



CINS CANADIAN INSTITUTE FOR NEUTRON SCATTERING

Current challenges faced by academic users

Canadian Neutron Initiative roundtable towards a National Neutron Strategy

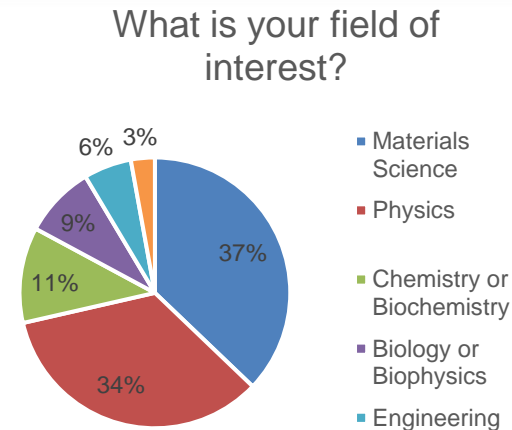
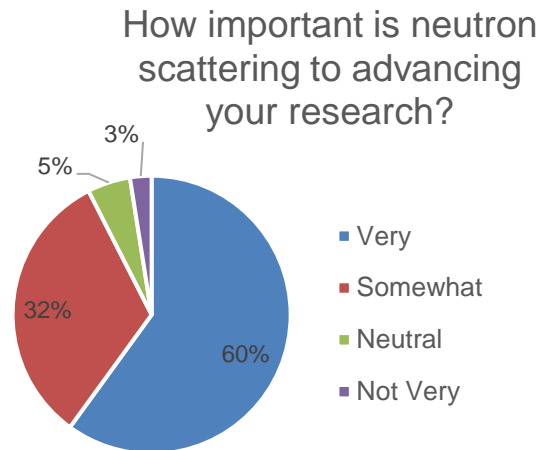
<http://cins.ca>
@NeutronsCanada



2020 User engagement survey

(n=40, Canadian PI, representing ~1/3 of the user community*)

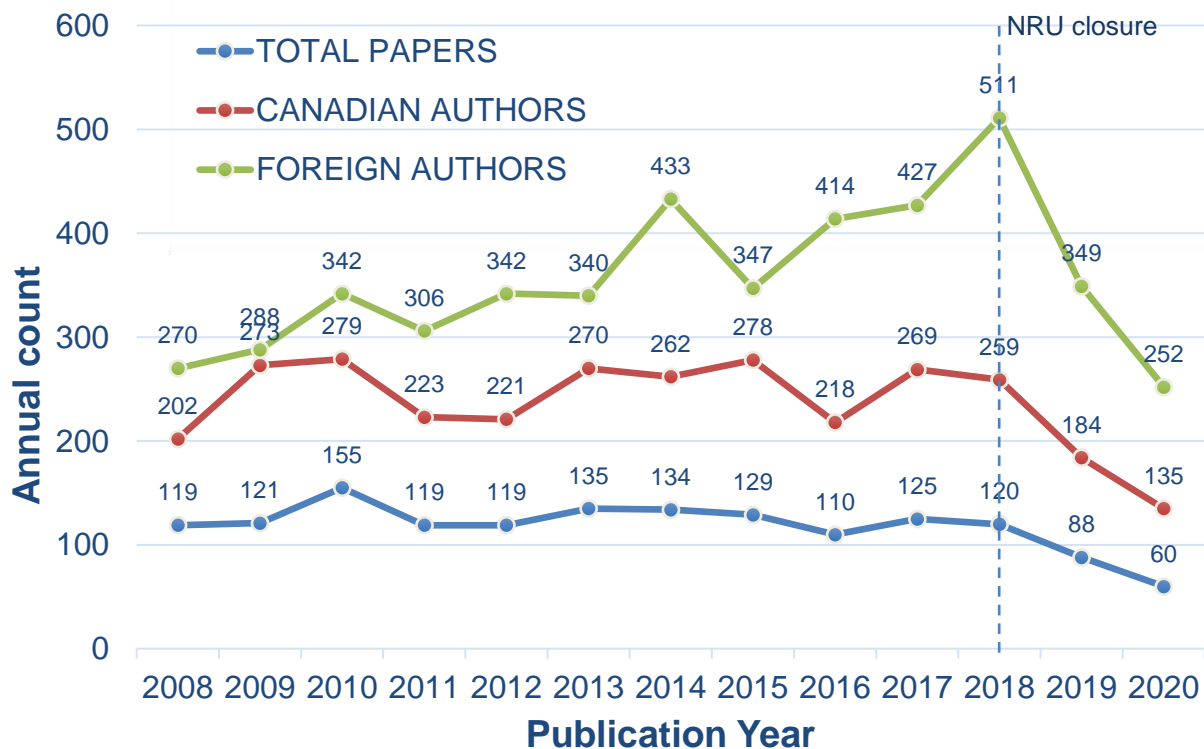
Neutron beams are important for research across a wide variety of fields.



* The neutron **user community** is defined as those with 2 publications in a 5 year period using neutron beams.

The closure of NRU has had a significant impact in scientific output, even halting the growth in foreign collaborations.

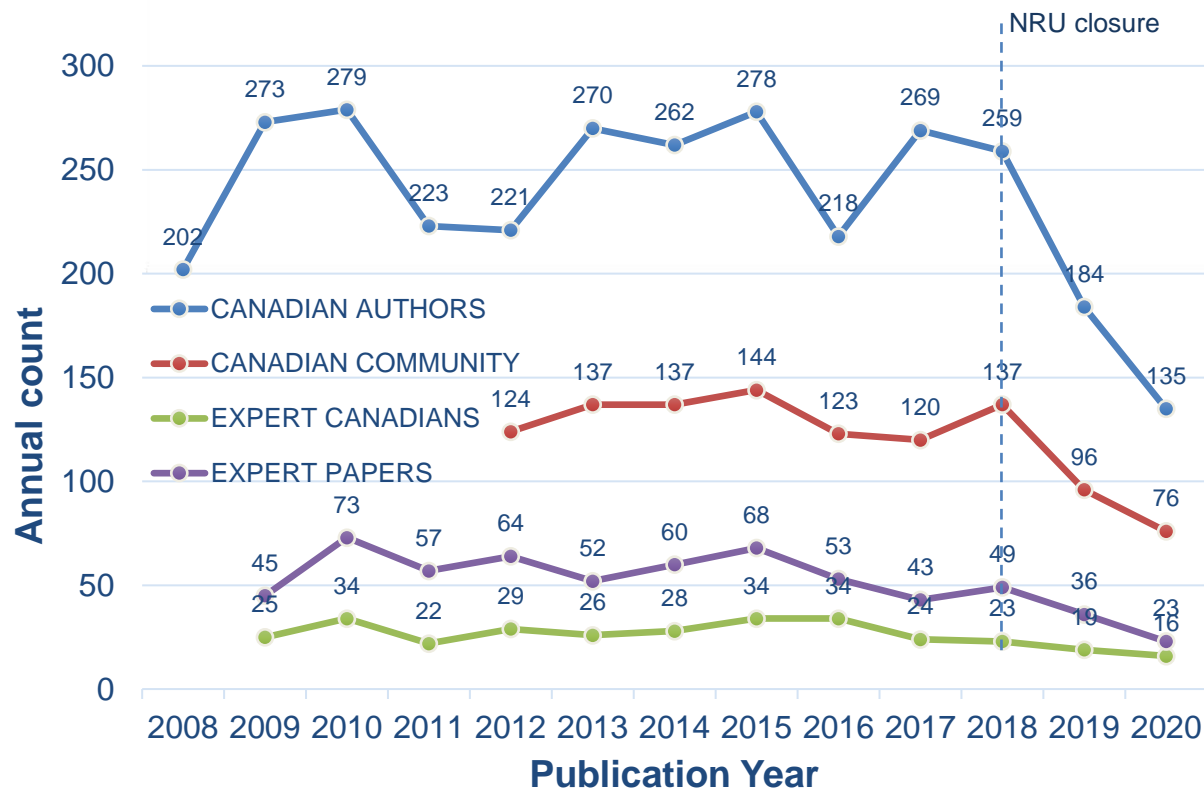
The neutron gap (the lack of ready access to neutron beams) is already being seen in fewer users and publications overall.



Web of Science search for research with neutrons beams and at least one Canadian author. Methods here: [doi:10.1139/facets-2019-0003](https://doi.org/10.1139/facets-2019-0003)

The neutron user community*, as identified by publications, is shrinking.

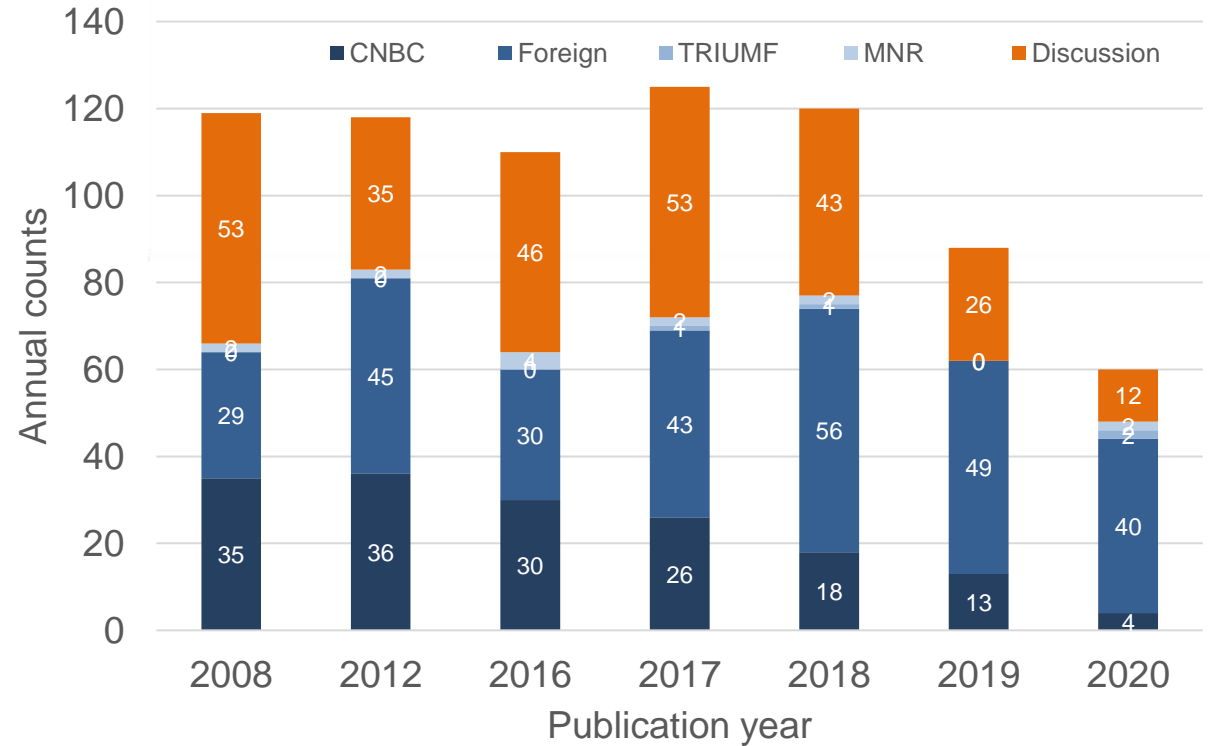
Foreign facility access is slowing the decrease of the expert community*, but less beam time overall erodes the number of publications.



* The neutron **user community** is defined as those with 2 publications in a 5 year period using neutron beams. The **expert community** is defined as those with 4 publications in a 2 year period using neutron beams

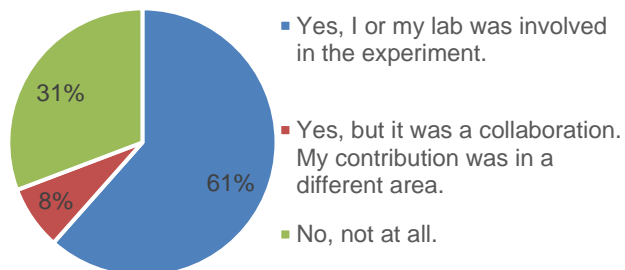
Foreign facility access is sustaining publication numbers with new data, as CNBC generated data dwindles.

MNR generated data will increase, but will it be enough?



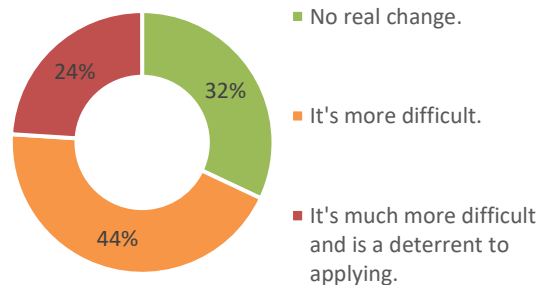
40% of users have not conducted an experiment in the two years since the CNBC closed (March 2018)

Have you conducted an experiment that used neutron beams since March 2018?



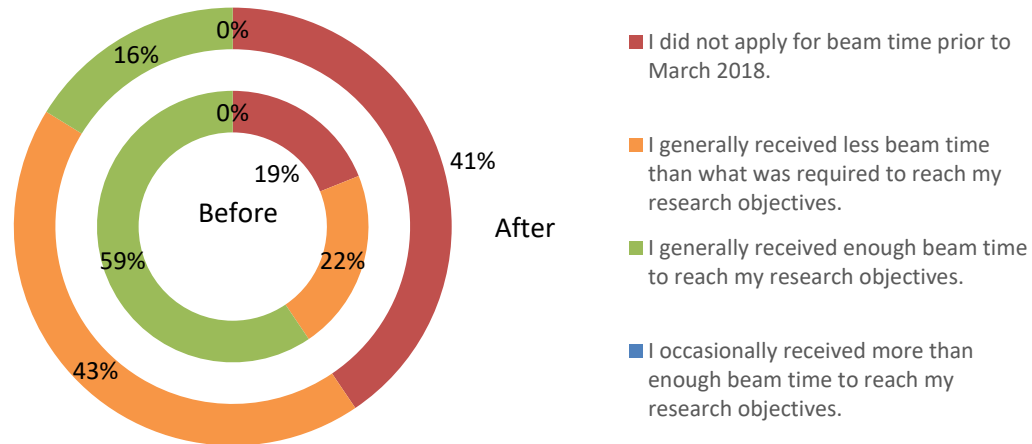
Two-thirds (68%) of respondents agree that getting beam time is more difficult, with 24% saying the increased difficulty is a deterrent to apply

How has the difficulty in
obtaining beam time
changed since March 2018?



Insufficient beam time has increased from 41% to 84%

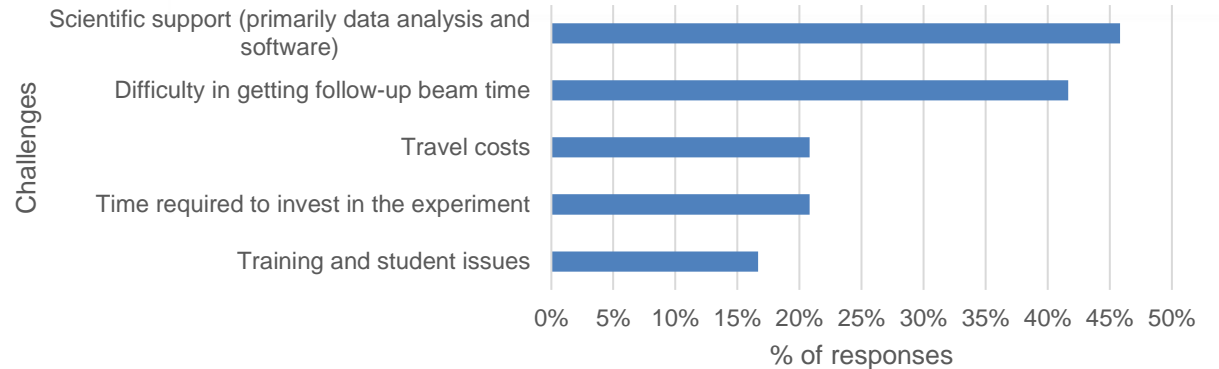
Sufficiency of beam time in the two years before and after the
CNBC closed in March 2018, for all respondents



The minority of respondents (32%) who have not been affected by the CNBC closure (they said "no real change") consist of only those who are using capabilities *that the CNBC did not provide*: e.g. Small-angle neutron scattering, cold neutrons, TOF methods, or spin echo neutron scattering.

The difficulty in getting beam time affects user's ability to compete a research project, as does the lack of local scientific support.

What challenges have you faced in seeing a neutron scattering experiment through to publication?

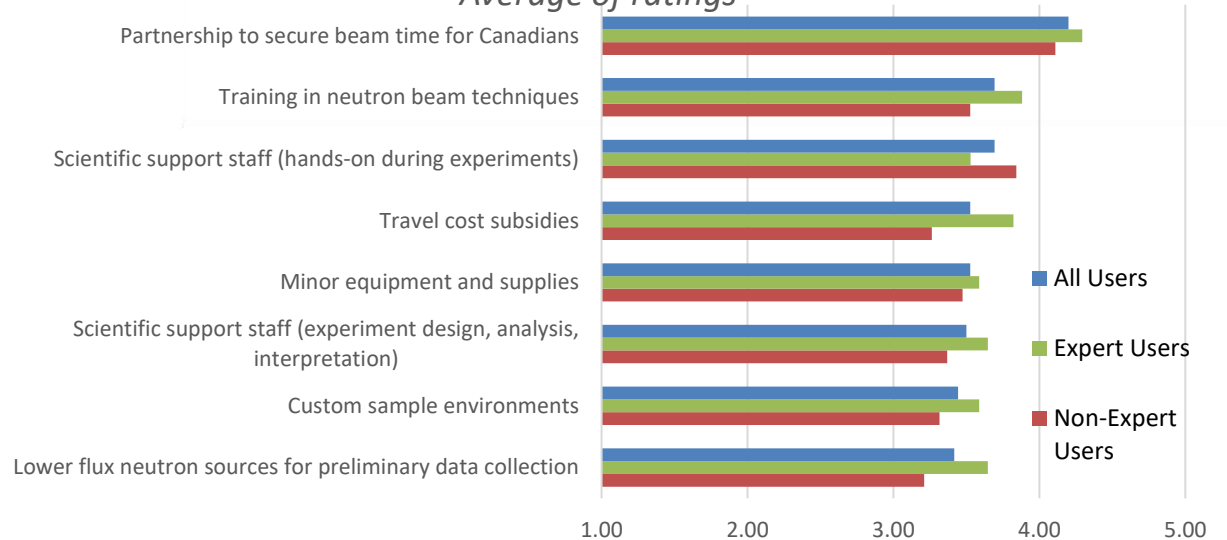


Access and **support** would most effectively restore Canadian researcher's scientific impact with neutron beams for materials research.

What services would be valuable to support your research?

1 = Not Very Valuable; 5 = Critically Valuable

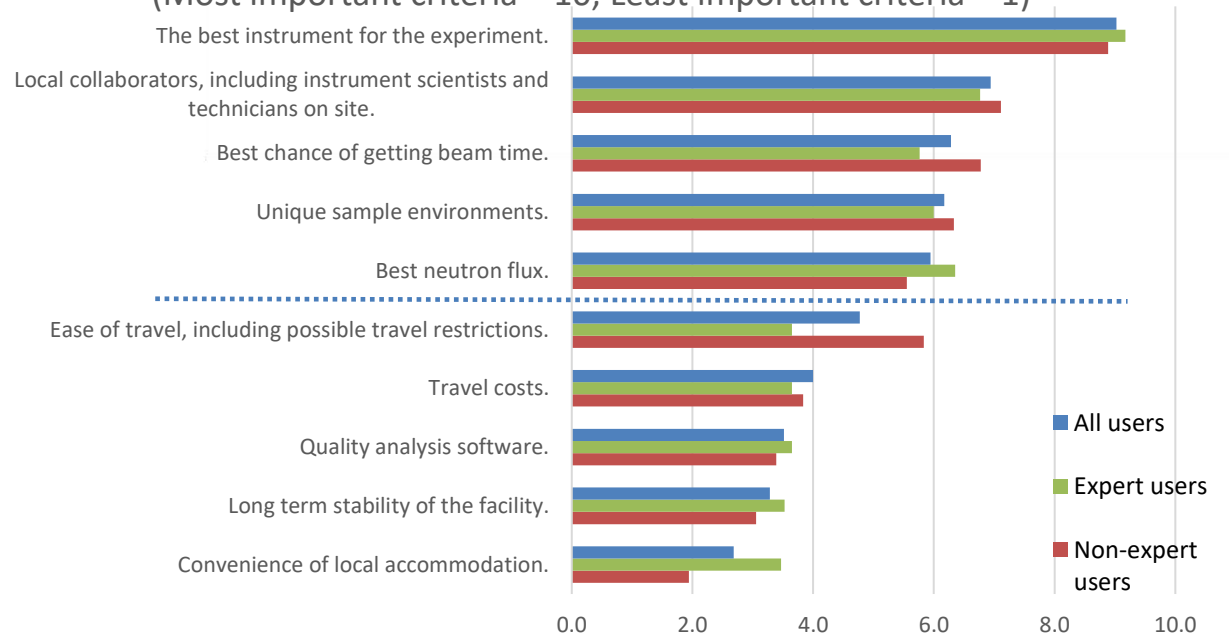
Average of ratings



Resource planning is critical to provide access to the instruments and support that users need.

Neutrons Canada can fill that role.

What things are important in choosing a neutron beam facility?
(Most important criteria = 10; Least important criteria = 1)



Neutron beams are a national and global resource.

The number of provinces and Canadian universities effected has held steady.

