully within their area. The roles in each team varies as individual skill sets and the quick pace that was needed for teams in this call to action to make. I've listed here some of the roles that have been put in place within Maker Efforts:

### Team Leads

- Team's Contact Point for coordination with Requesters
- Product Lead (will need to be in initial discussions)
- Donations & Reimbursements
- Receiving Supplies (*may need to sanitize before receiving*)
- Management of Supplies (*what/when are we receiving and who needs supplies*)
- Management of Equipment (*who has what and what equipment is not working*)
- Tasks Leads for each Making Process (*consistency and teaching techniques*)
- Deliveries to team members (*with social distancing we need to get supplies and component parts to a maker's location for their task at hand*)
- FAQs / Onboarding

Could be included, but might be in an overall coordinated effort

- Finding sources for supplies and helping manage within the region or state
- Material Donation Drop-offs
- Delivery of PPE to recipients
- Tech Support for forms, especially for requests for PPEs
- Finding Where the Items are Needed
- Fundraising

# Get a Jumpstart by Leveraging Community

If you haven't identified **WHAT** you intend to make, how you will identify **WHERE** to provide your made PPE items or **HOW** you intend to deliver them, get a jumpstart by visiting <https://GetUsPPE.org>. The Colorado Maker Hub is working closely with their efforts and at this time it is the effort with the most person-power trying to provide a platform for all of us makers nationwide to make a difference. Join the community by:

- [find WHAT PPE Items](#) are needed in your area using their Give Map,
- Read information on how things happen should happen when you make ([Step 1](#))
- Register as a GetUsPPE maker ([Step 2](#))
- MAKE utilizing the posted medically-accepted designs (*especially the specific materials and methods to use*) of WHAT to make ([Step 3](#)), and
- Follow the guidance provided on the Pinned Location that needs the PPE item you made.

Together WE CAN MAKE A DIFFERENCE!