



Columbine Health Systems
Center for Healthy Aging
COLORADO STATE UNIVERSITY

COVID-19 TESTING AND COLUMBINE HEALTH SYSTEMS- A RESEARCH PARTNERSHIP

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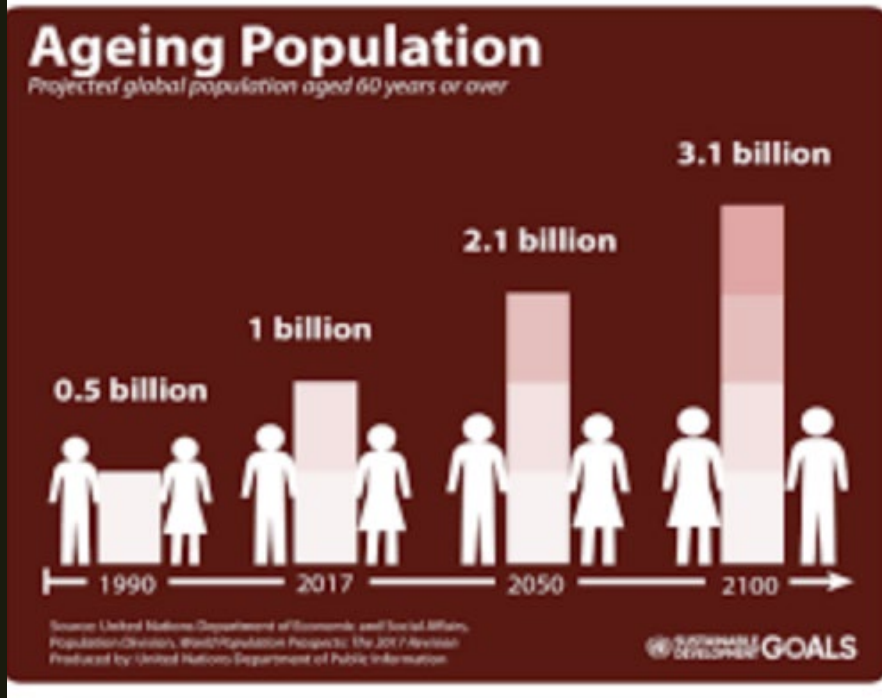


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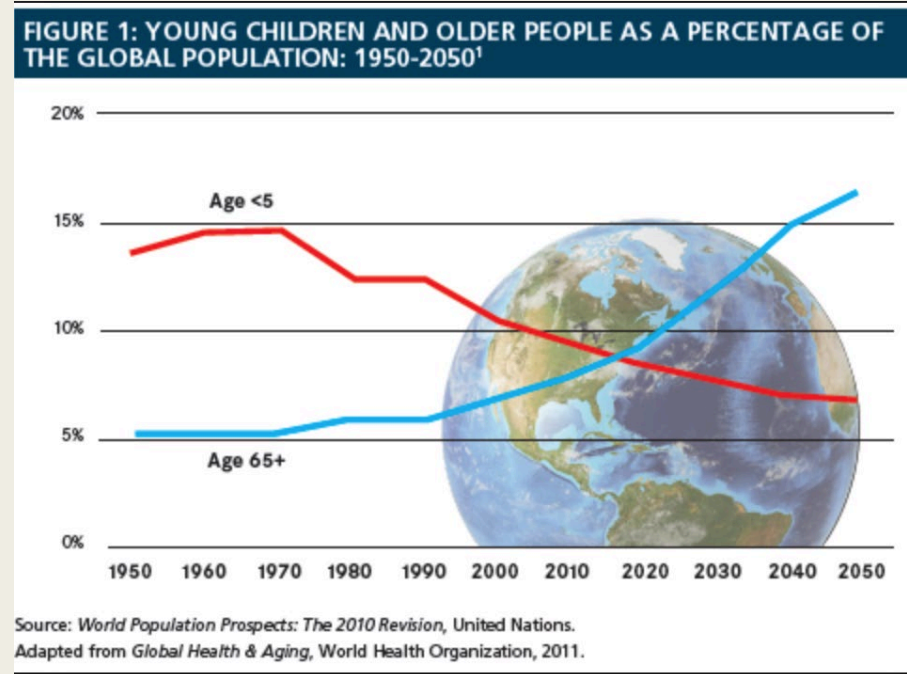
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Why Dedicate a Research Center to Aging?



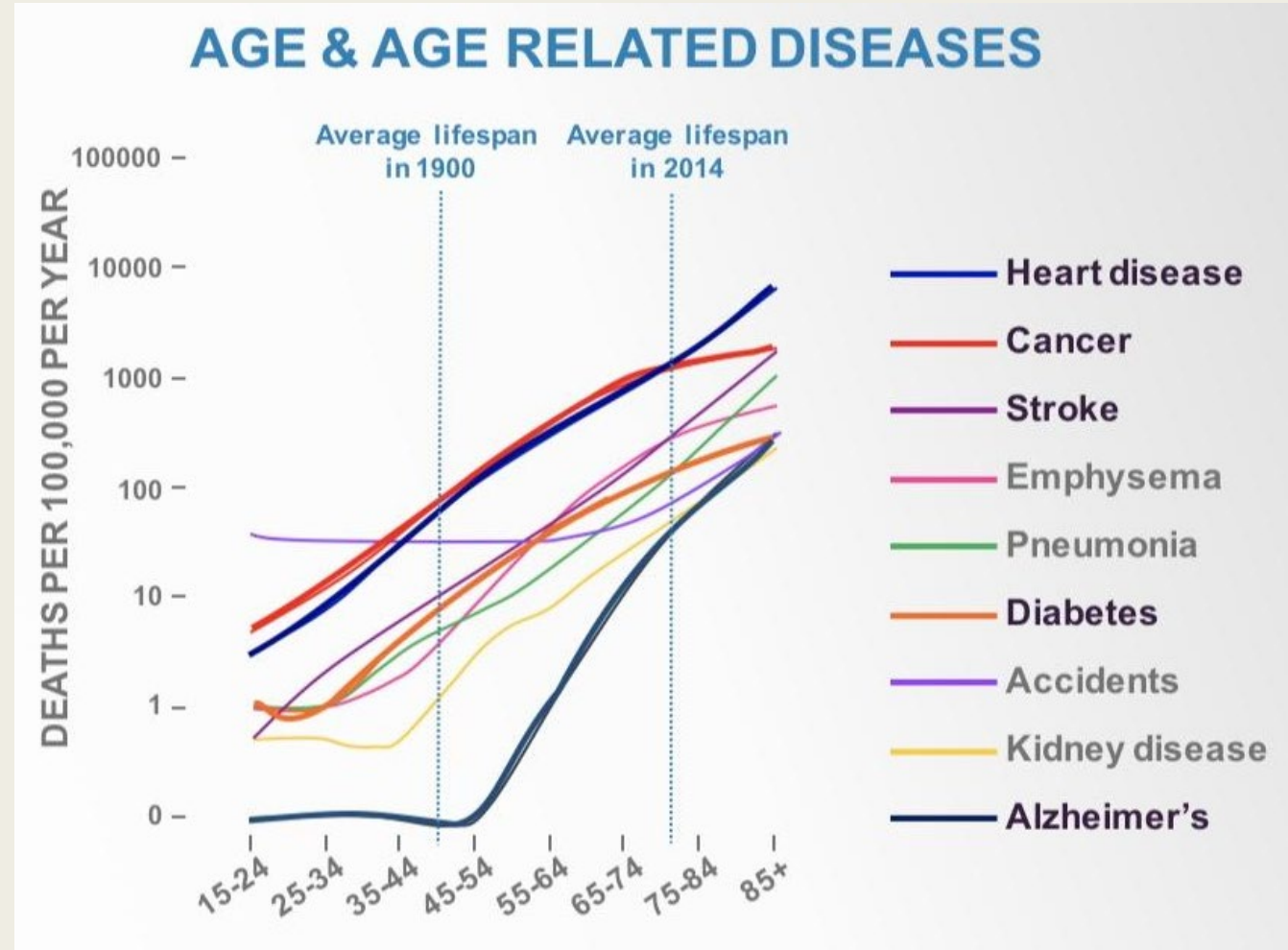
- By 2050 the number of Americans 85 years and older will triple



65-and-older population will rise to nearly 24 percent of the overall global population

Burden of Age-Related Diseases

- Average 65-69 year old takes 14 prescriptions per year
- 30 trillion in Medicare over the next 20 years
- Alzheimers disease
diabetes, heart disease
and cancer = 80% of the
US Medicare budget

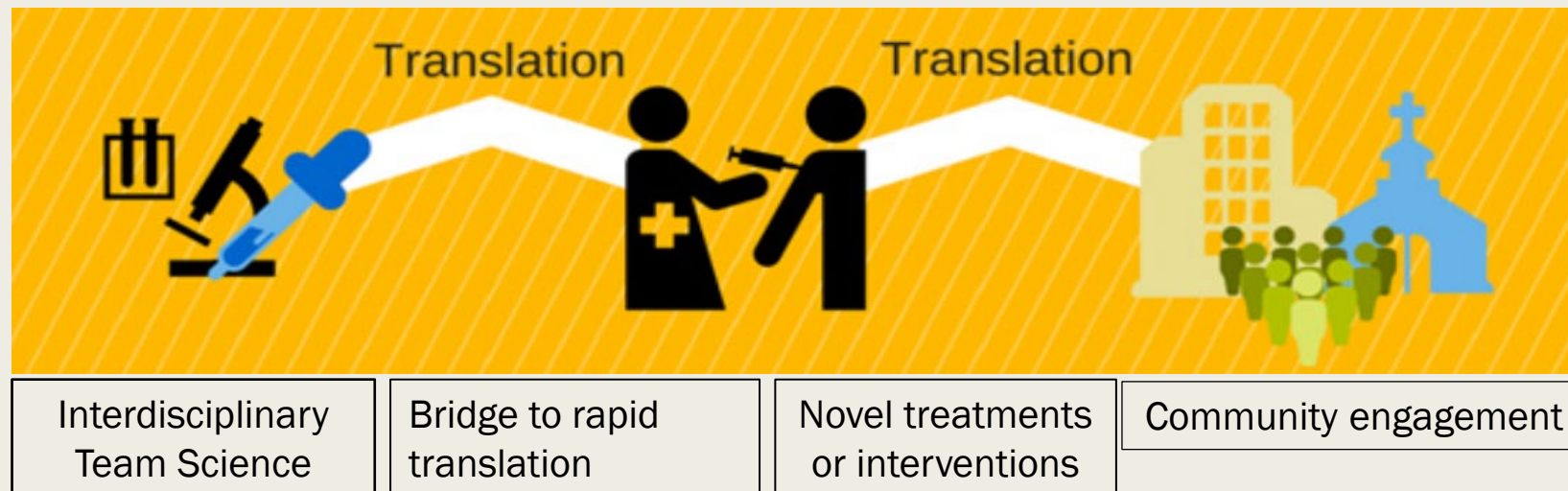


Columbine Health Systems Center for Healthy Aging at CSU

A catalyst for interdisciplinary research and evidence-based outreach to improve lifespan and healthspan

Three core activities:

- Interdisciplinary Research into Basic and Translational Mechanisms that Promote Healthy Aging
- Educational Opportunities for Undergraduate, Graduate Student, and Postdoctoral Training
- Engagement with the Community for Programs that Support Healthy Aging



Director

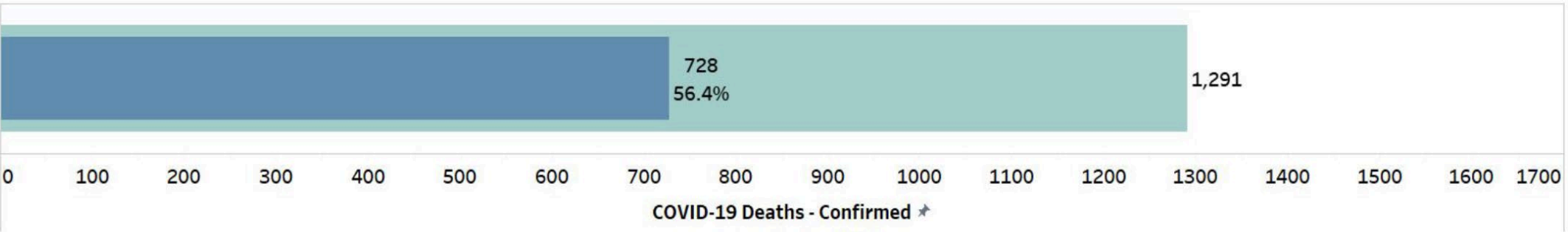
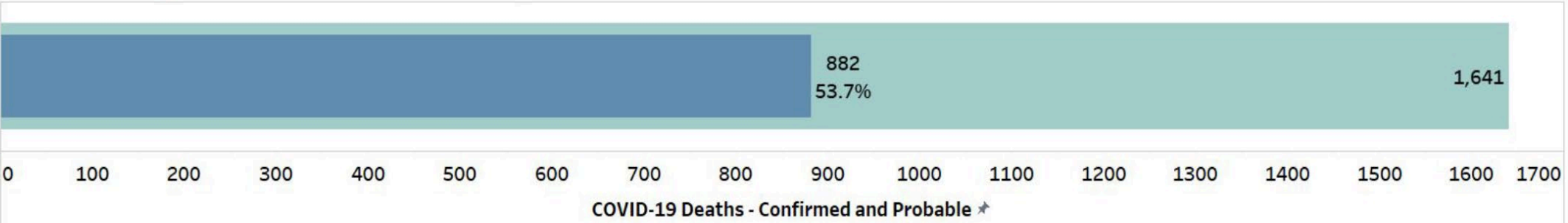
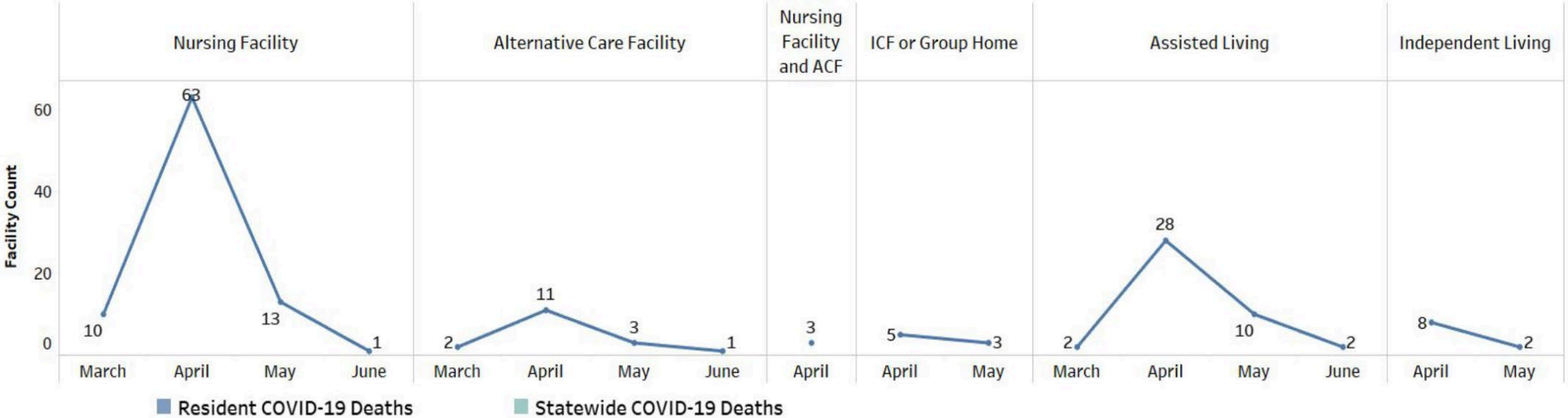
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COVID-19

- SARS-CoV-2 pandemic has highlighted the significant vulnerability of individuals living in residential care communities
 - *Group homes*
 - *Correction facilities*
 - *Communal living situations*
- Residents in skilled nursing and assisted living facilities are particularly vulnerable to any infectious disease
 - *Require day-to-day care*
 - *Multiple health conditions*
 - *Advanced age*
- 40% of deaths from COVID-19 nation-wide are in long term care facilities



Facility Outbreak Start and COVID-19 Deaths - Updated through 6/16/2020

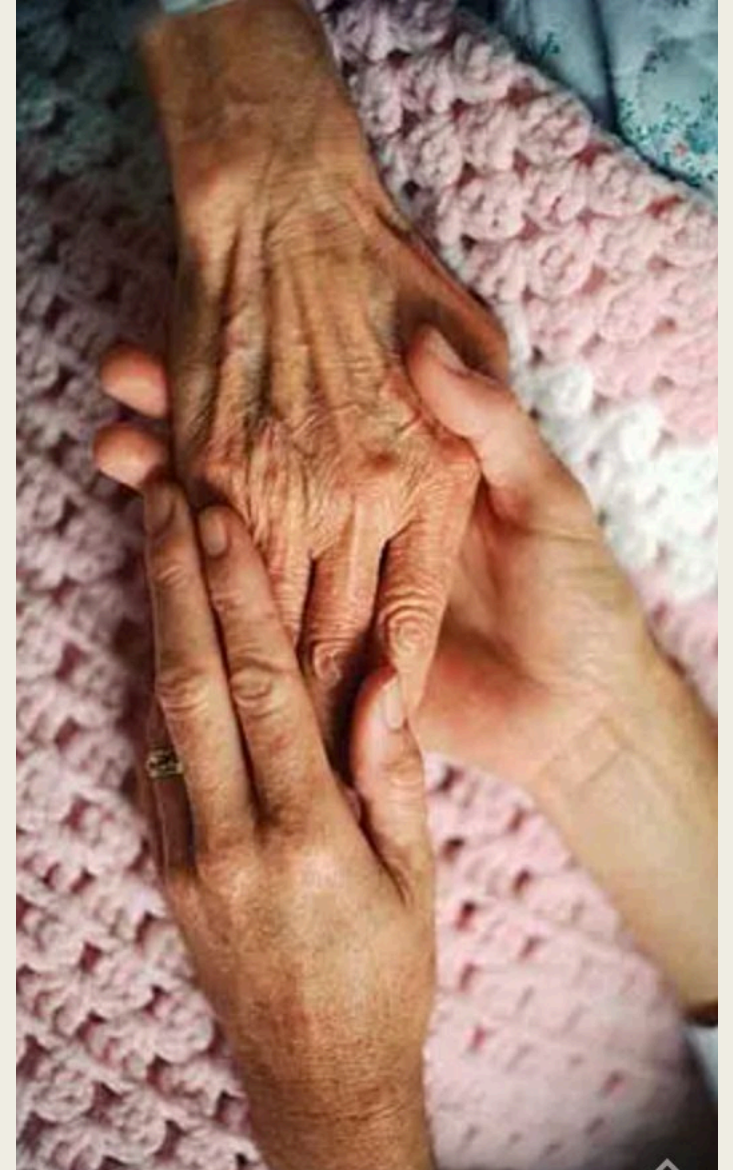


2020 SARS-CoV-2 Pandemic



Timeline: Early March 2020

- First SARS-CoV-2 reported CO
- Senior Living Communities discontinued visitors per State Public Health mandate
- CDC guidance - screen all staff daily for COVID-19 symptoms and exposure to identify potential vectors
 - *Fever*
 - *Cough*
 - *Travel*
 - *Known Exposure*
- Extreme difficulty in testing availability at the time
 - *Only for hospitalized patients*



Timeline

- Coherence of several issues of high concern :
 - *Understanding of the potential emerging threat to older adults*
 - *Early CDC test had contamination issues resulting in faulty results, delays*
 - *Diagnostic Testing was limited to only state labs*
 - *All testing directed for the sick, but no one talking about silent carriers*
- Recognition that:
 - *Research labs at CSU represents untapped resource potential for special population screening testing in Colorado*
 - *Scale up and operationalization of surveillance efforts through CSU could be deployed quickly and inexpensively*
 - *Center for Healthy Aging had already established relationships in SNFs for aging research (Columbine Health Systems)*
 - *Dr Greg Ebel had been doing West Nile surveillance and could pivot*

Challenges and Solutions

- Supply chain issues- FDA approved swabs, reagents, plastics
 - *Utilized catalytic invention approach (McGuyver'ed it!) and validated against CDC sanctioned processes/reagents*
- Compliance with regulatory guidance/policy
 - *"Special Letter of Assurance" issuance for Ebel/Ehrhart SARS-2-CoV testing*
- Funding challenges- interest in funding at State level but time was ticking...
 - *Directed Ehrhart start-up funds from CHS CHA*
 - *CSU Investigators volunteered grad students, post-docs, funds and supplies*
 - *CSU grad students volunteered to be couriers*

...and we just got started

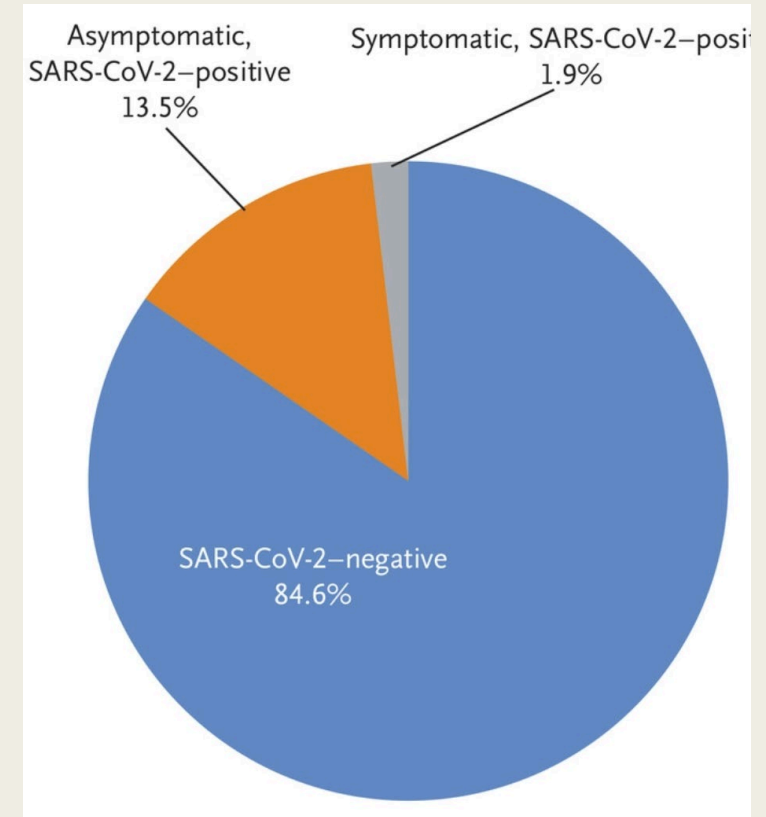
Pilot Study

- Recruited 542 healthy SNF staff from 6 facilities who consented to be tested weekly for COVID-19
- Entry criteria
 - *No reported COVID-19 symptoms*
 - *No known exposure*
 - *Consent to weekly NP over 8 weeks*
- If positive, workers agreed to self isolate and continue to be tested weekly
- Positive tests confirmed by two independent labs and reported to public health officials



Results

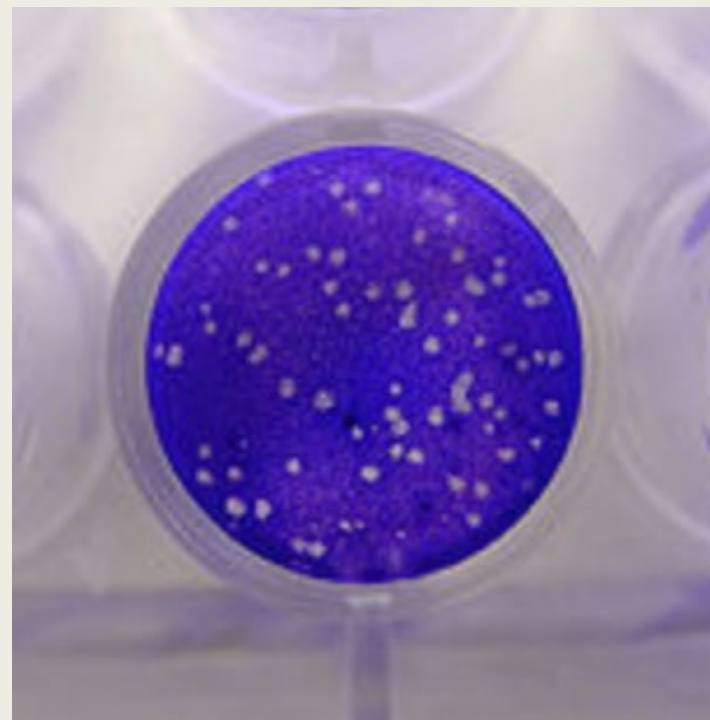
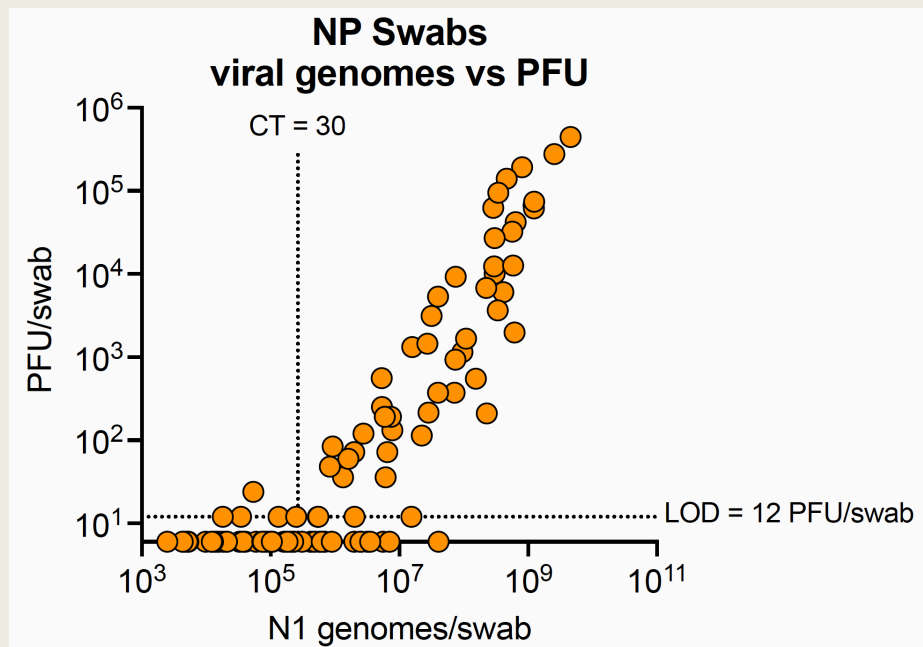
- 15% of 542 enrolled workers were positive for SARS-CoV-2 RNA during the study
 - *Asymmetrically distributed across facilities (range 1%-23%)*
 - *Asymmetrically distributed across job codes (11%-24%)*



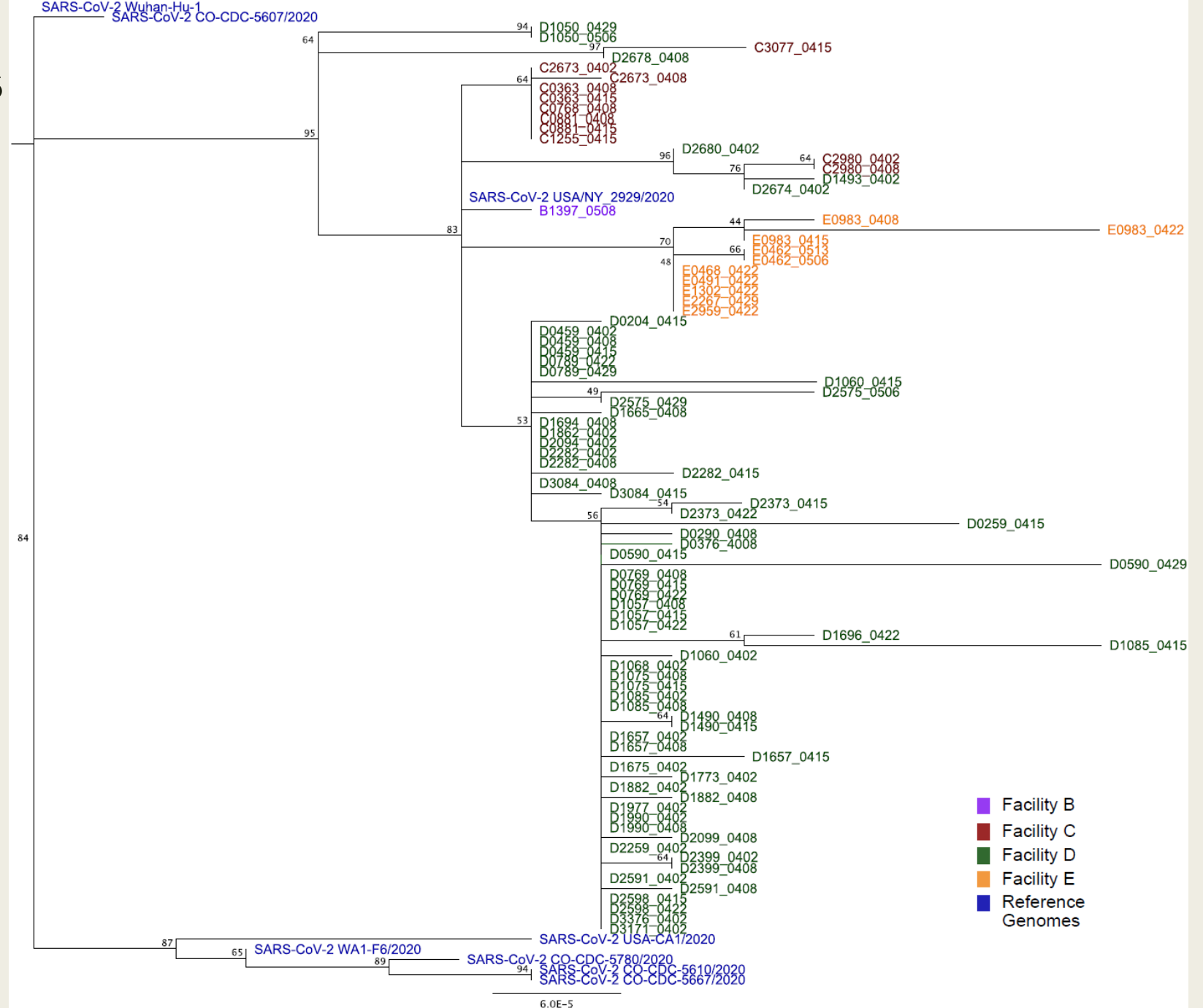
Job code	Number tested	% positive*	Unadjusted OR (95% CI)		Adjusted OR (95% CI)	
Administration	53	11.3	1.00	(ref)	1.00	(ref)
Nursing	180	24.4	2.53	(1.01, 6.33)	2.79	(1.07, 7.32)
Housekeeping	96	14.6	1.34	(0.48, 3.71)	4.69	(1.39, 15.84)
Dietary	36	19.4	1.89	(0.58, 6.18)	1.55	(0.45, 5.34)
Therapy	24	4.2	0.34	(0.04, 3.00)	0.47	(0.05, 4.45)
Other**	46	34.8	4.18	(1.47, 11.87)	4.91	(1.61, 14.97)

Asymptomatic People Can Infect Others

- Plaque assay confirmed infectious virus even in asymptomatic people



Phylogenetic analysis of 97 complete genomes from CO



Conclusions

- Screening for COVID-19 symptoms not sufficient to identify positive workers
- Asymptomatic/presymptomatic positives have high virus loads and are infectious to others
- Isolation of positive workers decreases new infection over time
- Serial testing serves as both an early warning and mitigation strategy to combat outbreaks in nursing home facilities



CSU Pilot Data Presented to Gov Polis in May 2020

- CSU model of weekly testing became the Colorado standard from that time forward
- State completely funds weekly testing program for staff in all Skilled Nursing Facilities and Assisted Living Facilities in CO
- CDC requested our results/samples
 - *Weekly model has become the national model for health care workers around the nation*
- CSU's Columbine Health Systems Center for Healthy Aging and CSU- a national leader for response during the pandemic in protecting the lives of older adults and residential care worker populations

Lead Investigators



ARTHROPOD-BORNE AND
INFECTIOUS DISEASES LABORATORY
COLORADO STATE UNIVERSITY



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VETERINARY
DIAGNOSTIC LABORATORIES

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