Study/Release	Test Type	Infected (%)	Undercount/ Ascertainment Bias	Regional IFR (%)	Population	Link
Belgium study	Serological	6.40			Hospital workers, students etc	https://jamanetwork.com/journals/jama/fullarticle/2767382?questAccessKey=2c09fc03-d85b-4333-82c7-effc17189baf&utm_source=silverchair&utm_medium=email&utm_campaign=article_alert-jama&utm_content=olf&utm_term=061520
Geneva study	Serological	7.90			Household survey	https://www.sciencedirect.com/science/article/pii/S0140673620313040?via%3Dihub
Israeli Study	Serological	2.50	10.00	0.14	Israeli Population	http://archive.is/5RIQw
UK Survey (ONS)	PCR	2.40			Random households with multiple tes	https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/conditionsanddiseases/bulletins/coronaviruscovid19infectionsurveypilot/28may2020
UK Survey (ONS)	Serological	6.78			Random households with multiple tes	https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/conditionsanddiseases/bulletins/coronaviruscovid19infectionsurveypilot/28may2020
IFR Extrapolation from NYC Data	Serological	25.00	25.00	0.86	NYC extrapolated to US	https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3590771
NYC Antibody Respons Study	Serological	50.00	21.00	0.39	NYC self-selected antibody testing	https://www.medrxiv.org/content/10.1101/2020.05.23.20111427v1.full.pdf
Swedish Continuous Study	Serological	5.00	42.00	0.23	Swedish Citizens	https://www.folkhalsomyndigheten.se/nyheter-och-press/nyhetsarkiv/2020/maj/forsta-resultaten-fran-pagaende-undersokning-av-antikroppar-for-covid-19-virus/
LA County	Serological	4.65	43.00	0.07	LA County	https://jamanetwork.com/journals/jama/fullarticle/2766367
Milan Study	Serological	10.80	7.30	1.19	Milan Population	https://www.medrxiv.org/content/10.1101/2020.05.11.20098442v1.full
Global IFR Estimate	Meta-analysis	0.38	6.29	1.04	Global meta-analysis of data	https://www.medrxiv.org/content/10.1101/2020.05.11.20098780v1
Luxembourg Study	Serological	1.97	3.50	0.71	Luxembourg Population	https://www.medrxiv.org/content/10.1101/2020.05.11.20092916v1
French Study	Serological/PCR	4.40	15.00	0.70	French Population	https://science.sciencemag.org/content/early/2020/05/12/science.abc3517
IUPUI Study	Serological	2.80	7.39	0.58	Hoosier Population	https://news.iu.edu/stories/2020/05/iupui/releases/13-preliminary-findings-impact-covid-19-indiana-coronavirus.html
Continuous Spanish Study	Serological	5.50	10.05	0.80	Whole Spanish Population	https://www.isciii.es/Noticias/Noticias/Paginas/Noticias/PrimerosDatosEstudioENECOVID19.aspx
London HCW Screening	PCR	7.10	35.00	0.54	London Health Care Workers	https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(20)31100-4/fulltext
Second Switzerland Study	Serological	9.70	9.55	0.50	Geneva	https://www.medrxiv.org/content/10.1101/2020.05.02.20088898v1.full.pdf
SF Study	PCR	1.40	7.04	0.25	Mission District Latinx Population	https://www.ucsf.edu/news/2020/05/417356/initial-results-mission-district-covid-19-testing-announced
Czech Study	Serological	0.40	5.00	0.59	Czech Population	https://medicalxpress.com/news/2020-05-czech-covid-incidence-population.html
Slovenia Study	Serological	3.30	45.00	0.16	Slovenian Population	https://www.gov.si/en/news/2020-05-06-first-study-carried-out-on-herd-immunity-of-the-population-in-the-whole-territory-of-slovenia/
Super-spreader Study	PCR	15.50	5.00	0.36	Super-spreader event in Germany	https://www.ukbonn.de/C12582D3002FD21D/vwLookupDownloads/Streeck_et_al_Infection_fatality_rate_of_SARS_CoV_2_infection2.pdf/%24FILE/Streeck_et_al_Infection_fatality_rate_of_SARS_CoV_2_infection2.pdf
Swedish Serological Study	Serological	10.00	25.00	0.18	Stockholm	https://www.kth.se/aktuellt/nyheter/10-procent-av-stockholmarna-smittade-1.980727
Idaho Study	Serological/PCR	1.79	13.00	0.17	Boise Population	https://www.medrxiv.org/content/10.1101/2020.04.27.20082362v1
HCW Madrid Study	Serological/PCR	11.20	31.00	0.56	Madrid Hospital Workers	https://www.medrxiv.org/content/10.1101/2020.04.27.20082289v1
Iranian Study	Serological	33.00	543.00	0.12	Guilan province, Iran	https://www.medrxiv.org/content/10.1101/2020.04.26.20079244v1
Kobe Serology Study	Serological	2.70	627.00	0.06	Kobe, Japan	https://www.medrxiv.org/content/10.1101/2020.04.26.20079822v1.full.pdf
Total COVID-19 Mortality in Italy	PCR	67.00	35.00	0.50	Italy extrapolated to NYC	https://www.medrxiv.org/content/10.1101/2020.04.15.20067074v2
Danish Blood Donor Study	Serological	1.70	11.00	0.08	Danish Blood Donors < 70 years old	https://www.medrxiv.org/content/10.1101/2020.04.24.20075291v1
Swedish Study	Serological	20.00	105.00	0.11	Swedish Hospital Workers	https://www.ds.se/om-oss/press2/#/pressreleases/var-femte-medarbetare-har-haft-covid-19-2994310
Continous New York State Study	Serological	19.99	10.06	0.77	New York City Residents	https://www.governor.ny.gov/news/amid-ongoing-covid-19-pandemic-governor-cuomo-announces-results-completed-antibody-testing
Italian Epidemic Report	PCR	10.70	30.00	0.40	Italian Healthcare Workers	https://www.epicentro.iss.it/coronavirus/bollettino/Bollettino-sorveglianza-integrata-COVID-19_16-aprile-2020.pdf#page=13
International Medical Cluster Study	Serological	10.00	50.00	0.03	Moscow Residents	https://www.reuters.com/article/us-health-coronavirus-russia-antibodies/up-to-one-in-10-residents-of-moscow-may-have-had-coronavirus-infections-laboratory-idUSKCN2262Z7?utm_source=reddit.com
Miami-Dade Study	Serological	6.00	15.00	0.20	Miami-Dade Residents	https://www.miamiherald.com/news/coronavirus/article242260406.html?fbclid=IwAR2svgTSw4gmNvTrCI35bG1IYQtmgkMXOc4Sre_92zLdJx1Uyr1T6FeaR2U
New York Study	Serological	13.90	11.20	0.56	New York State Residents	https://www.governor.ny.gov/news/amid-ongoing-covid-19-pandemic-governor-cuomo-announces-statewide-antibody-testing-survey-will
Northern France Study	Serological	25.90	582.00	0.00	Oise high school students	https://www.medrxiv.org/content/10.1101/2020.04.18.20071134v1
Northern France Study	Serological	3.00	69.00	0.50	Oise blood donors	https://www.medrxiv.org/content/10.1101/2020.04.18.20071134v1
Ohio Prison Data	PCR	66.00		0.57	Marion Correctional Institution	https://drc.ohio.gov/Portals/0/DRC%20COVID-19%20Information%2005-03-2020%201253.pdf
Ohio Prison Data	PCR	73.00		1.44	Pickaway Correctional Institution	https://drc.ohio.gov/Portals/0/DRC%20COVID-19%20Information%2005-03-2020%201253.pdf
Greek Repatriation Flights	PCR	6.30	59.65	0.15	Repatriated Barcelonians	https://academic.oup.com/jtm/article/doi/10.1093/jtm/taaa054/5820895
Switzerland Study	Serological	5.50	10.00	0.40	Geneva	https://www.hug-ge.ch/medias/communique-presse/seroprevalence-covid-19-premiere-estimation
LA County Flu Surveillance	PCR	5.00	100.00	0.01	LA Flu Surveillance	https://jamanetwork.com/journals/jama/fullarticle/2764137?questAccessKey=525fc308-4cd3-4670-ad73-15b8b019f2a8&utm_source=For_The_Media&utm_medium=referral&utm_campaign=ftm_links&utm_content=tfl&utm_term=033120&fbclid=IwAR002a6aaBUV-_4OMIzIofWAip_DAbB8hZejGVA5BLOvrEUR68tVb1prP8A
Wuhan Hospital	Serological	10.00	22.10	0.36	Wuhan Region	https://onlinelibrary.wiley.com/doi/10.1002/jmv.25904
Chelesa Data	Serological	33.00	30.10	0.71	Chelesa Street Survey	https://www.bostonglobe.com/2020/04/17/business/nearly-third-200-blood-samples-taken-chelsea-show-exposure-coronavirus/?fbclid=IwAR3XQlYzGz7cMfc3nmQSAbG8jTICJ7nkG8ZMfH-fQbf8QmQ2FYthvSiAEkQ
Santa Clara County	Serological	2.80	24.50	0.17	Santa Clara County	https://www.medrxiv.org/content/10.1101/2020.04.14.20062463v2
Flu-like Surveillance	PCR	10.00	100.00	0.05	Flu Surveillance	https://www.medrxiv.org/content/10.1101/2020.04.01.20050542v2?fbclid=IwAR0ccDKohage1txFGvJ7kSZavLbhx1xUg_-UcxT_Kjg43rAKXh2GB-0Ttxc
Dutch Survey	Serological	3.00	31.00	0.67	Netherlands	https://www.researchsquare.com/article/rs-25862/v1
German Survey	Serological	14.00	20.00	0.37	Gangelt	https://www.uni-bonn.de/news/111-2020?set_language=en
Iceland Continous Sampling	PCR	1.00		0.28	Iceland	https://www.nejm.org/doi/full/10.1056/NEJMoa2006100
Finnish Institute	Serological	3.40	6.00	0.39	Helsinki	https://thl.fi/en/web/thlfi-en/-/number-of-people-with-coronavirus-infections-may-be-dozens-of-times-higher-than-the-number-of-confirmed-cases?fbclid=IwAR3bDYNRIQBQFxhJdrmjypoHtbk_thqb5E_ayR9IUU3FUGeXrP3oc6GwpS0
Scottish Blood Donors	Serological	0.60	20.00		Scotland	https://figshare.com/articles/Serological_analysis_of_1000_Scottish_blood_donor_samples_for_anti-SARSCoV2_antibodies_collected_in_March_2020/12116778/2?fbclid=IwAR1wkF1QVZeAt6jDNmeWVJwBmK6Bo8zYPnBRJruvfOYqYO9qFEXuMndjpl8
Homeless Sample	PCR	36.00	37.00	0.08	Boston Homeless	https://www.wbur.org/commonhealth/2020/04/14/coronavirus-boston-homeless-testing?fbclid=IwAR0Ai5IuXYXKOGLB8Y-znlk0yXakg5Q_R_mpwEV1bU8AGt15VaC2a99Ft7g
Pregnant Sample	PCR	14.00	17.00	0.53	Pregnant Women in NYC	https://www.nejm.org/doi/full/10.1056/NEJMc2009316?fbclid=IwAR0MOuMrCb3xe0lfiNMZwND4FN_HSDimM_fLdBrmDXuWeJzLVc4bnKiH48M
Pregnant Sample	PCR	7.00	143.00	0.05	Pregnant Women in Sweden	https://www.svt.se/nyheter/inrikes/coronatestar-alla-gravida-pa-forlossningen-sju-procent-smittade?fbclid=IwAR2nGl4OLF0rduQVKr3YF4C1K54s45jlym8Y0eEpQTNifrilkGKrDveCcG0
Madrid Study	PCR	11.60	31.00	0.54	Madrid Hospital Workers	https://www.medrxiv.org/content/10.1101/2020.04.07.20055723v1?fbclid=IwAR0mg2DXxFZUNuzYuGuQOkwgQySH5_bUpwODJdWeWFONjCAbhemI28hxPCs
Swedish Study	PCR	2.50	20.00	0.08	Stockholm	https://www.folkhalsomyndigheten.se/nyheter-och-press/nyhetsarkiv/2020/april/resultat-fran-undersokning-av-forekomsten-av-covid-19-i-region-stockholm/?fbclid=IwAR2YDRAod3tXJ8CB0-2n3VB2ei30LFB3jsN6Ek9MoIXitelycNv6ZpIrm-g
Denmark Study	Serological		70.00	0.05	Capital Region	https://www.sst.dk/-/media/Udgivelser/2020/Corona/Status-og-strategi/COVID19_Status-6-uge.ashx?la=da&hash=6819E71BFEAAB5ACA55BD6161F38B75F1EB05999&fbclid=IwAR0yF9-CVqtvIdch1wRB0d2esxDwzH-riv3XRJq62Qt1WWAkR48BIMauvbI
Gibraltar Study	PCR	2.00	7.00	0.00	Gibraltar Region	https://www.youtube.com/watch?v=FnIMRUWSX2Q&fbclid=IwAR1UO7i5YD_QQnaBwCJRvk1fxr1j0_Vkr7pLJCmqvbvXHPt1FMB82BpYr0U
Private SF Study	Serological	0.50	10.00	0.15	Self-Selected SF Residents	https://twitter.com/friedberg/status/1245461209542868992?s=20&fbclid=IwAR2gmBbFnTMcp4pl2d-x8nkvQDXVRB3g-4h3Qg3etHmxXZ4W5-g_NbyaABE
Italy Town Sample	PCR	70.00	10.00	1.00	Sample of whole Italian town	https://www.lastampa.it/topnews/primo-piano/2020/04/02/news/coronavirus-castiglione-d-adda-e-un-caso-di-studio-il-70-dei-donatori-di-sangue-e-positivo-1.38666481?fbclid=IwAR2w8-93Qbhq4uRHpZYbbn-yEO_LjmCPMtQdXQ-wkkmClnIj9rxXJeEAwJc
San Miguel Sample	Serological	2.00	15.00	0.00	Sample of whole Colorado town	https://www.sanmiguelcountyco.gov/CivicAlerts.aspx?AID=511&fbclid=IwAR3XfQkv1OCSuOY-w1FkDCu0BDGnG07yf-D9_Ilne_Bd8oYAnJ80S6w2OZU
Italian Analysis	PCR		5.00	1.00	Repatriation Data	https://www.thelancet.com/journals/laninf/article/PIIS1473-3099(20)30227-9/fulltext?fbclid=IwAR3b9eOpxeQLbUxmxjFHGK2b2M2tM7dRerS0Y5cWPV6H6B1QPqZsN_GzDX0
Wuhan Repatriation	PCR	34.00	46.00	0.12	Repatriation Flights	https://www.medrxiv.org/content/10.1101/2020.02.12.20022434v2?fbclid=IwAR0xX_0fZLr2K0DCh9X8ullbE1GJPnRpDilkxBrah3UD14vRP21yl3kHDBR8
Wuhan Flu Surveillance	PCR	1.40	20.00		Wuhan Flu Data	https://www.nature.com/articles/s41564-020-0713-1
Covid-19 Simulation	PCR			0.60	Repatriation Data	https://www.medrxiv.org/content/10.1101/2020.03.09.20033357v1.full.pdf?fbclid=IwAR3ATHWmq2CQRMGy95V-YV6LZ4hBZcXt2WJuKhmEBxuvcoHY9mdNM-HsB8E
Covid-19 Simulation	PCR		5.00		Simulation	https://science.sciencemag.org/content/early/2020/03/24/science.abb3221.full?fbclid=IwAR3NQ_ybQnjzvysGQPvLsb-9zfKOoHYY22CJMMbry7-mCGEC1LYcTjQf0Z0
Early French Analysis	PCR		8.00	0.80	Simulation	https://www.medrxiv.org/content/10.1101/2020.03.22.20040915v4
		Median Averages	20.00	0.38		

Scientific analysis of these studies	https://www.medrxiv.org/content/10.1101/2020.05.13.20101253v1
CDC use of 0.4% IFR for planning	https://www.cdc.gov/coronavirus/2019-ncov/hcp/planning-scenarios.html