



An Initial Analysis of the Impact of the COVID-19 Pandemic on California Farmworkers and Their Families

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UPDATE NOTE (8 April 2020): This paper's estimate of the cumulative impact of the COVID-19 pandemic on California farmworkers and their families was based on a March 16 paper, by modelers at the Imperial College of London, putting forth a very pessimistic scenario about consequences of the spread of the novel Corona virus, if aggressive actions were not taken.

California has taken aggressive action. At this point (April 8) these proactive efforts seem to be paying off. Hospitalizations and deaths are likely to be much lower than projected in the paper. This is great. However, it is believed there will still be subsequent resurgences of COVID-19 even after the current crisis is over. What toll those will take is unknown—but the time bought by successfully “flattening the curve” should be used to prepare to find increasingly effective ways to protect farmworkers and their families from the health and economic impact of the pandemic.

Please read this paper with this note in mind. Neither the content of the paper nor the calculations have been re-done to reflect what may be a less dire outcome. However, even with, perhaps, a less dire outcome, the issues and complexities entailed in addressing them, we feel still stand.

As Governor Newsom’s emergency proclamation has wisely recognized, agriculture is an essential business for California—generating more than \$50 billion in receipts annually. The health and well-being of California’s farm labor force is critical to California’s overall labor-intensive agricultural production. However, the stakes are also high for local communities and counties where agricultural production dominates the local economy. It is also crucial in order to assure the fiscal health of municipal and county government in these regions of the state.

The question is, of course, what to do to keep everyone as safe as possible.

State, federal, and local strategies to suppress the COVID-19 pandemic need to be tailored to the distinctive nature of farmworker community life. Farmworkers will be continuing to work even as the pandemic progresses and be less well-protected by current “shelter in place” guidelines than the general public. Effective strategy requires concurrent and coordinated efforts to decrease transmission in the agricultural workplace (since production is ongoing and the peak season for labor demand in many crops is approaching) and in farmworker homes



(since one out of three farmworkers live in crowded housing where effective self-isolation is difficult). Targeted control measures, beyond basic “shelter in place” are called for.

Key considerations in developing the most effective possible strategy for combatting COVID-19 among farmworkers are:

- Assuring that low-income farmworker families without health insurance can get free medical care if their illness becomes serious.
- Assuring that farmworkers can secure easily-understandable and practical advice on early recognition of COVID-19 symptoms for themselves, their family, housemates, and co-workers; and get reliable updates on what's happening with pandemic in California and in their communities (e.g. clusters, updated guidelines for social distancing).
- Developing and disseminating practical guidance about decreasing SAR-CoV-2 transmission in the workplace (especially in *raitero* vans taking workers to the fields and in field-packing and processing plant operations where workers are close to each other).
- Informing farmworkers and their family members about effective self-isolation in the household to decrease the likelihood of SAR-CoV-2 transmission within their family and offering free isolation accommodations and support for those living in crowded housing where effective self-isolation is not practically viable.
- And providing farmworkers with the resources they need to protect themselves – e.g. masks when they are feeling sick; access to washing machines, if they don't have that access; access to hand sanitizer in the workplace, etc.

This paper addresses two basic COVID-19 planning issues: numbers of farmworkers and family members who might require medical care due to serious COVID-19 illness and numbers who might die.

There are many uncertainties in such estimation—but it makes sense to generate the best possible initial estimate and revise it as analysis of COVID-19 epidemiological data proceeds. This paper provides an up-to-date estimate of the impacts drawing on reports published in February-March, 2020.

The following discussion summarizes considerations to keep in mind in reviewing the attached spreadsheet that provides estimates for:

- The numbers of California farmworkers expected to have severe COVID-19 related illness and numbers of death for all age groups



- The numbers of California farmworker dependents with severe COVID-19 related illness and numbers of death for all age groups

We will subsequently expand the analysis to examining the available evidence related to other crucial planning issues:

- how requirements for serious care for farmworkers relates to local health system capacity in the major agricultural production counties,
- how to minimize workplace risk of COVID-19 transmission (since agriculture is an essential California industry and crucial to the entire food supply system), and
- how to minimize in-home risk of COVID-19 transmission (since so many farmworker families live in crowded quarters).

Data Sources and Considerations To Keep In Mind In Reviewing the Estimates Presented Here

▪ *Numbers and Age Distribution of California Farmworkers and Family Members*

The estimate of numbers of California farmworkers is from Ed Kissam, based on review of estimates by Phillip Martin, the U.S. Department of Labor, EDD, and earlier analysis conducted by Ed Kissam and Shannon Williams. The estimate of numbers of farmworker dependents who are not, themselves, farmworkers is from Shannon Williams' analysis of NAWS data to determine the number of non-FW dependents of FW's. This estimate is lower than the one by Phillip Martin and EDD data analysts but higher than the one developed by the USDOL.

The estimate of the age distribution of California farmworkers is from the ETA/DOL NAWS web page Table 13. This estimate is based on NAWS data for California farmworkers for FFY15-16. It is likely that the current farmworker population is older than the population 5 years ago. It is also possible that numbers of farmworkers have increased (Phillip Martin estimated 848,000 in 2017). At the same time, agricultural producers consistently report shortages of workers. The estimate will be updated with FFY17-18 NAWS data when it becomes publicly available.

The estimate of the age distribution of California farmworker dependents is based on a 2017 report prepared by the California Senate Office of Research for the Latino Caucus of the California Legislature analyzing the demographics of the entire California Latino population.

The estimates presented here assume farmworkers and their families have access to the products, technology, and information that are available to others in the communities in which they live so they can comply with, at least, the CDC COVID-19 guidelines. These products and



technology include – at a very, very basic level – adequate soap and water and sanitizer and washing machines and masks and gloves (where useful), Kleenex and garbage bags; and, of course, food and shelter. Without these being available both at the workplace and home, it is likely that the transmission will be higher. Access to consultation, advice and problem-solving assistance (e.g. practical guidance about how to provide support for a sick person in crowded housing), will be crucial.

- *Cumulative Numbers of Farmworker and Family Members with COVID-19 Infection*

The estimate of COVID-19 impact is for cumulative impact—assuming that herd immunity is reached at a point when 40% of the entire population has been infected. Experts have been quoted projecting that herd immunity will not be reached until 40%-70% of the entire population is infected. The estimate provided in the spreadsheet can easily be extrapolated for scenarios assuming higher or lower proportions of total COVID-19 infections before spread is controlled—since there are, for example, uncertainties about possible resurgence.

An important consideration is that there are inherent difficulties in determining the relationship between the COVID-19 “infection rate” and the “case rate”. There is consensus that using “confirmed cases” as the denominator for analyses of proportions of infected individuals who progress to serious illness and for mortality overstates case-fatality ratios because cases are, inevitably, underestimated in COVID-19. This is because infection often results in no symptoms or mild symptoms. Several experts now suggest that the actual infection rate is double the confirmed case rate.¹ If this is the case, herd immunity might be reached when there is only a 20% prevalence of confirmed cases (since another 20% might be unobserved). This analytic bias will become more severe if, due to shortage of tests, jurisdictions (such as many in California) restrict COVID-19 testing to those with moderate and severe cases of presumed COVID-19 infection.

Here it is assumed that California farmworkers and their families will be infected at the same rate as the overall California population. It is uncertain whether they might ultimately have higher rates of COVID-19 infection due to the prevalence of crowded housing and the fact that agriculture is an essential California industry. Many farmworkers will continue to work and be

¹ See Riou Julien, Counotte M, Hauser A, Althaus, C, “Adjusted age-specific case fatality ratio during the COVID-19 epidemic in Hubei, China, January and February 2020” medRxiv preprint doi: <https://doi.org/10.1101/2020.03.04.20031104>. See also, Oke, J. and Heneghan, C, “Global Covid 19 Case-Fatality Rates” (updated 22nd March), Center for Evidence-Based Medicine <https://www.cebm.net/global-covid-19-case-fatality-rates/>



at risk of contracting SARS-CoV-2 infections in the workplace, as well as at home from family members, or from casual contacts.

- *Estimate of the Case-Fatality Ratio for COVID-19-Infected Individuals*

The estimate of case-fatality ratio by age cohort is drawn primarily from the Centers for Disease Control Morbidity and Mortality weekly report (MMWR) for March 18, 2020 for the U.S. COVID-19 infected population. For the population 65+, the case-fatality ratio from the WHO Joint Mission Report (based on case outcomes in China) is used—because the CDC data appear to include a significant proportion of very old U.S. patients and, therefore, are unlikely to conform to the demographic profile of the farmworker population. The farmworker households are likely to have fewer of the very vulnerable sub-population in the 70+ age range.

The MMWR provides estimates as ranges. The spreadsheet presented here uses the mid-point of the reported range for its estimates.

There are major uncertainties regarding the case-fatality ratio. As noted above, the most critical of these is that many COVID-19-infected individuals may not be tabulated as “confirmed cases”—thereby inflating the apparent proportion of cases which require medical treatment as well as inflating the proportion of fatalities.

Also, it has already been observed—understandably—that case/fatality ratio depends on the demographics of an affected population, the prevalence of underlying health conditions associated with worse outcomes, and availability/quality of appropriate treatment. Italy’s very high mortality rate, for example, is thought to stem both from the population being older than in other countries and overloading hospitals—the consequences of not being successful in “flattening the curve”. COVID-19 outcomes to date appear to be worse for males than for females—a consideration with respect to the California farm labor force since 70% of California farmworkers are men.

- *Estimate of the Proportion of SARS-CoV-2-Infected Individuals Requiring Medical Attention*

The estimate of the proportion of COVID-19 cases requiring medical attention is drawn from the CDC MMWR weekly bulletin for March 18, 2020 for the U.S. COVID-19 infected population. The term “medical attention” is used in lieu of “hospitalization” because it is likely that if infection levels rise drastically, adaptations will be made to provide relatively intensive medical care outside of a hospital setting. These are the cases that generate substantial costs.

The CDC estimates that, overall, about 81% of COVID-19 cases are mild. No medical attention (beyond diagnosis and advice) is required for the mild cases. The remaining 19% of the cases



require medical treatment and should be understood to be those classified as “serious” while a sub-set of the serious cases receiving medical care are classified as “critical”.

The higher-than-average incidence of diabetes in the U.S. Latino population, the prevalence of obesity observed in the California Agricultural Worker Health Survey, and low numbers of male farmworkers with access to routine health care, all factors associated with serious COVID-19 related illness indicate that outcomes in the farmworker population (even if access to adequate health care if feasible) might be higher than the general epidemiological patterns suggest. The average California farmworkers is now 42 years old.

The proportion of “critical” cases (reported in the MMWR as “Admitted to ICU”) is not estimated in the current spreadsheet—because it is still unclear exactly what factors lead to a mild or “moderate” case becoming critical. Moreover, if hospital capacity is exceeded, fewer very serious cases will actually secure access to intensive care. This has been the case in Italy.

Estimates of Need for Medical Care and Mortality - The Numbers

As can be seen in the attached **Table 1**, COVID-19 will have a very large impact on California farmworkers, their family members, and the agricultural industry. Somewhere around 100,000 California farmworkers and family members may require medical care for COVID-19 illness and around 3,000 may die.

There is, at this point in the pandemic, no way to project the geographic distribution of COVID-19 cases in California or prevalence at any given time. Consequently, the impact that numbers of farmworkers infected and requiring self-isolation (which would require leaving work for about 1 month at best) will have during peak production season on labor supply in various crops is unclear. There is, nonetheless, little doubt that as COVID-19 spreads, even mild cases where a worker in a farmworker crew or on a processing line becomes ill and is required to self-isolate for 2 or more weeks, or where other works in the crew are required to self-quarantine will have an impact on agricultural operations.

As the pandemic progresses and epidemiological reporting generates information on infections in each California county, it will be possible to make some projections—since there are, inevitably, “clusters” in any epidemic as infection spreads through a local social/economic network.



What is fairly certain is that the progression of the COVID-19 pandemic in California, particularly in the context of the strategy for “flattening the curve”, is likely to affect the entire 2019-2020 agricultural production year.²

² Ferguson et al, “Impact of non-pharmaceutical interventions (NPIs) to reduce COVID-19 mortality and healthcare demand”, Imperial College COVID-19 Response Team, March 16, 2020.

<https://www.imperial.ac.uk/media/imperial-college/medicine/sph/ide/gida-fellowships/Imperial-College-COVID19-NPI-modelling-16-03-2020.pdf>



Table 1: Projected Cumulative Impacts of COVID-19 on California Farmworkers and Their Families

CA farmworker and family member population by age cohort*	CA FW's by age cohort	Fatality/case ratio	FW family dependents by age cohort	Cumulative FW deaths at 40% level herd immunity	Cumulative FW dependent deaths at 40% level herd immunity	Proportion of cases requiring medical intervention-	# of FW cases requiring medical intervention	# of FW dependent cases requiring medical intervention
Estimated population	700,000		800,000					
Age: 0-13	0%	0.00%	25%	-	-	2%	-	1,613
Age: 14-17	2%	0.00%	7%	-	-	2%	-	461
Age: 18-19	3%	0.00%	4%	-	-	2%	-	230
Age: 20-24	14%	0.10%	8%	39	26	14%	5,488	3,584
Age: 25-34	25%	0.15%	16%	105	77	17%	11,900	8,704
Age: 35-44	22%	0.20%	13%	123	83	21%	12,936	8,736
Age: 45-54	22%	0.65%	10%	400	208	23%	14,168	7,360
Age: 55-64	9%	2.00%	10%	504	640	25%	6,376	8,096
Age: 65 or older	3%	3.60%	7%	302	806	40%	3,360	8,960
	100%	0.74%	100%	1,474	1,840		54,228	47,744

* # of FW dependents based on FW/dependent ratio of 1.2 (Williams and Kissam, 2016) Age Cohorts (based on Latino Caucus 2017-Chart 5 Population)



SELECTED REFERENCES

Centers for Disease Control, "Severe Outcomes Among Patients with Coronavirus Disease 2019 (COVID-19) — United States, February 12–March 16, 2020". MMWR Morb Mortal Wkly Rep. ePub: 18 March 2020. DOI: <http://dx.doi.org/10.15585/mmwr.mm6912e2external icon>.

Ferguson et al, "Impact of non-pharmaceutical interventions (NPIs) to reduce COVID- 19 mortality and healthcare demand", Imperial College COVID-19 Response Team, March 16, 2020. <https://www.imperial.ac.uk/media/imperial-college/medicine/sph/ide/gida-fellowships/Imperial-College-COVID19-NPI-modelling-16-03-2020.pdf>

Frieden TR, Lee CT. Identifying and interrupting superspreading events—implications for control of severe acute respiratory syndrome coronavirus 2. Emerg Infect Dis. 2020 Jun [early release March 18, 2020]. <https://doi.org/10.3201/eid2606.200495>

Gabbard, S., et. al, "Recent Changes in U.S. Agriculture and Crop Worker Characteristics", Presentation to 2020 Western Forum for Migrant and Community Health, February 20, 2020.

Kissam, Edward and Williams, S., "Estimate of Agricultural Workers and their Dependents in the Pacific Seaboard Region", Report prepared for California Rural Legal Assistance, August, 2013.

Philip Martin, Brandon Hooker and Marc Stockton, "Ratio of farmworkers to farm jobs in California increased to 2.3 in 2016", [California Agriculture](#), Vol. 73, #2, May, 2019

Science Media Center, "Expert Comments About Herd Immunity", March 13, 2020.

WHO, "Report of the WHO-China Joint Mission on Coronavirus Disease 2019 (COVID-19)", February 16-24, 2020

WHO, "Clinical management of severe acute respiratory infection (SARI) when COVID-19 disease is suspected: Interim guidance V 1.2.", March 13, 2020.

U.S. Department of Labor, National Agricultural Worker Survey, <https://www.dolleta.gov/naws/>

Villarejo, D. et al., "The Health of California's Immigrant Farmworkers", [American Journal of Industrial Medicine](#) 53:387–397 (2010)