

COVID-19 Vaccine Allocation: Social Equity vs. Vaccine Fairness

Michigan's plan for the distribution of COVID-19 vaccine was published on January 31, 2021.¹ This MDHHS (Michigan Department of Health and Human Services) publication describes how Lansing policymakers and bureaucrats plan to get vaccine into the arms of Michigan citizens. Among other things, this publication lays out the current Administration's priorities for distributing vaccine doses to Michigan's 83 counties.

A review of the MDHHS plan revealed that it denies Livingston County seniors their fair share of vaccine. Rather than allocating vaccine based upon medical factors, Lansing "experts" have devised a scheme whereby social factors are used to decide which counties receive more vaccine and which receive less.

For months the "experts" have told Michigan citizens that COVID-19 is especially deadly for senior citizens, especially those with underlying conditions. Hence, one would expect that any reasonable vaccine distribution plan prioritize these medically vulnerable individuals with both vaccine and resources. Unfortunately Michigan's plan glosses over the needs of our seniors while prioritizing the needs of special groups favored by the Administration in Lansing.

Michigan's plan specifically identifies the importance of vaccinating citizens who are incarcerated², citizens who are IV drug users³, and non-citizens.⁴ It is unconscionable that people residing illegally in Michigan receive priority attention from Lansing. Michigan's plan also enables MDHHS to poach vaccines from "out-of-favor" population groups and redistribute them to "favored" or special population groups.⁵

If this isn't bad enough, MDHHS has chosen to use an algorithm based upon social factors, not medical factors, as the basis on which to allocate vaccine to Michigan counties. Michigan "experts" selected the Social Vulnerability Index⁶ (SVI) as a means to prioritize vaccine shipments to counties.

The SVI algorithm calculates a value, from 0 to 1, based upon 15 Social Factors. A lower value means a county receives less vaccine, while a higher values means a county receives more vaccine. Using this contrived formula, Livingston County ends up having the lowest priority of all 83 Michigan counties. It is worth noting that had MDHHS elected to use a county's population of senior citizens, Livingston County would have increased its ranking from 83rd to 11th.

SVI algorithm

The SVI algorithm computes its index value based upon the 15 Social Factors and 4 Themes shown in Figure 1. An in-depth discussion of the computations associated with this algorithm is available in Exhibits 5 and 6.

In addition to identifying the Social Factors and Themes, the right-hand column of Figure 1 shows what circumstances are favorable for a county increasing its allotment of vaccine.

¹ See Exhibit 1 for full plan

² See Exhibit 2, Figure 3

³ See Exhibit 2, Figure 4

⁴ See Exhibit 2, Figure 2

⁵ See Exhibit 2, Figure 1

⁶ See Exhibits 3, 4, 5

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A closer examination of Figure 1 provides the reader with greater insight as to how the “experts” view the importance of each of the 15 Social Factors. When it comes to allocating vaccine, some Social Factors are more heavily weighted, and thus more important in determining which counties receive more vaccine and which receive less.

Here is a summary of the more egregious examples of inappropriate weighting of Social Factors. These are egregious in that almost all factors are unrelated to health status.

Theme Ranking Variable	Social Factor	Social Factor Weight	Favorable for higher county vaccine priority
Socioeconomic Status	Below Poverty	6.25%	more poverty
	Unemployed	6.25%	fewer taxpayers
	Income	6.25%	fewer taxes paid
	No High School Diploma	6.25%	less educated
Household Composition and Disability	Aged 65 or older	6.25%	more elderly
	Aged 17 or younger	6.25%	more youth
	Older than 5 with a disability	6.25%	more disabilities
	Single-parent households	6.25%	fewer traditional families
Minority Status and Language	Minority	12.50%	fewer white persons
	Speaks English "Less than Well"	12.50%	more non-citizens
Housing Type and Transportation	Multi-Unit Structures	5.00%	fewer single-family homes
	Mobile Homes	5.00%	more mobile homes
	Crowding	5.00%	more shared rooms in homes
	No Vehicle	5.00%	fewer automobiles
	Group Quarters	5.00%	more persons in group homes

Figure 1: Social Vulnerability Index, 4 Themes, 15 Input Variables

- Arguably the most important factor associated with COVID-19 mortality is age. The elderly are most vulnerable. Thus, one might think that the factor “Aged 65 or older” would be the most heavily weighted factor in any algorithm. Regrettably, the Lansing “experts” do not agree. These “experts” have concluded that “Aged 65 or older” should account for 6.25% of the total weighting. This means that all other Social Factors outweigh the elderly by 16 to 1. This lopsided ratio is not fair to our senior citizens.
- If you are a minority and you do not speak English you have four times the vaccine priority as someone who is “Aged 65 or older.” (25% weighting vs. 6.25% weighting).
- Whether you own an automobile (5% weight) is nearly as important as being elderly (6.25%).
- While it is informative to compare the weights of Social Factors contained in the SVI algorithm, it is equally important to consider what factors (Social or otherwise) have been left out of the algorithm. Factors not included in the algorithm have a weight of 0%. One important factor that has been omitted is whether a citizen has underlying health issues. “We do know that older adults and people who have severe underlying medical conditions like obesity, diabetes, or heart or lung disease are at higher risk for developing more serious

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complications when they have COVID-19.”⁷ That underlying health conditions are excluded from the algorithm suggests the SVI may be misapplied for vaccine distribution.

Comparing Vaccine Fairness to Social Equity

Michigan’s vaccine allocation plan focuses on equity rather than fairness. In fact the plan mentions the words equity and equitable seven times, while the words fair and fairness are not mentioned at all.

That Michigan utilizes an SVI to determine vaccine allocation supports its goal of equity over fairness. Using SVI Social Factors instead of legitimate Medical Factors illustrates Lansing’s priority is not medical fairness. Rather than focusing on our vulnerable seniors, Lansing bureaucrats have chosen to dilute seniors’ needs by considering extraneous variables as they dictate who receives care and who does not.⁸

What is the difference between fairness and equity? This difference can be quantified using statistics supplied by the State of Michigan on its COVID-19 Vaccine Dashboard.⁹ This dashboard contains a link to a spreadsheet named COVID-19 Vaccines Shipped To Providers. Data from this spreadsheet was compiled and analyzed in order to answer these questions:

- Using Michigan’s current social equity plan, how many doses have been shipped to Livingston County during the period ending 1/31/21?¹⁰
- Using a fair vaccine plan, how many doses would have been shipped to Livingston County during the period ending 1/31/21?¹¹

⁷ CDC Feb 2, 2021 https://www.cdc.gov/coronavirus/2019-ncov/faq.html?CDC_AA_refVal=https%3A%2F%2Fwww.cdc.gov%2Fcoronavirus%2F2019-ncov%2Fneed-extra-precautions%2Fpeople-with-seasonal-allergies-faqs.html#People-with-Seasonal-Allergies

⁸ Some have said we are seeing a glimpse of what would happen if government agencies controlled your healthcare. Social justice and equity would mandate that your healthcare be rationed based upon Social Factors, not your medical need.

⁹ Link to dashboard: https://www.michigan.gov/coronavirus/0,9753,7-406-98178_103214-547150--,00.html



COVID_Vaccines_Shipped_LTC_712482_7

¹⁰ The worksheet titled Vaccines Shipped-raw data contains the data as downloaded from the Vaccine Dashboard. The remaining spreadsheets were added to organize and prepare the data for analysis.

¹¹ This fair vaccine plan would allocate vaccine doses in proportion to the number of senior citizens, aged 65 and older, residing in Livingston County.

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Plan	End Date	Jurisdiction	Vaccines Doses Shipped	Elderly Population Age 65+	Vaccines Doses per Elderly
Equity	1/31/2021	All Counties	1,301,825	1,620,232	0.8035
Equity	1/31/2021	Livingston	7,375	29,976	0.2460
Fair	1/31/2021	Livingston	24,085	29,976	0.8035
Fair Plan - Doses Gained for Livingston County			16,710		

Figure 2: Current Equity Plan vs. Proposed Fair Plan

The Fair Plan proposes to allocate vaccine doses such that each county would receive a quantity that is proportional to the number of senior citizens residing in each county. Figure 2 shows that Livingston County would go from 7,375 doses under the current Equity Plan to 24,085 doses under the proposed Fair Plan. This is an increase 16,710 doses or over 300%.

It is time for the Lansing “experts” to focus on Senior Fairness rather than Social Equity. After all, protecting our most COVID – vulnerable citizens ought to be the goal of any vaccine allocation plan.

Discussion

The Kaiser Family Foundation¹² has reported it is up to the individual states to prioritize the distribution of COVID-19 vaccine to its citizens. Some states, including Michigan, have incorporated Social Equity into their distribution plans.

The current Administration in Lansing has concluded that Social Equity is needed to protect its Socially Vulnerable citizens. This begs the question, with its concern about Socially Vulnerable citizens, why didn’t the Administration use the SVI to protect citizens throughout the COVID-19 pandemic? If Social Vulnerability is such a concern shouldn’t the Administration have imposed stricter lockdowns in areas with high Socially Vulnerable populations? Or conversely, shouldn’t the Administration have relaxed lockdowns in areas with fewer Socially Vulnerable populations?

Will the application of SVI in vaccine distribution produce optimum results with respect to protecting vulnerable senior populations? The analysis provided in this report suggests not. Further, recent history suggests that proven methods such as Fairness, not Social Equity, are well suited for addressing a pandemic. About a decade ago, during the HINI pandemic, experts did not rely on Social Factors and Social Equity to address the needs of vulnerable persons. Instead of Social Equity, experts used traditional fairness and common sense to guide their decisions.

¹² See Exhibit 8

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Exhibits

1. State of Michigan Vaccine Strategy Document

This document describes the vaccine allocation plan adopted by the Michigan Department of Health and Human Services (MDHHS)

Document title: Michigan Interim COVID-19 Vaccination Strategy

Document date: January 29, 2021

Saved document title: 1.29.21_Michigan_Vaccine_Strategy_FINAL_714811_7.pdf

Click on the icon below to view the entire document.



1.29.21_Michigan_Vaccine_Strategy_FINAL_714811_7.pdf

2. Excerpts from Michigan Vaccine Strategy Document

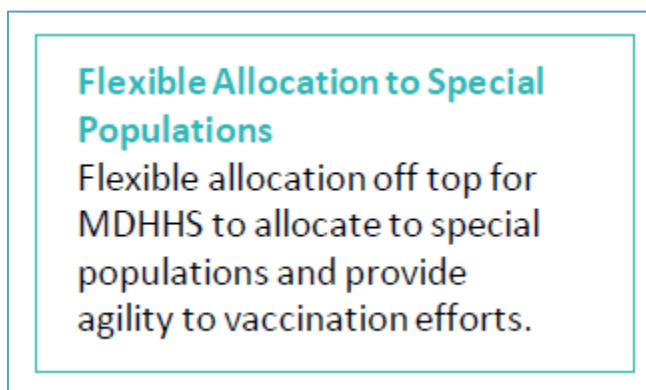


Figure 3: MDHHS can arbitrarily redistribute vaccines, taking from one group of citizens to give to another, page 6

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+ Ensure no out of pocket costs or citizenship requirements for vaccination.

Figure 4: Free vaccines to those who illegally reside in Michigan is a MDHHS priority, page 11

+ Target transient/hard to reach populations such as incarcerated, homeless, disabled, or those living with substance use disorders.

Figure 5: Allocating additional resources to vaccinate those in jail is a MDHHS priority, page 12

+ Leverage existing nontraditional spaces like casinos, nail salons, barber shop, and syringe service programs.

Figure 6: Establishing extra vaccination sites specifically for users of controlled substances is a MDHHS priority, page 13¹³

3. CDC Social Vulnerability Index – (short definition)

What is Social Vulnerability?

Every community must prepare for and respond to hazardous events, whether a natural disaster like a tornado or a disease outbreak, or an anthropogenic event such as a harmful chemical spill. The degree to which a community exhibits certain social conditions, including high poverty, low percentage of vehicle access, or crowded households, may affect that community's ability to prevent human suffering and financial loss in the event of disaster. These factors describe a community's social vulnerability.

<https://svi.cdc.gov/Documents/FactSheet/SVIFactSheet.pdf>

¹³ A Syringe Service Program (SSP) provides services to reduce the harms associated with drug use, and prevent HIV and viral hepatitis infections. Reducing harms associated with substance use disorder through syringe service programs and syringe access. <https://www.cdc.gov/ssp/syringe-services-programs-factsheet.html>

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4. What is CDC Social Vulnerability Index?

ATSDR's Geospatial Research, Analysis & Services Program (GRASP) created a Centers for Disease Control and Prevention Social Vulnerability Index (CDC SVI or simply SVI, hereafter) to help public health officials and emergency response planners identify and map the communities that will most likely need support before, during, and after a hazardous event. SVI indicates the relative vulnerability of every U.S. Census tract. Census tracts are subdivisions of counties for which the Census collects statistical data. SVI ranks the tracts on 15 social factors, including unemployment, minority status, and disability, and further groups them into four related themes. Thus, each tract receives a ranking for each Census variable and for each of the four themes, as well as an overall ranking. In addition to tract-level rankings, SVI 2010, 2014, 2016, and 2018 also have corresponding rankings at the county level. Notes below that describe "tract" methods also refer to county methods.^{14, 15}

5. CDC SVI 2018 Documentation - 1/31/2020

This document presents a summary of the SVI (Social Vulnerability Index) as published in 2018. This document provides the reader with a working understanding of SVI along with the 15 specific input variables that are used to calculate SVI for a given jurisdiction. Here is a link to the entire document. https://svi.cdc.gov/Documents/Data/2018_SVI_Data/SVI2018Documentation.pdf

¹⁴ "Created in 1980, ATSDR is Agency for Toxic Substances and Disease Registry. The Agency for Toxic Substances and Disease Registry (ATSDR), based in Atlanta, Georgia, is a federal public health agency of the U.S. Department of Health and Human Services. ATSDR protects communities from harmful health effects related to exposure to natural and man-made hazardous substances. We do this by responding to environmental health emergencies; investigating emerging environmental health threats; conducting research on the health impacts of hazardous waste sites; and building capabilities of and providing actionable guidance to state and local health partners." <https://www.atsdr.cdc.gov/>



SVI by Michigan
County.xlsx

¹⁵ Click on this icon to view the SVI data associated with counties in Michigan. The sheet named raw data with headings contains data downloaded from the Vaccine Dashboard, along with column headings added in row 2. The sheet named analysis is a duplicate of raw data with headings with some extra columns added to complete the analysis.

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6. Excerpts from the CDC SVI 2018 Documentation published on 1/30/2020

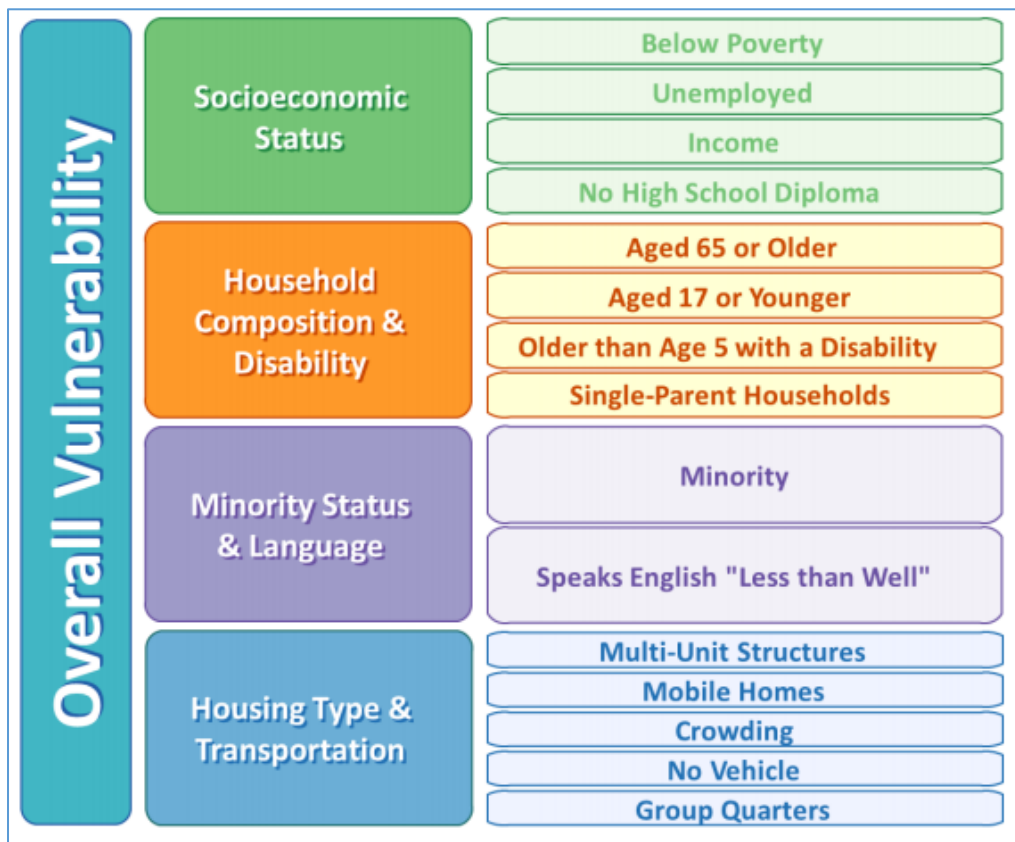


Figure 7: The 15 Variables Used to Calculate SVI¹⁶

Clarifying notes:

- There are four Summary Theme Ranking Variables: Socioeconomic status, Household Composition and Disability, Minority Status and Language, and Housing Type and Transportation. Each of these Theme Ranking Variables is weighted 25% in the calculation of the overall SVI.
- There are a total of 15 social factors that are used to calculate the SVI. Each of these 15 social factors are assigned to one of the Theme Ranking Variables as shown in Figure 5.
 - The four social factors assigned to Socioeconomic status are assigned a weight of 6.25% ($25\% / 4 \text{ Social Factors} = 6.25\% \text{ weight per Social Factor.}$)

¹⁶ The data associated with these variables comes from the American Community Survey (ACS), 2014-2018 (5-year). <https://www.census.gov/programs-surveys/acs/about.html>

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- ii. *Similarly, the four social factors assigned to Household Composition and Disability are also assigned a weight of 6.25%. Therefore, it follows that the Social Factor “Aged 65 or Older” has a weight of 6.25%*
- iii. *The two social factors assigned to Minority Status and Language are assigned a weight of 12.50% (25% / 2 Social Factors = 12.50% weight per Social Factor.) Therefore, it follows that the Social Factor “Minority” and the Social Factor “Speaks English less well” each carry a weighting that is twice as large as “Aged 65 or Older.” Combined, these two Social Factors carry a weighting that is four times as large as “Aged 65 or Older.”*
- iv. *The five Social Factors assigned to Housing Type and Transportation are assigned a weight of 5% (25% / 5 Social Factors = 5% weight per Social Factor).*
 - 1. *It is worth noting that each of these five Social Factors carry nearly as much weight as “Aged 65 or Older.” (5% vs. 6.25%)*
 - 2. *The illogicality of these weights can best be illustrated when one observes that the Social Factor “No Vehicle” carries nearly as much weight as “Aged 65 or Older.”*
 - a. *When calculating the SVI, a higher vaccination priority is gained from being “Aged 65 or Older.” This higher priority is almost entirely cancelled out if the elderly person happens to own a vehicle. (It should be apparent that, when using the SVI, a Livingston County senior citizen who travels by car would have lower vaccine priority than a senior citizen who lives in a large city and travels by public transportation.)*

7. Social Vulnerability Index (SVI)

A spreadsheet containing data used to calculate the SVI can be downloaded using this link.¹⁷
https://www.atsdr.cdc.gov/placeandhealth/svi/data_documentation_download.html

¹⁷ Page 4 of the [CDC SVI 2018 Documentation published on 1/30/2020](#) discusses the high margin of error (MOE) for some of the 15 social factor variables. This document stated, “Because of relatively small sample sizes, some of the MOEs are high. It’s important to identify the amount of error acceptable in any analysis.”

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8. National Recommendations and State Distribution Plans (Kaiser Family Foundation, KFF)

This excerpt from KFF discusses the use of racial equity in the distribution of COVID-19 vaccine. KFF indicates that the US Department of Health and Human Services left it up to individual states as to how to distribute the vaccine. A bit more than half of states have mentioned racial equity in their distribution plans.

National recommendations emphasize the importance of equitable allocation of a COVID-19 vaccine for mitigating health disparities and prioritize some groups for initial access to a vaccine. The National Academies of Medicine (NAM) issued a framework for equitable allocation of a coronavirus vaccine, which identified mitigating health inequities as an underlying ethical principle. It recommended prioritizing allocation to areas identified as vulnerable through the CDC's Social Vulnerability Index (SVI), which determines an area's social vulnerability based on 15 social factors, including racial/ethnic distribution. The Centers for Disease Control and Prevention's (CDC) Advisory Committee on Immunization Practices (ACIP) will make final recommendations for vaccine allocation. Its ethical principles for developing recommendations include promoting justice and mitigating health inequities. ACIP has proposed prioritizing certain groups to receive initial access to the vaccine, including health care workers, long-term care facility residents, other essential workers, and older adults and adults with high-risk medical conditions. On December 1, 2020, ACIP recommended that vaccination, once authorized or approved by the FDA, initially be offered to health care workers and residents of long-term care facilities; additional recommendations are expected to follow. In contrast to the NAM and ACIP allocation approaches, HHS announced that initial allocations of the vaccine will be made to states based on their total number of adults and that states could make their own prioritization decisions within the amount allocated to them.

Prioritization of certain groups may help address disparities, but it will also be important to address equitable allocation within priority groups. Prioritization of certain groups may help to address racial disparities since people of color are disproportionately likely to be essential workers and to have high-risk underlying health conditions. However, ensuring equitable access within priority groups also will be important since racial disparities persist within them. For example, analysis shows that people of color account for the majority of COVID-19 cases and/or deaths known among health care workers, and nursing homes with relatively high shares of Black and Hispanic residents were more likely to report COVID-19 cases and deaths.

Recent KFF analysis of state vaccine distribution plans found that states vary in the extent to which they focus on racial equity. Just over half of the states with publicly available plans (25 of 47, or 53%) have at least one mention of incorporating racial equity into their considerations for targeting of priority populations. Some states expect to explicitly prioritize people of color, while others report using broader measures, such as the SVI (as recommended by the NAM) and/or a health equity team or framework to guide prioritization decisions. Only a subset (12 of 47, or 26%) of plans specifically mention or consider efforts to include providers that will be needed to reach diverse populations. About half of plans (23 of 47, or 49%) mention targeted efforts to reach diverse communities or underserved populations as part of their communications plans. Some states have made equity a primary guiding principle and central focus of their vaccine distribution plans. For

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example, states like Maine, California, Louisiana, Oregon, and Washington are embedding workgroups, task forces, or teams focused on health equity into the organizational structures designing and leading distribution plans. These states have also articulated plans to directly engage communities into their planning processes and to develop tailored communication materials that are linguistically and culturally appropriate for different populations. Prioritizing racial equity in vaccination efforts may help reduce disparities in vaccination uptake and the burden of the virus on people of color, but some have suggested that there are potential legal and ethical questions associated with any allocation plan that explicitly uses race as a criterion.

<https://www.kff.org/racial-equity-and-health-policy/issue-brief/addressing-racial-equity-vaccine-distribution/>