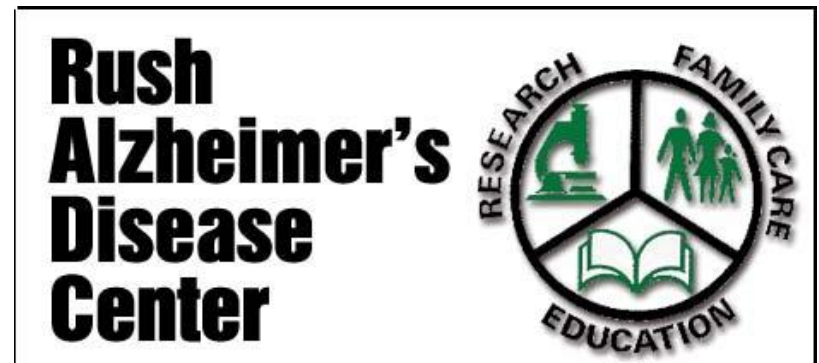




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Pathology and cognition: evolution of findings in early older recruits to Religious Orders Study

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Data Core Leader
ADC Meeting
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Disclosures



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- Also

- NIA: R01AG036836, R01AG042210
- NINDS: R01NS078009
- NIMHD: P20MD006886
- Illinois Department of Public Health

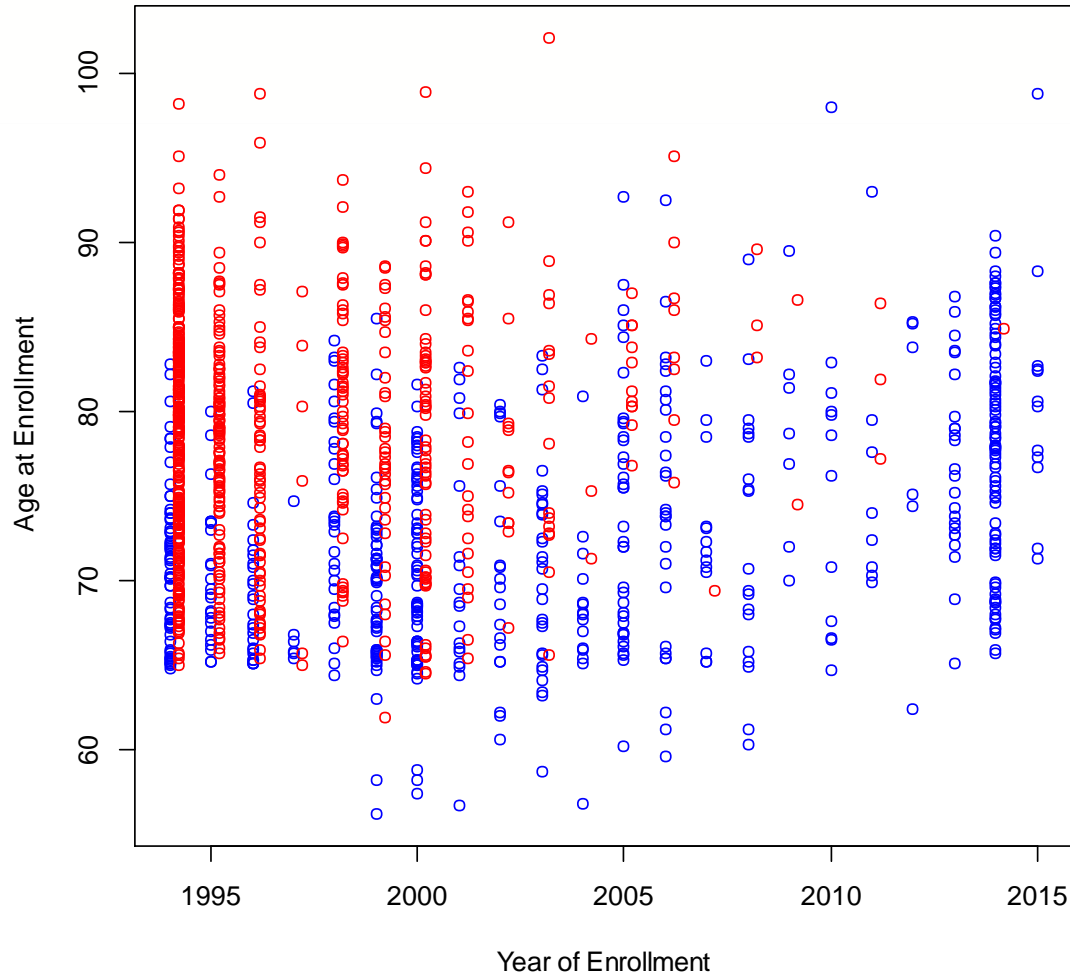
- No conflicts

Concern

- Neuropathologic Cohort studies can contribute essential knowledge.
- Neuropathology requires death; being alive means autopsy data are missing
- Informative missingness is a Potential Statistical Disaster: How serious is it here?
- Religious Orders Study affords an opportunity to look at the missingness because enrollment began in 1994. Pictures are helpful.

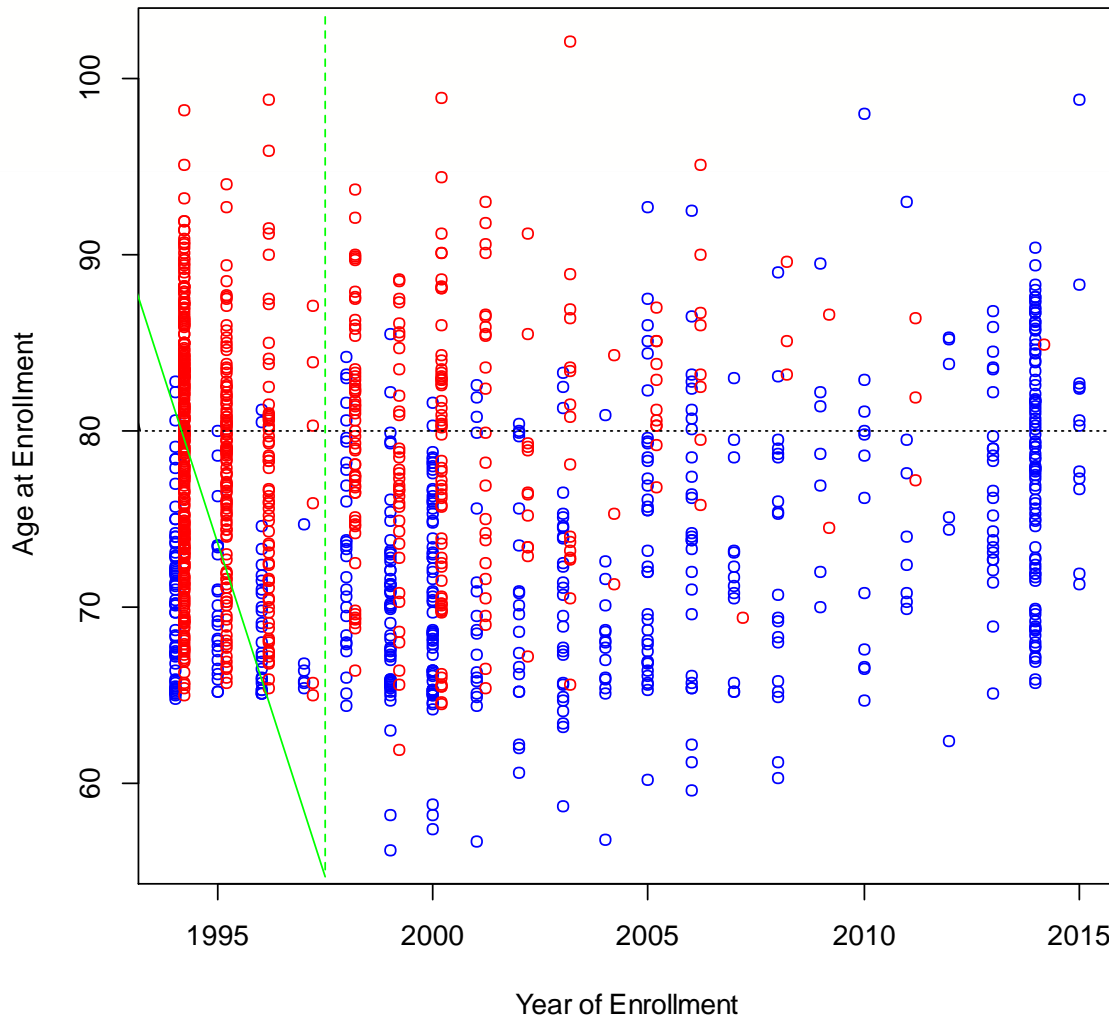
Enrollment: Age vs. Year

Religious Orders Study, N=1317
Vital status (Blue: 701 alive; Red: 616 dead)



Enrollment: Age vs. Year

Religious Orders Study, N=1317
Vital status (Blue: 701 alive; Red: 616 dead)



Enrolled 1994-97: 583

Age 80+ : 201

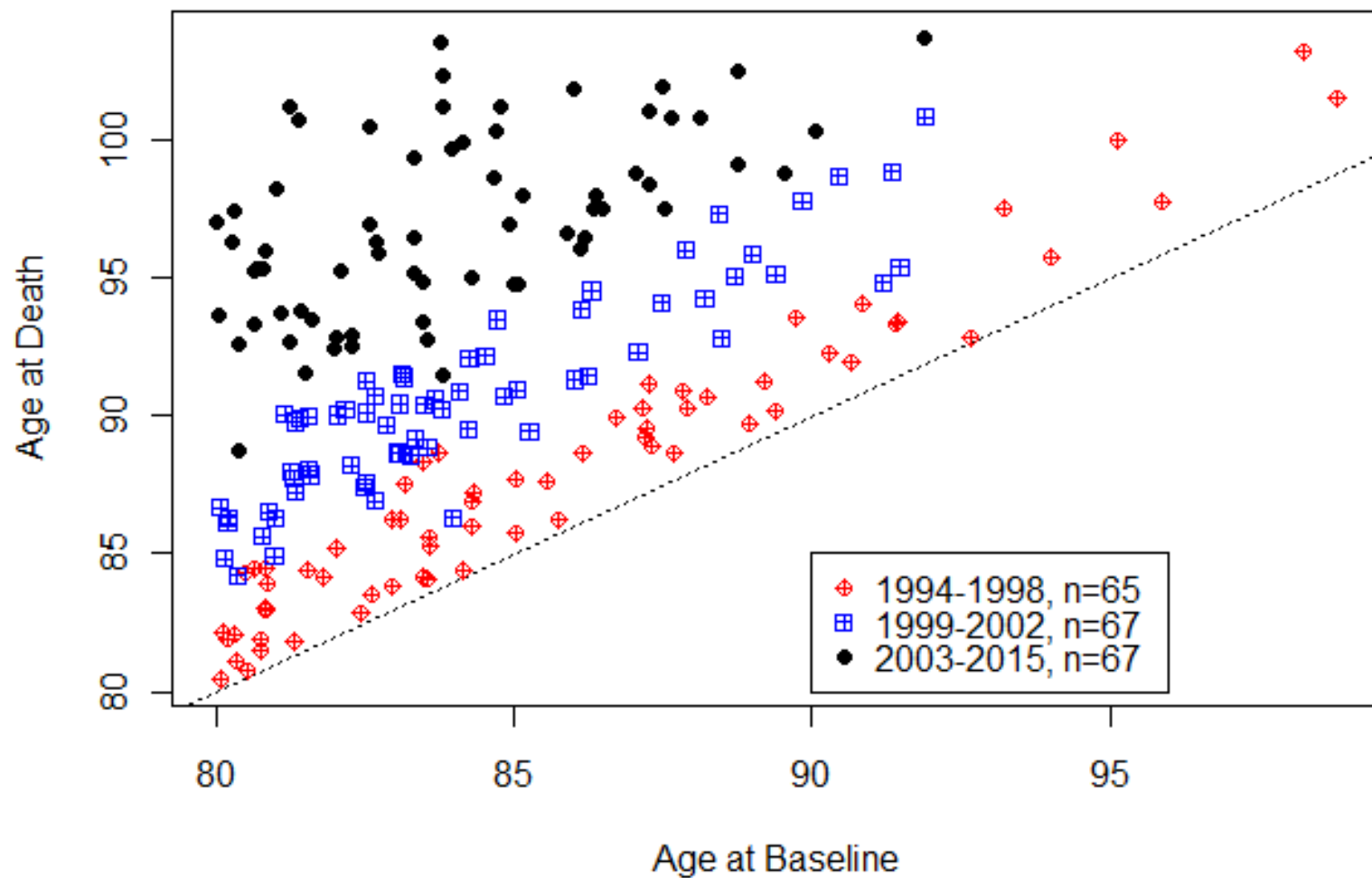
Died : 196

Alive : 5

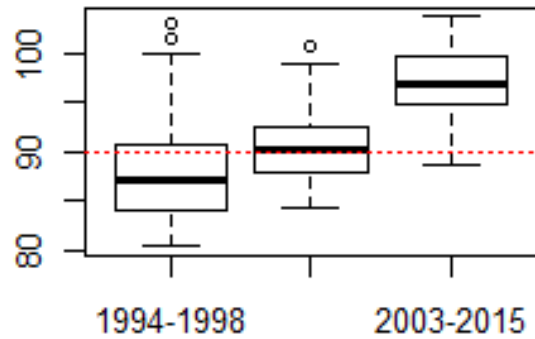
Autopsy : **187**

- 97.5 % of older early enrollers have died;
- 95.4% of deaths have autopsy data

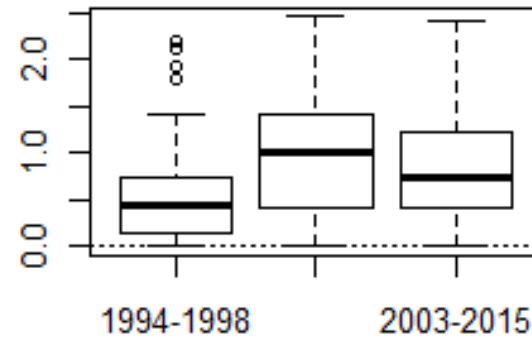
ROS Early Enrolling Elders by epoch of death



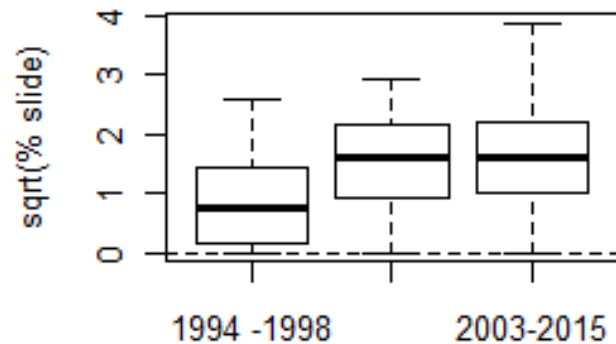
Age at Death



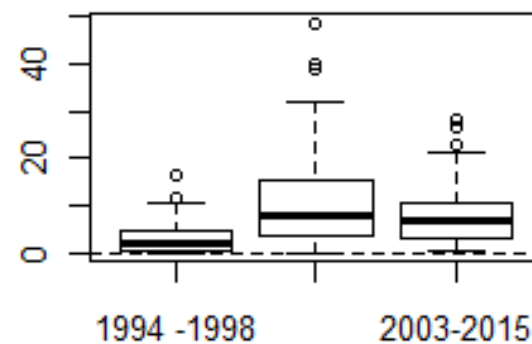
AD Pathology Burden



ICH amyloid, %

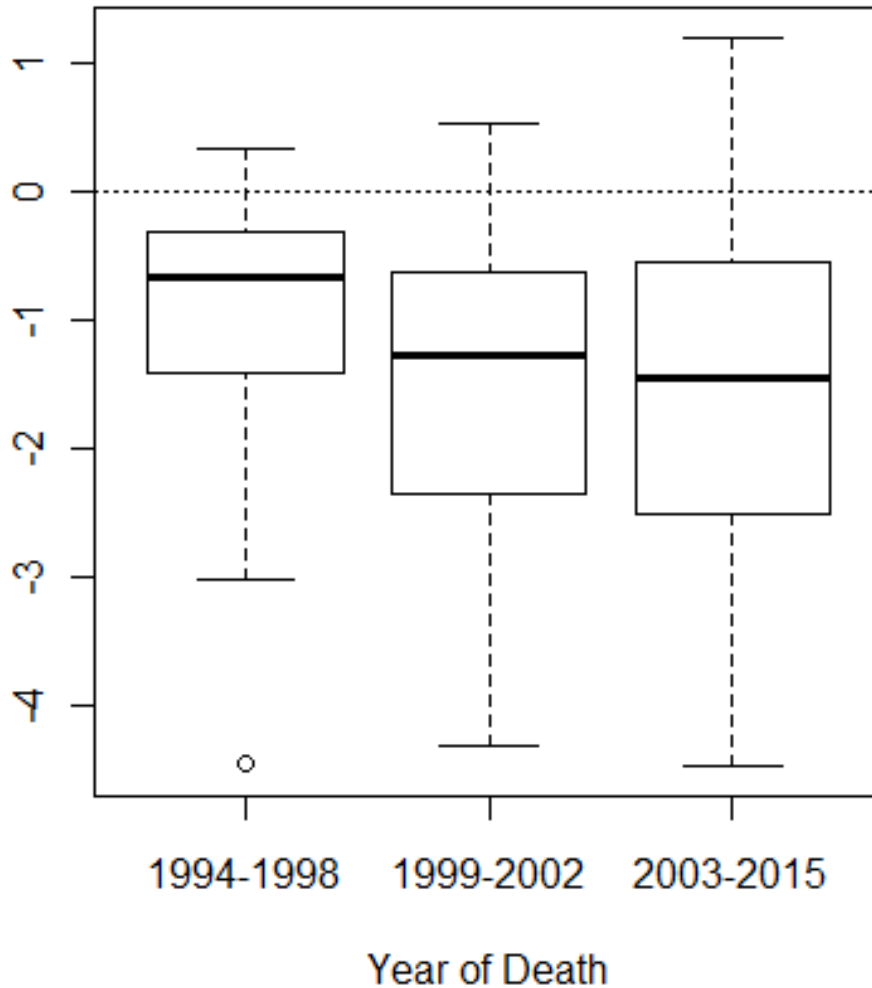


Tangles



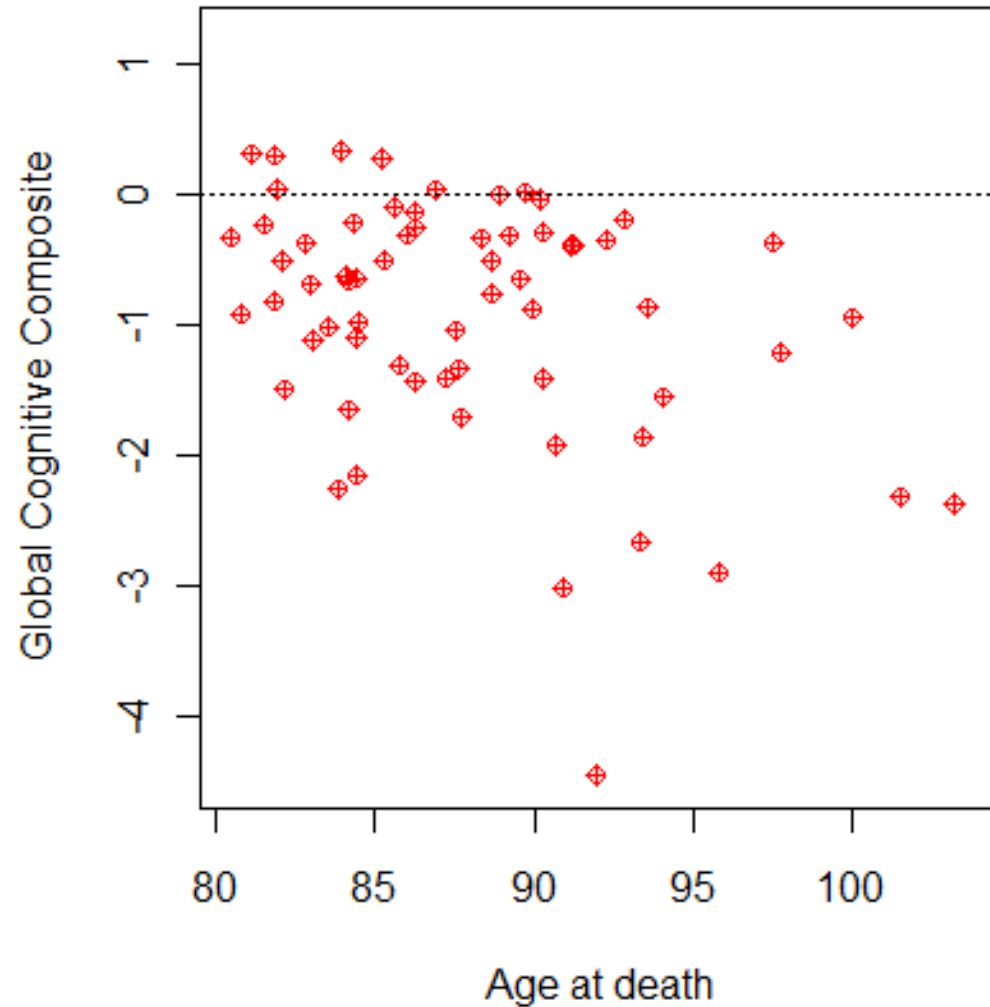
Global Cognition at Last visit

Global Cognition by group



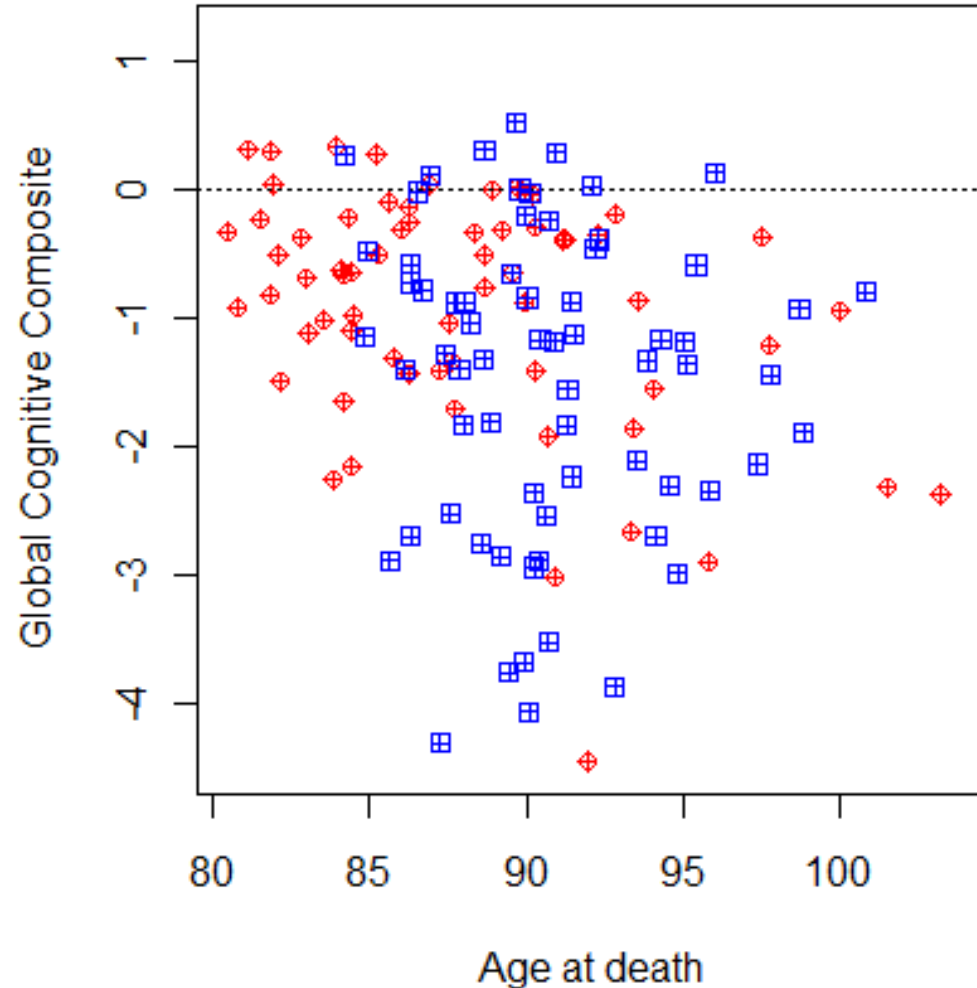
Global Cognition at Last visit versus age

Global Cognition

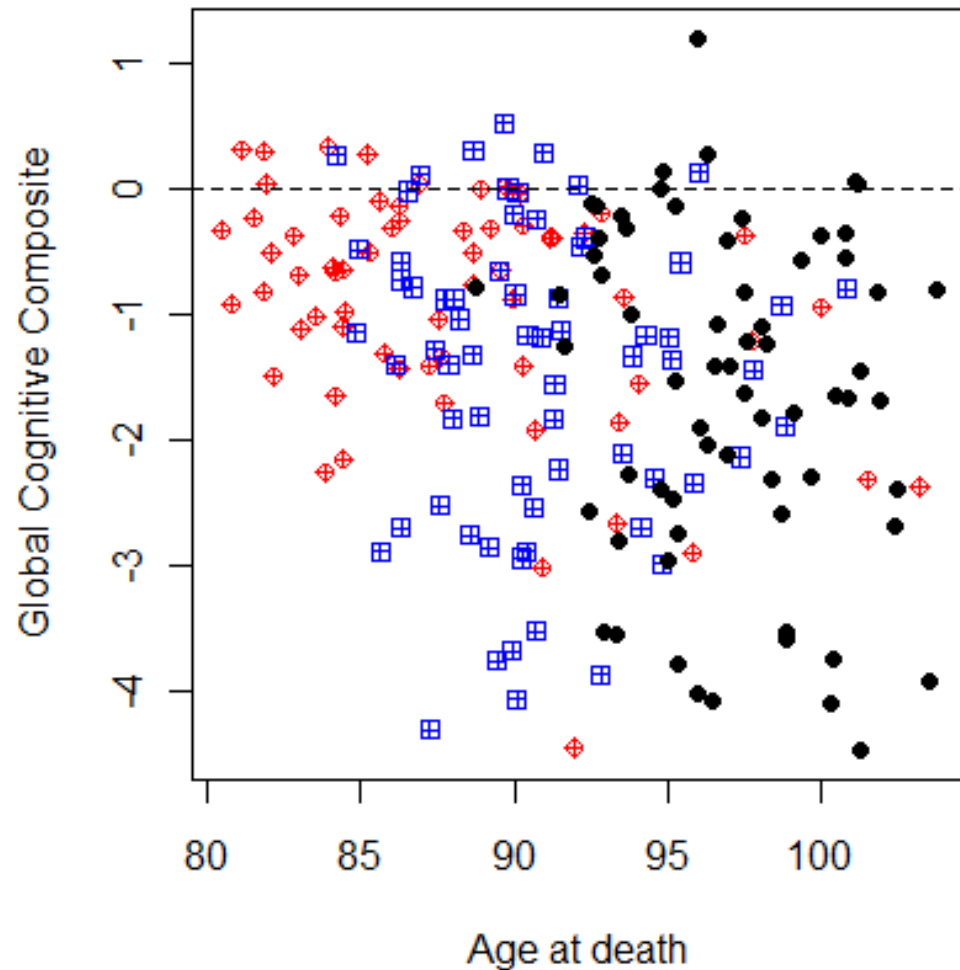


Global Cognition at Last visit versus age

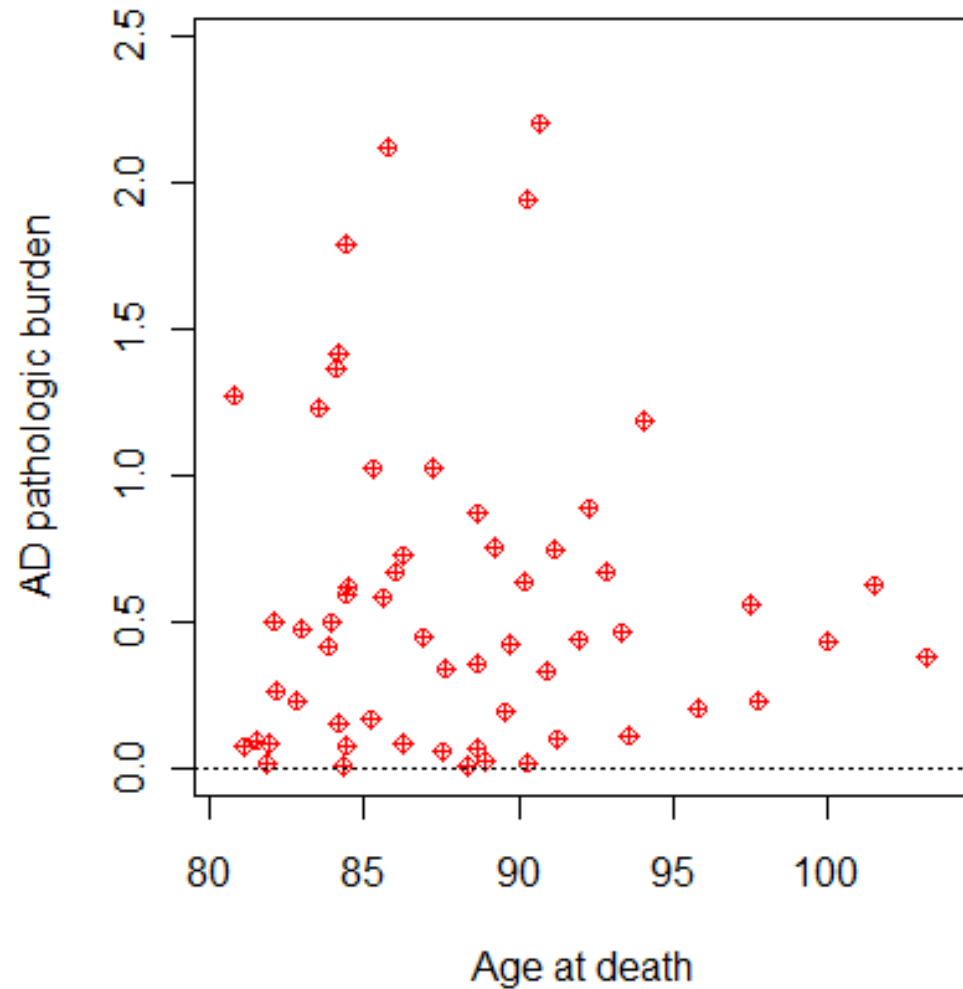
Global Cognition



Global Cognition at Last visit versus age

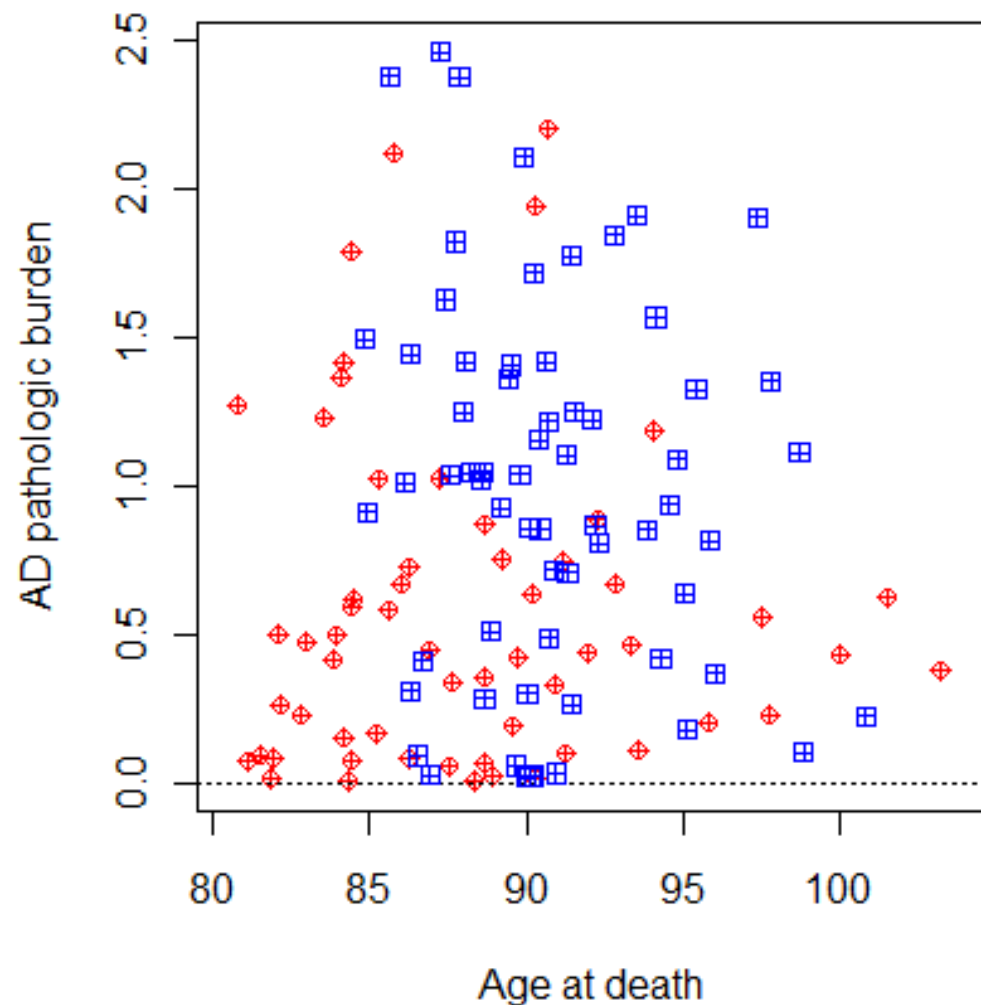


AD pathological burden (counts of dp, np, nft)



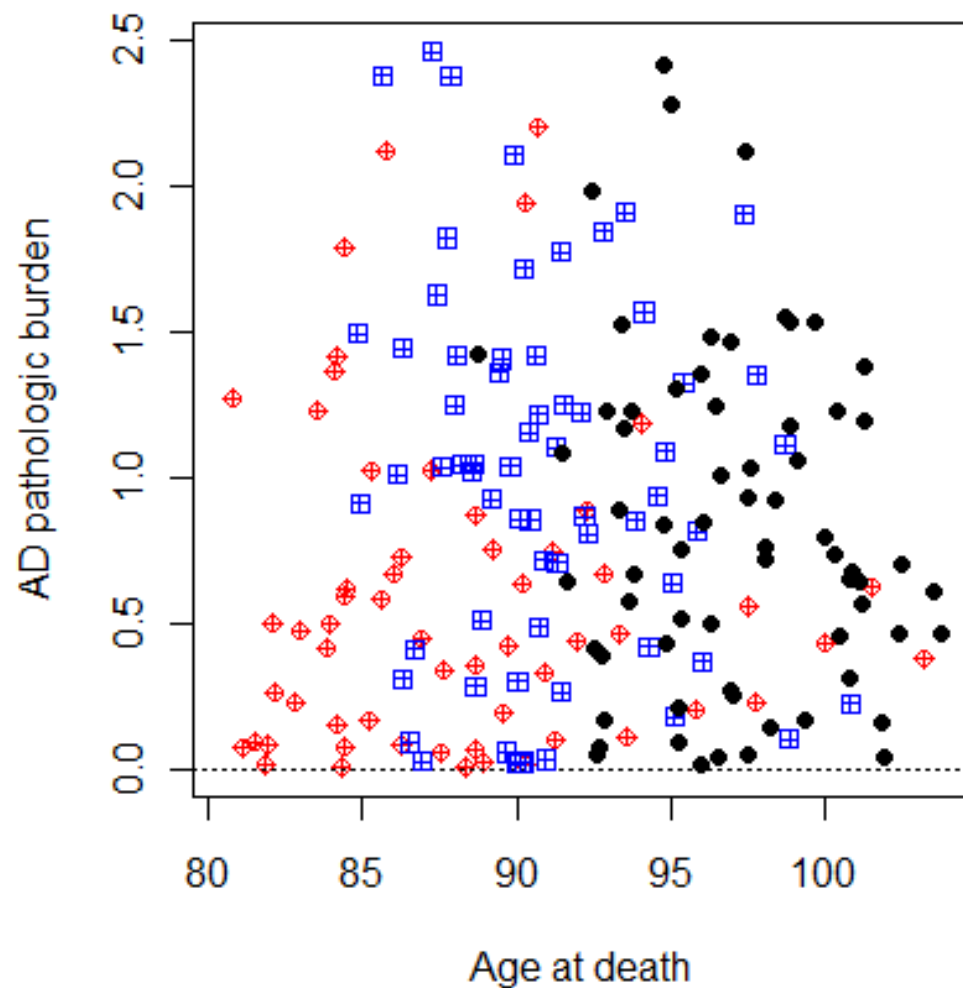
AD pathological burden (counts of dp, np, nft)

AD Pathology Burden



AD pathological burden (counts of dp, np, nft)

AD Pathology Burden



Did the data confess?



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Variable	Est (n=197)	p	Est (N=65)	p
Age @ death	-0.04	0.006	-0.06	0.006
Sex	-ns-	-ns-	-ns-	-ns-
Educ	-ns-	-ns-	-ns-	-ns-
anyE4	-0.337	0.03	-0.15	0.56
amyIsqrt	-0.193	0.059	+0.10	0.53
Tangles	-0.045	2×10^{-5}	-0.073	6×10^{-5}
R ² (adj)	0.26		0.33	

Conclusions

- Gain in power as number of deaths increased (N, range of values)
- Gain in richness of hypotheses that can be addressed
- As time passed, the age at death shifted left and the overall burden of pathology tended to increase
- No important changes in associations between neuropathology and cognition
- Fears not substantiated--- Though there is no guarantee of protection...

Credits

PhD Statisticians for ROS

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Alec Burgess, Xueping (Mike) Li, Greg Roman
Data Sharing: Gregory Klein

Neuropathologists: *Elizabeth Cochran*, Julie Schneider, Sukriti Nag

ROS Participants and RADDC Staff

NIA: P30 AG010161