

APPENDIX - full results and robustness

Socio-economic impacts of the Inuvik-Tuktoyaktuk Highway: a synthetic control analysis of new all-season road development in Arctic Canada*

Sara Wray Enns

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Abstract

From 1974 to 2017, a winter ice road was the only ground transportation from Tuktoyaktuk, Northwest Territories, to Inuvik, the regional centre and subsequently the rest of Canada. On November 15, 2017, the Inuvik-Tuktoyaktuk Highway (ITH) opened, allowing people to travel to the community year-round (Government of the Northwest Territories, 2010). I use a synthetic control analysis to study the impact of the causal effect of the opening of the ITH on crime, income, employment and population. I find non-positive results for income and employment outcomes and mixed results for crime outcomes. Data is obtained from the Canadian Census, the Northwest Territories Community Survey, Canadian Vital Statistics and the T4 Family file – made available through the Northwest Territories Bureau of Statistics.

Keywords: Infrastructure, road development, socio-economic outcomes, employment, infrastructure and income, economics of crime, demographic changes

JEL Codes: J15, J21, K14, O18, P25, R23

*I thank my supervisor team Donn Feir, Rob Gillezeau and Maggie E.C. Jones

AVERAGE FAMILY INCOME

Figure 1: Average family income results for Tuktoyaktuk

PREFERRED SPECIFICATION

2014 treatment; Other NWT communities as donor pool

Full covariates list; level data

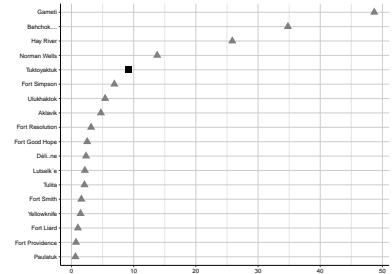
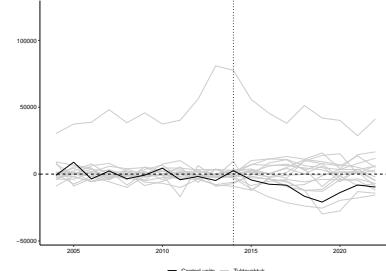
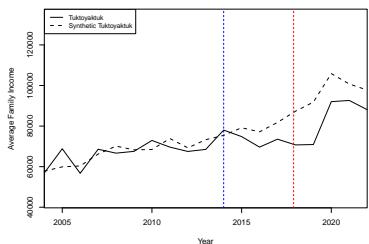
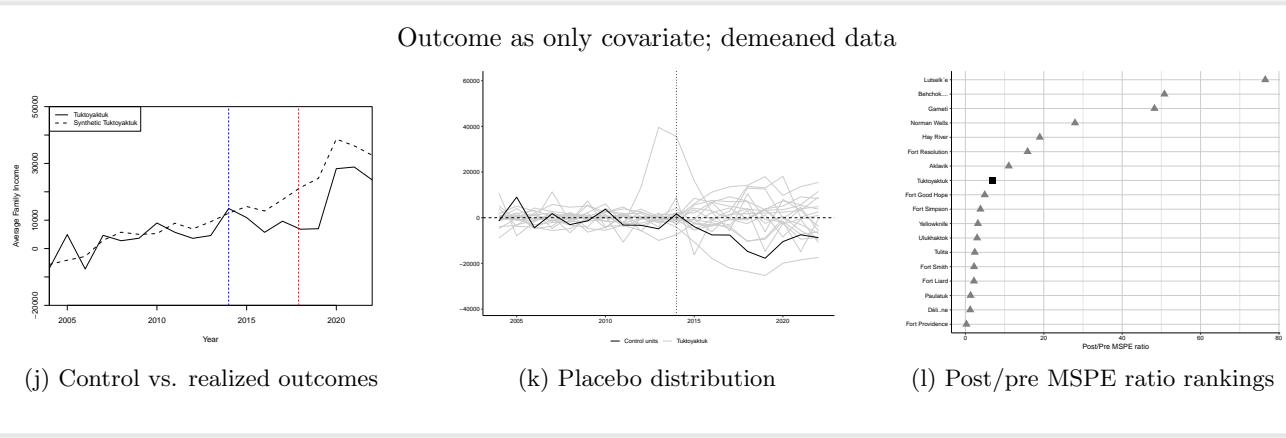
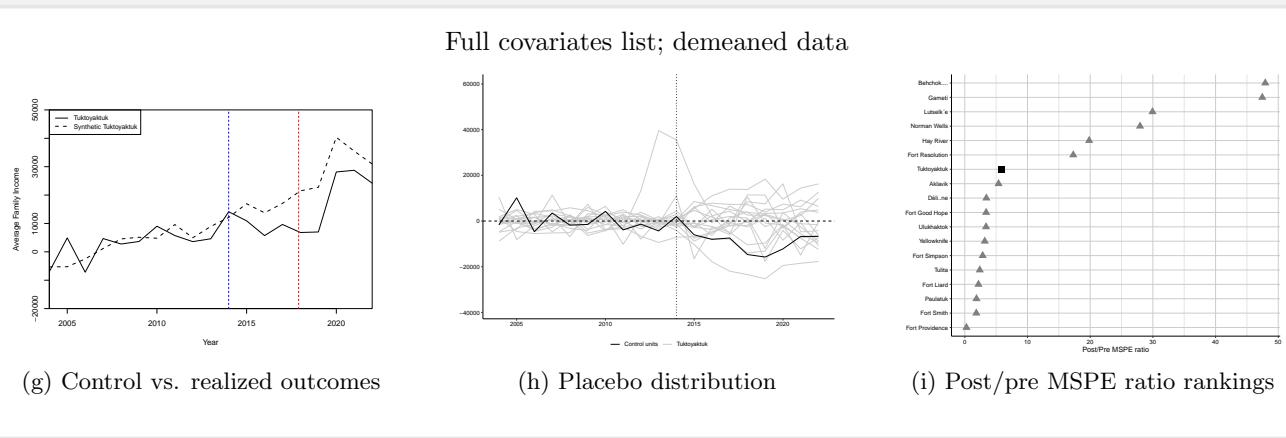
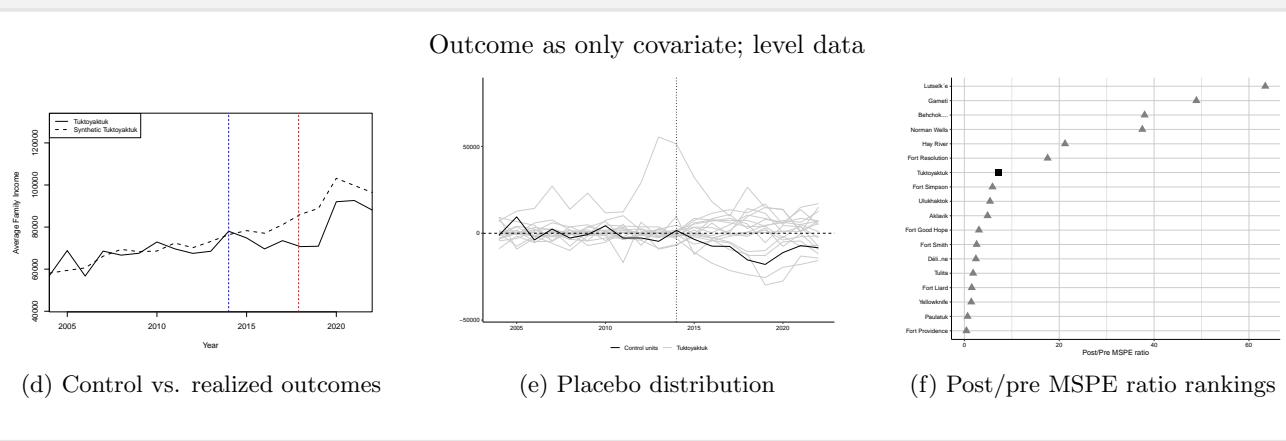
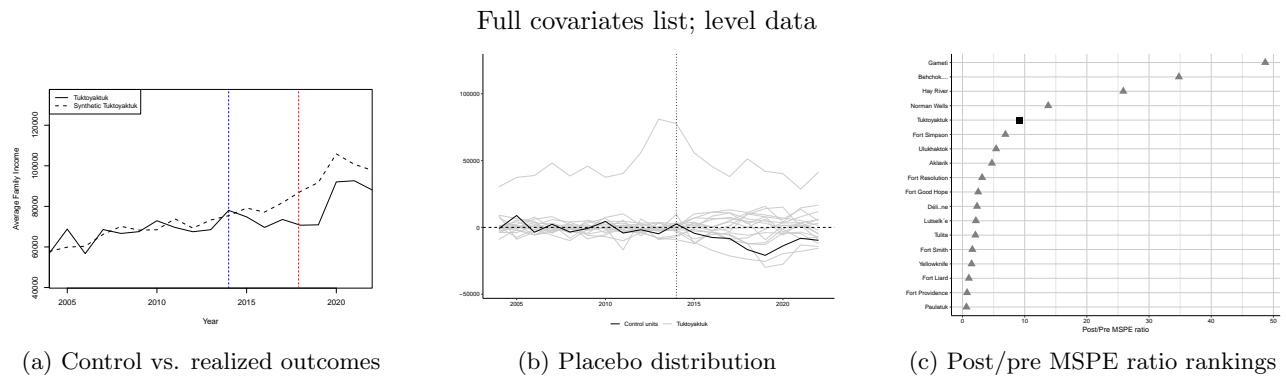


Figure 2: Average family income synthetic control results for Tuktoyaktuk

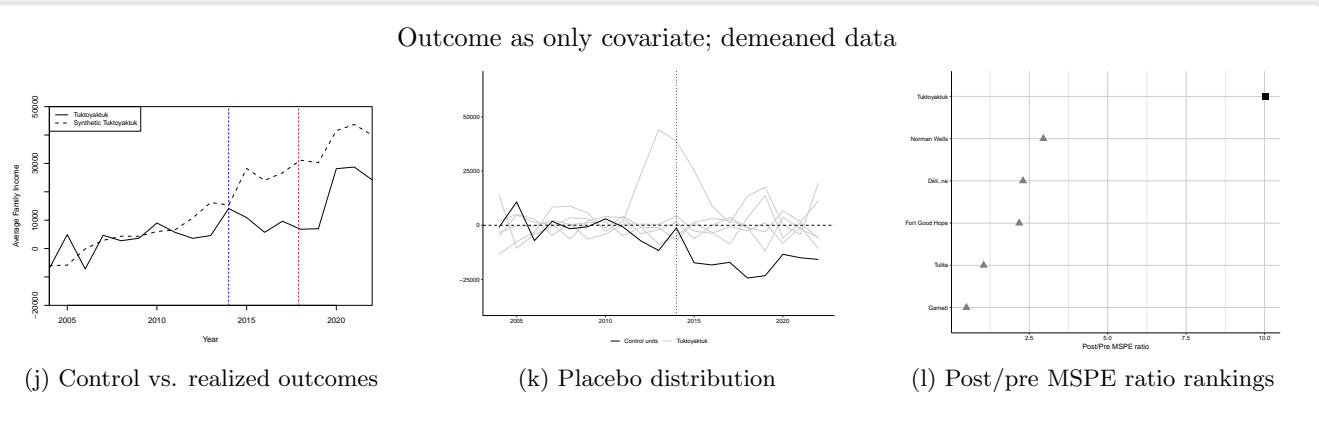
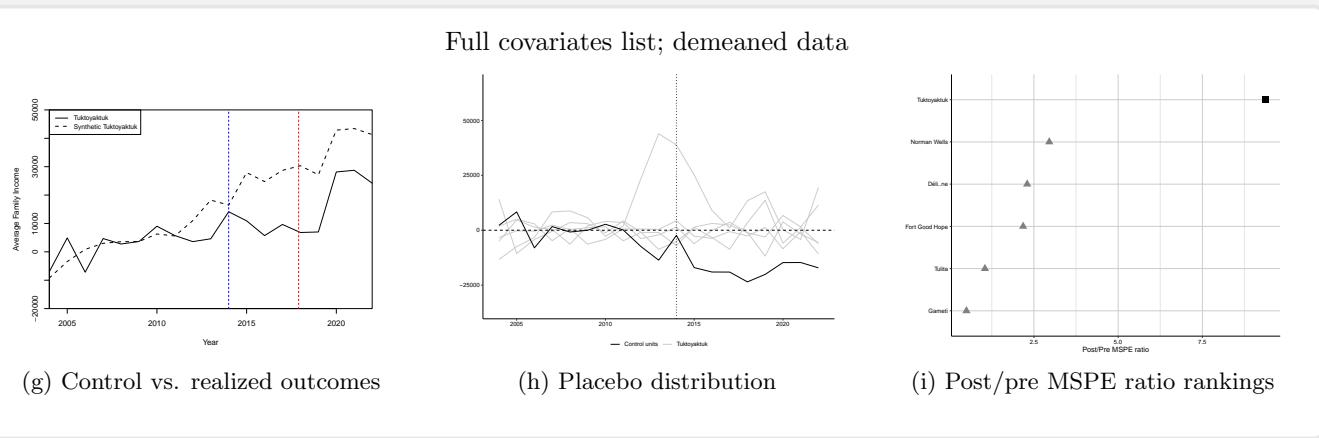
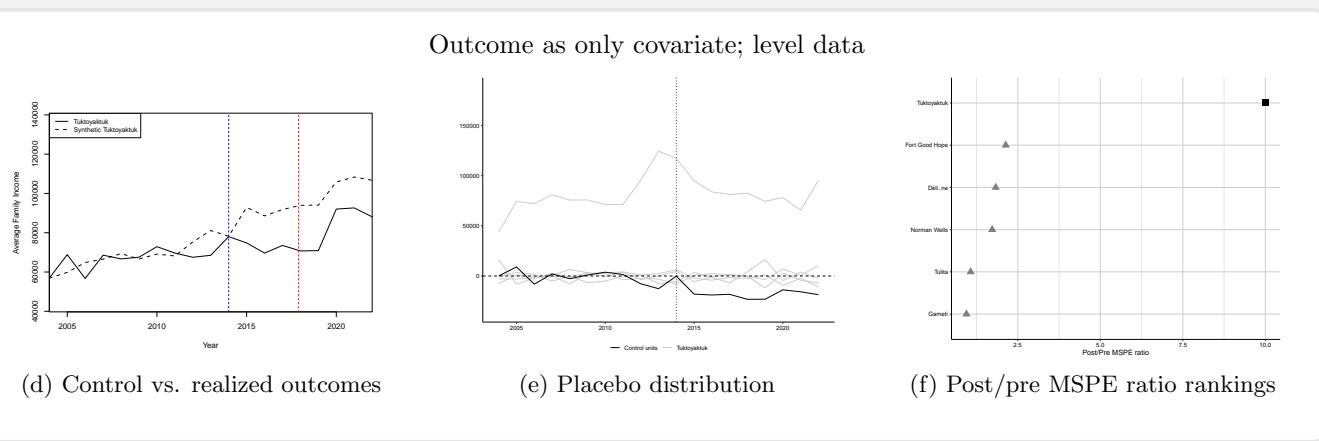
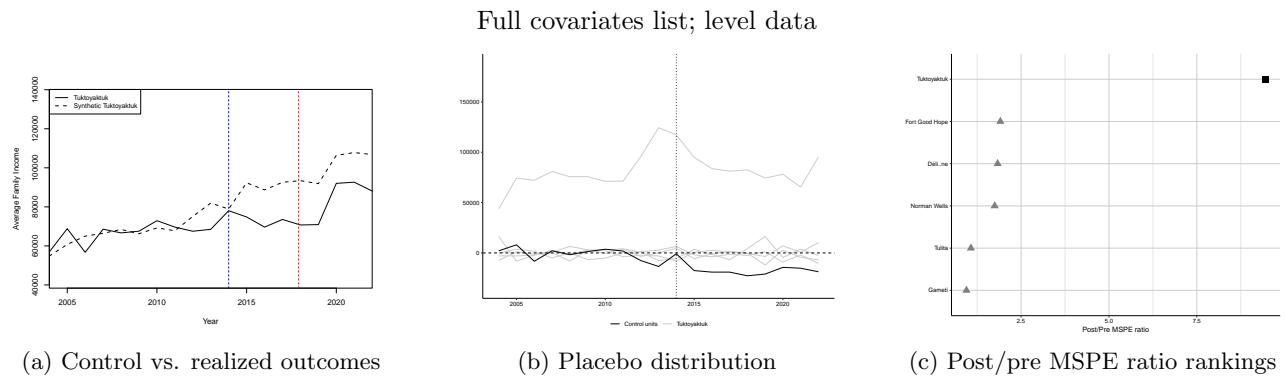
2014 treatment; Other NWT communities as donor pool



NOTES: Average family income is based on a family size of two adults and two children or SOMETHING SOMETHING, and is taken as the community average. The synthetic control vs. realized outcomes graph shows a blue dotted line at 2014, the year construction started and a red line in November 2017, when the road opened. The control pool includes every community in the Northwest Territories that has a consistent population above 100 people during the study period.

Figure 3: Average family income synthetic control results for Tuktoyaktuk

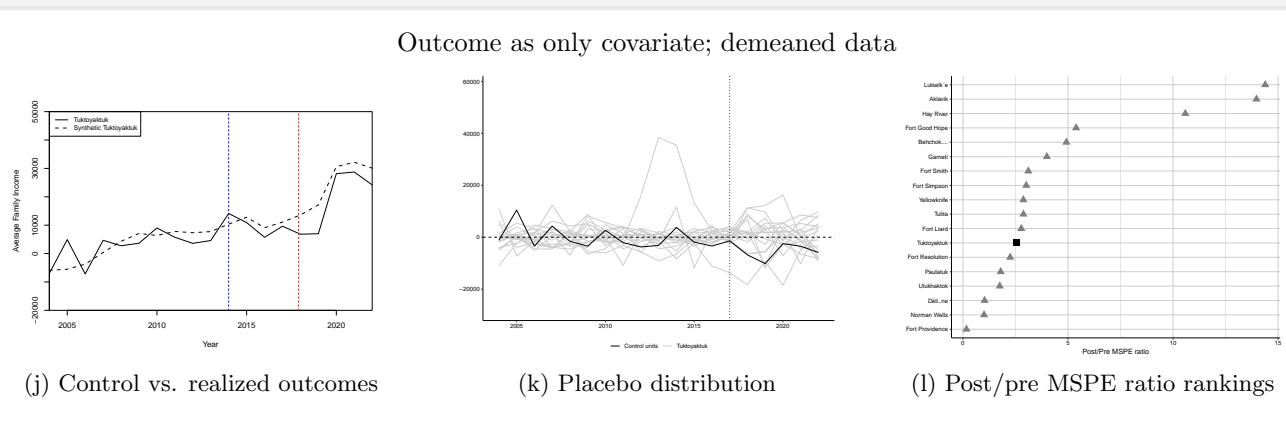
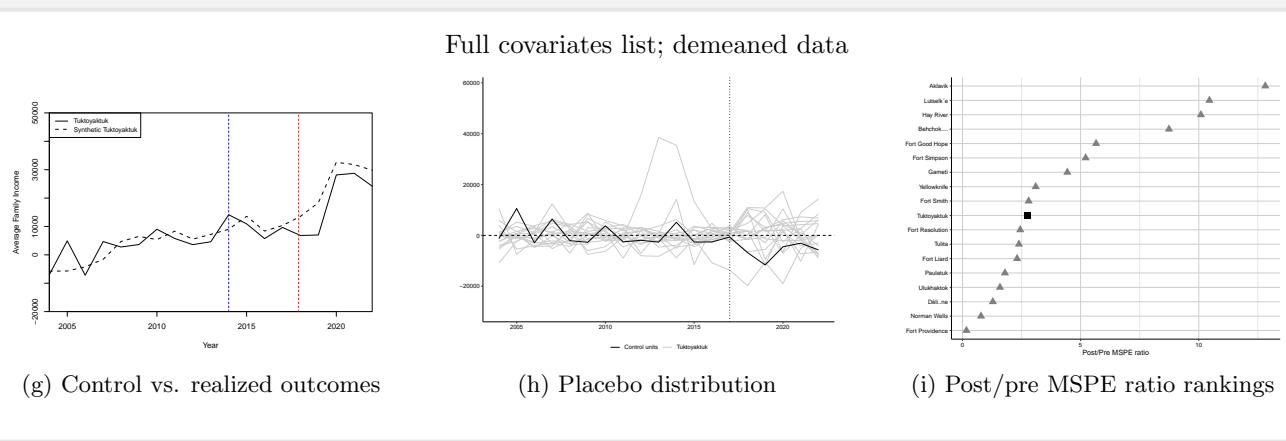
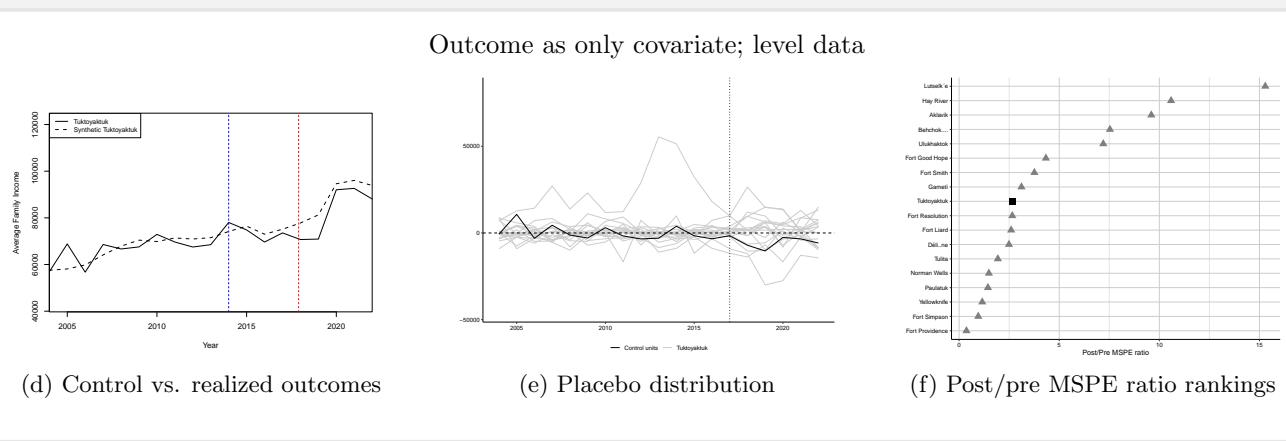
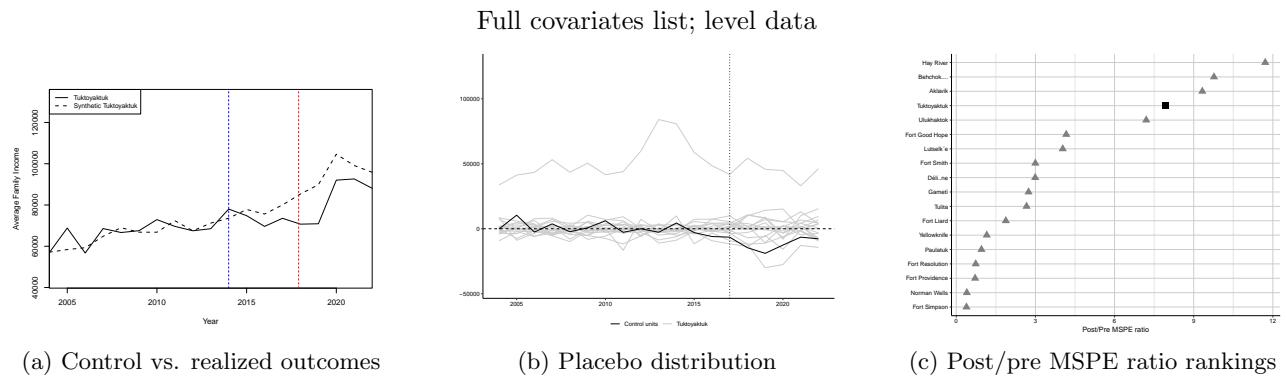
2014 treatment; Mackenzie valley ice road communities as donor pool



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Figure 4: Average family income synthetic control results for Tuktoyaktuk

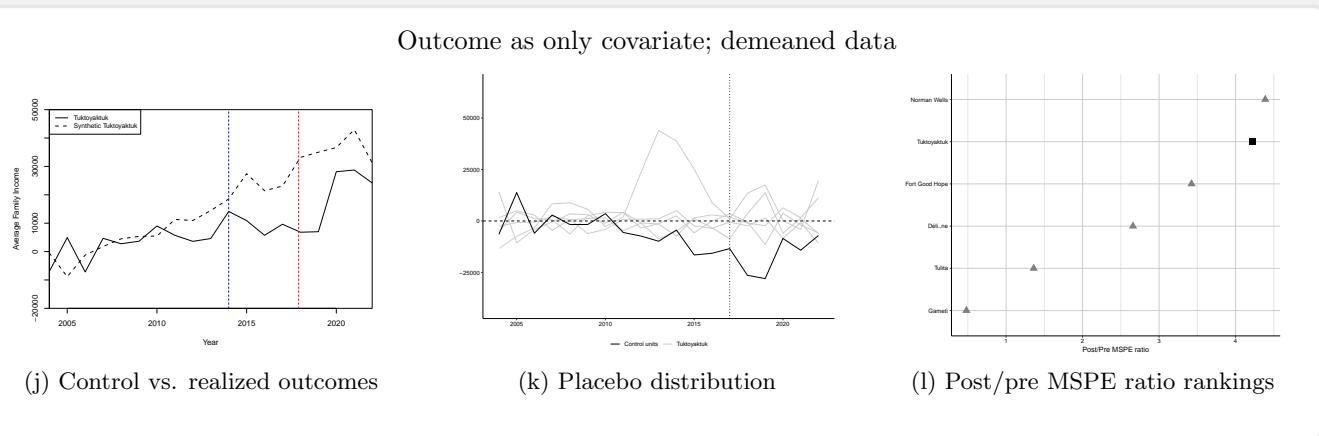
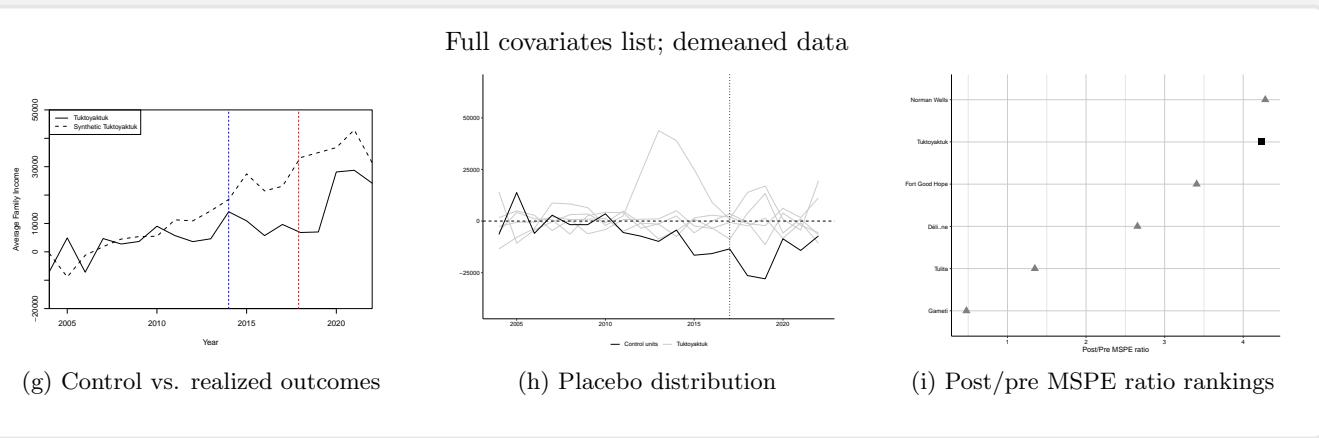
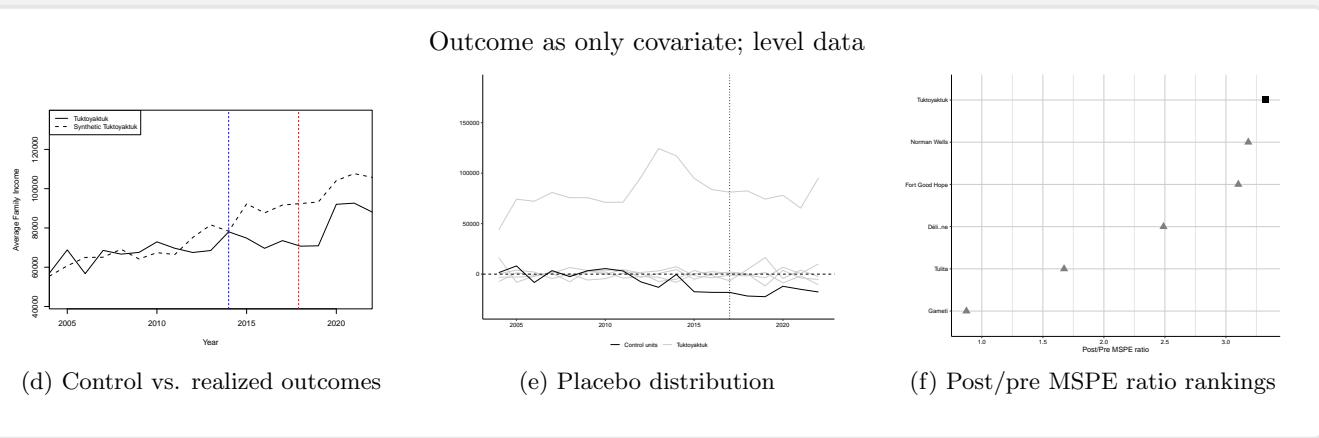
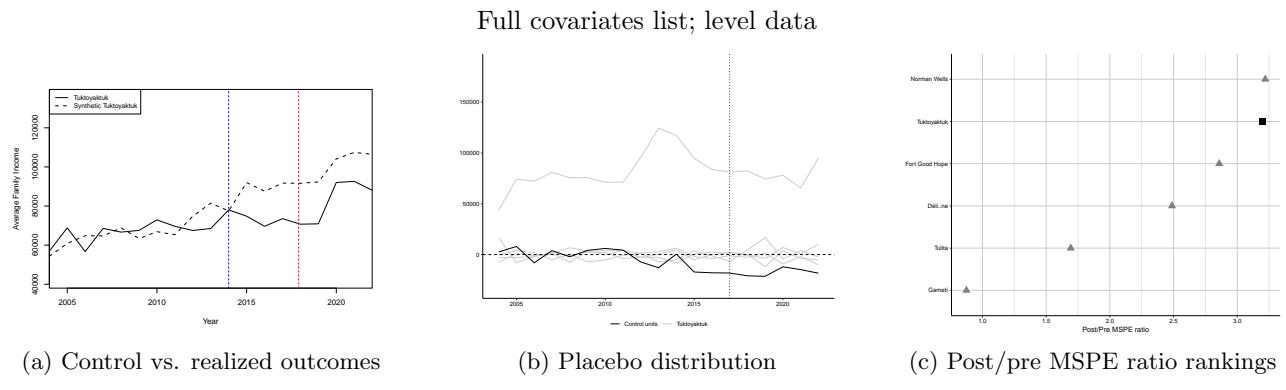
2017 treatment; Other NWT communities as donor pool



NOTES: Average family income is based on a family size of two adults and two children or SOMETHING SOMETHING, and is taken as the community average. The synthetic control vs. realized outcomes graph shows a blue dotted line at 2014, the year construction started and a red line in November 2017, when the road opened. The control pool includes every community in the Northwest Territories that has a consistent population above 100 people during the study period.

Figure 5: Average family income synthetic control results for Tuktoyaktuk

2017 treatment; Mackenzie valley ice road communities as donor pool



NOTES: Average family income is based on a family size of two adults and two children or SOMETHING SOMETHING, and is taken as the community average. The synthetic control vs. realized outcomes graph shows a blue dotted line at 2014, the year construction started and a red line in November 2017, when the road opened. The control pool includes communities on the proposed Mackenzie valley highway that currently only have seasonal ice road overland access.

AVERAGE FAMILY INCOME: SINGLE PARENT HOUSEHOLDS

Figure 6: Average family income - single parent households results for Tuktoyaktuk

PREFERRED SPECIFICATION

2014 treatment; Other NWT communities as donor pool

Full covariates list; level data

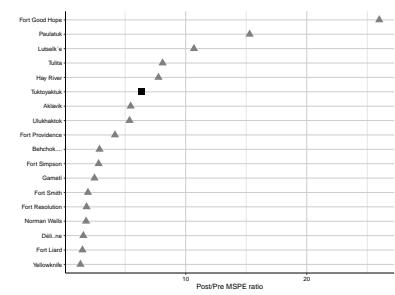
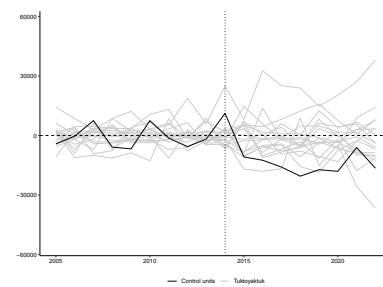
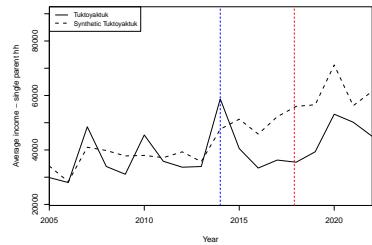
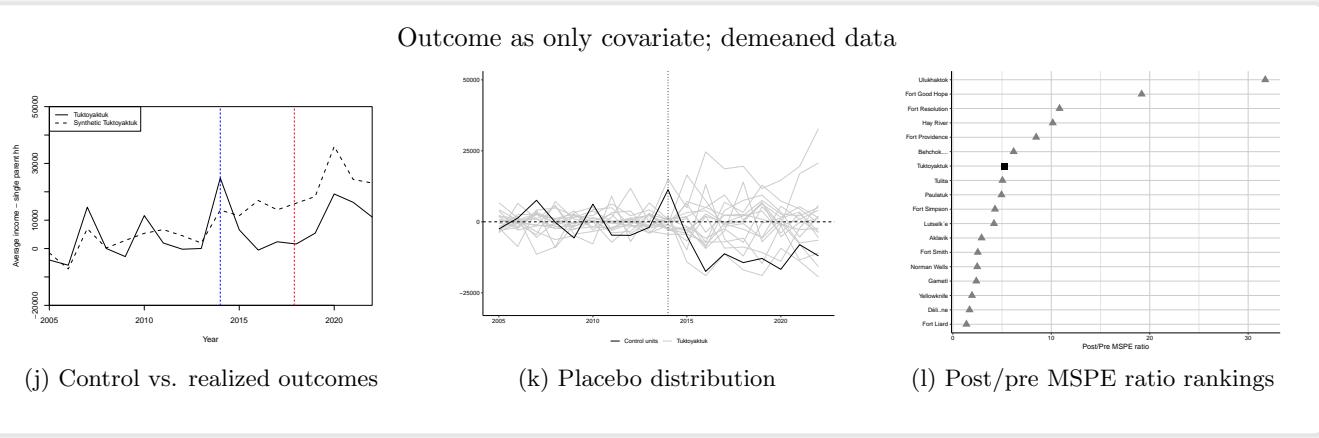
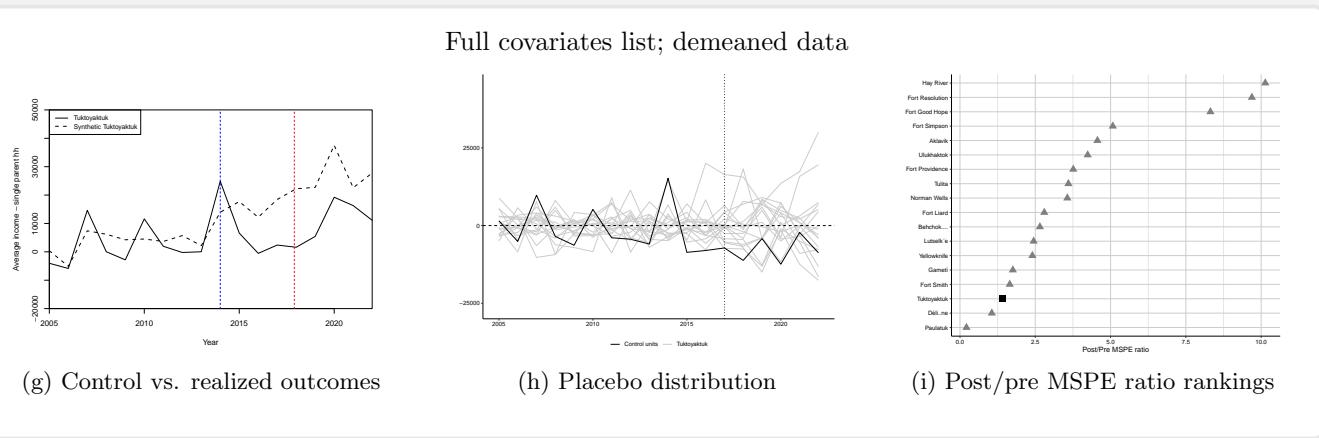
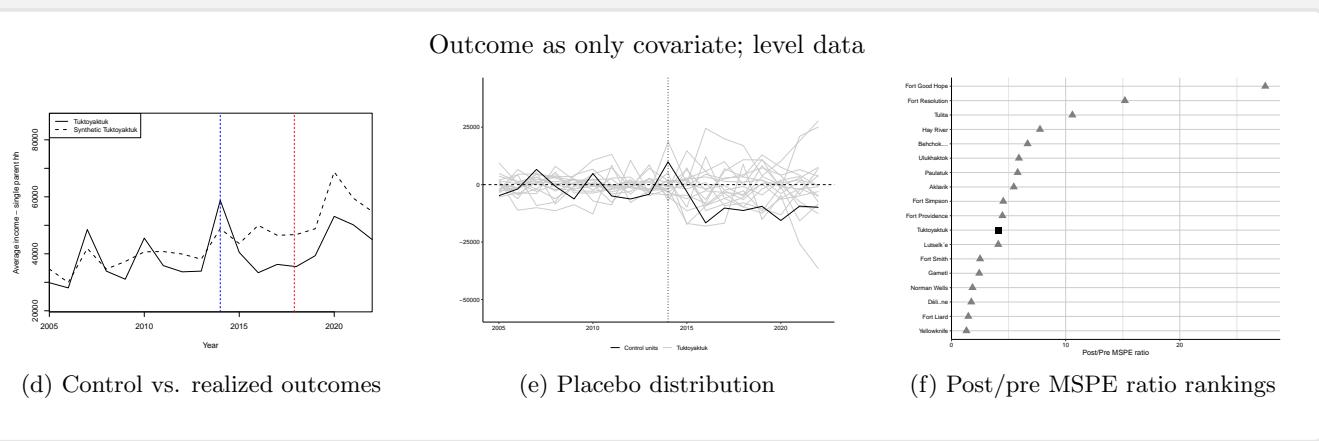
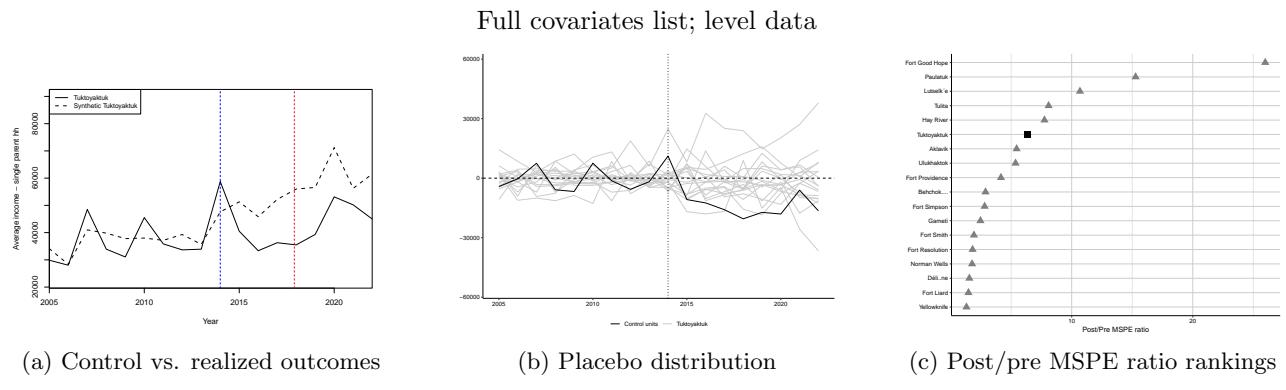


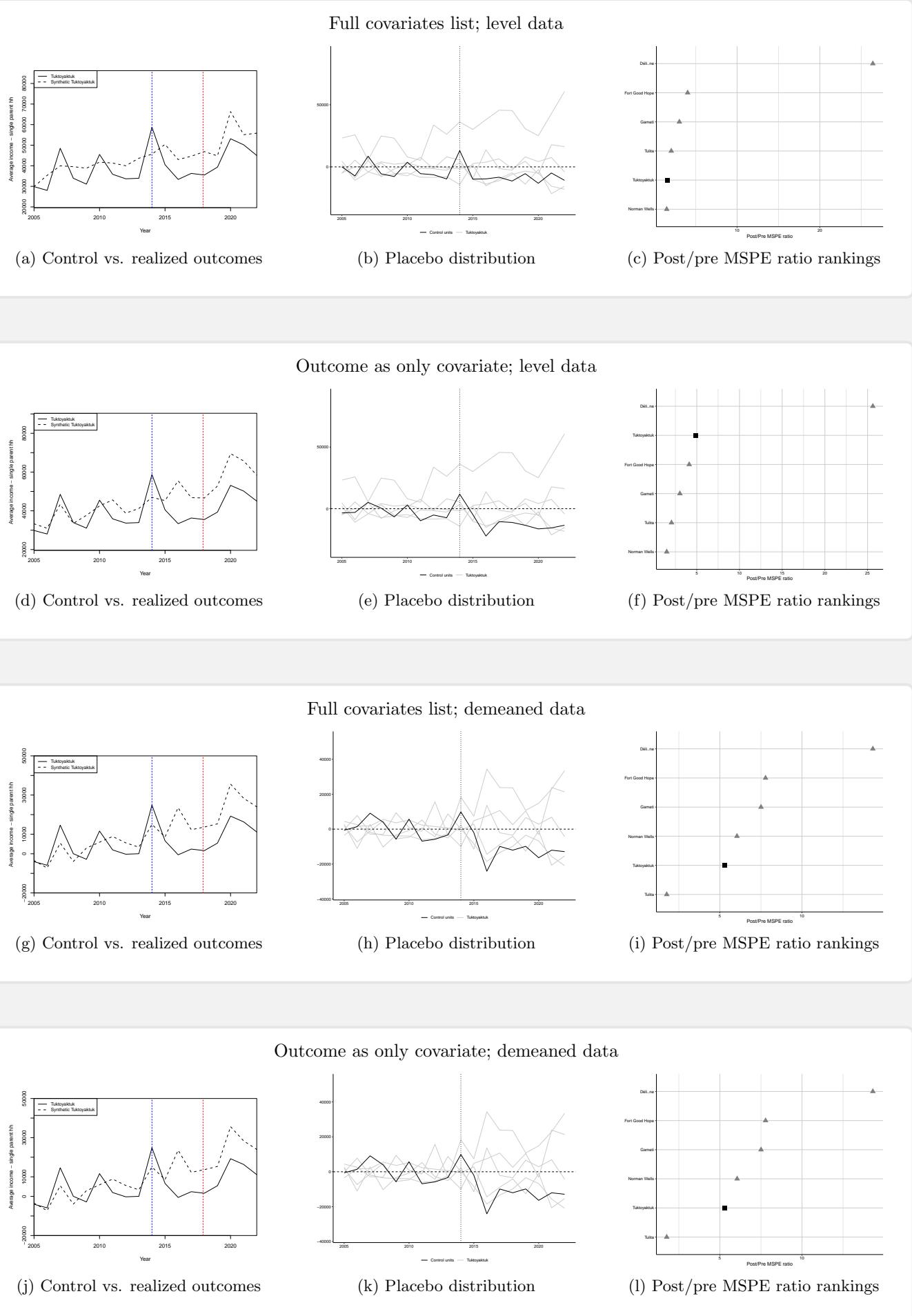
Figure 7: Single parent household's average family income synthetic control results for Tuktoyaktuk

2014 treatment; Other NWT communities as donor pool



NOTES: Average family income for single parent households. A household is defined as SOMETHING SOMETHING. The synthetic control vs. realized outcomes graph shows a blue dotted line at 2014, the year construction started and a red line in November 2017, when the road opened. The control pool includes every community in the Northwest Territories that has a consistent population above 100 people during the study period.

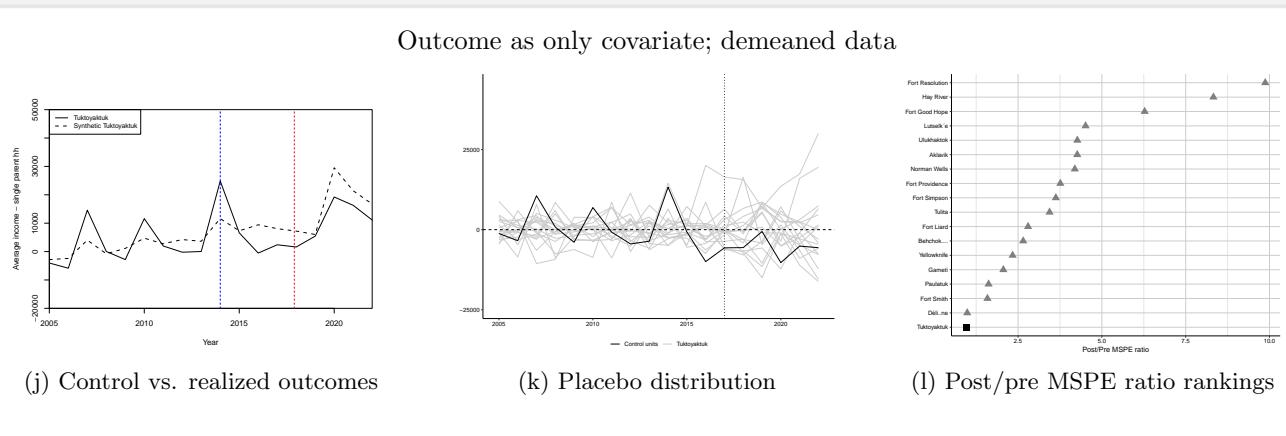
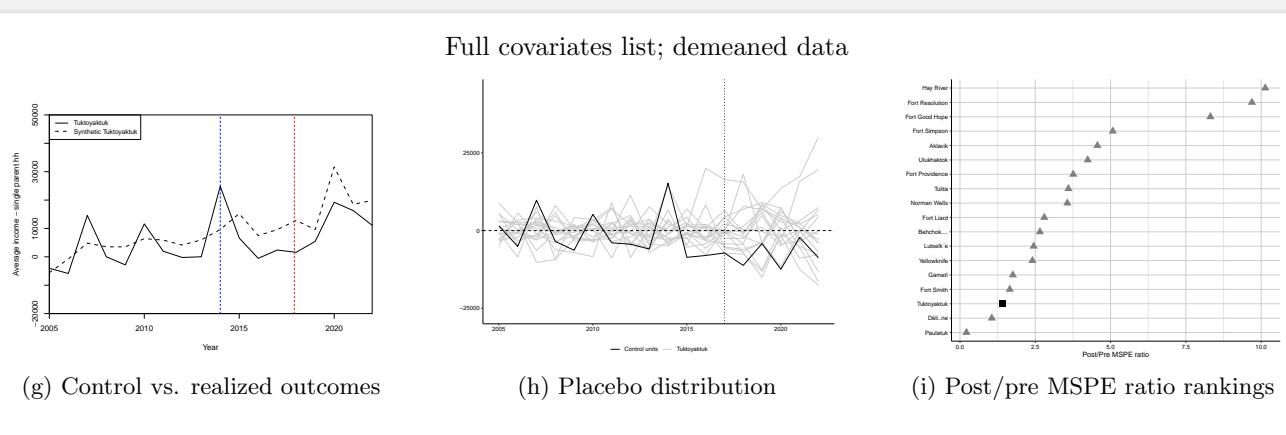
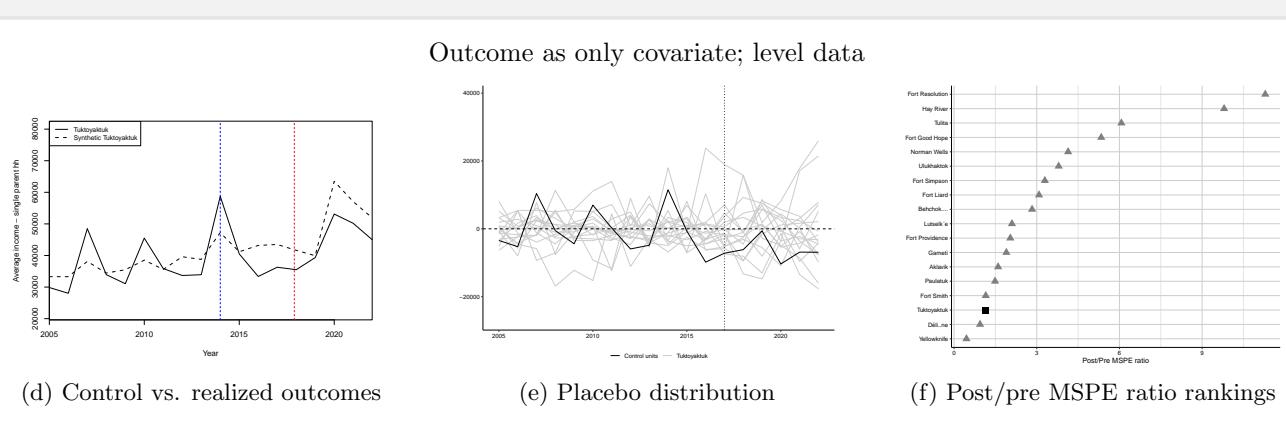
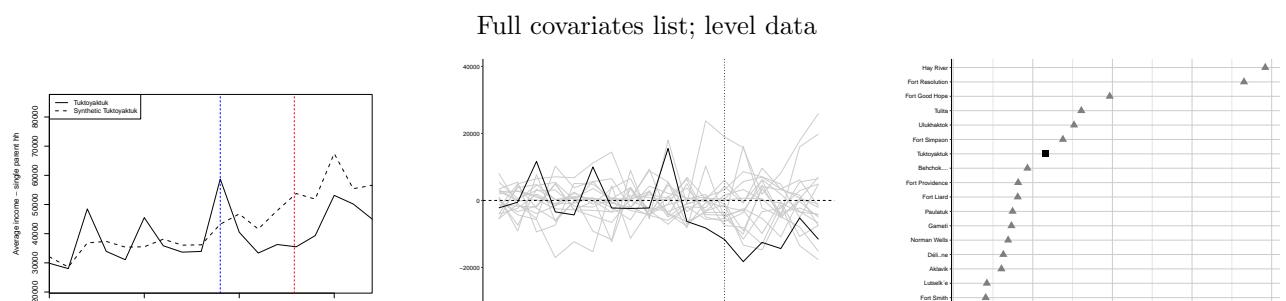
Figure 8: Single parent household's average family income synthetic control results for Tuktoyaktuk
2014 treatment; Mackenzie valley ice road communities as donor pool



NOTES: Average family income for single parent households. A household is defined as SOMETHING SOMETHING. The synthetic control vs. realized outcomes graph shows a blue dotted line at 2014, the year construction started and a red line in November 2017, when the road opened. The control pool includes communities on the proposed Mackenzie valley highway that currently only have seasonal ice road overland access.

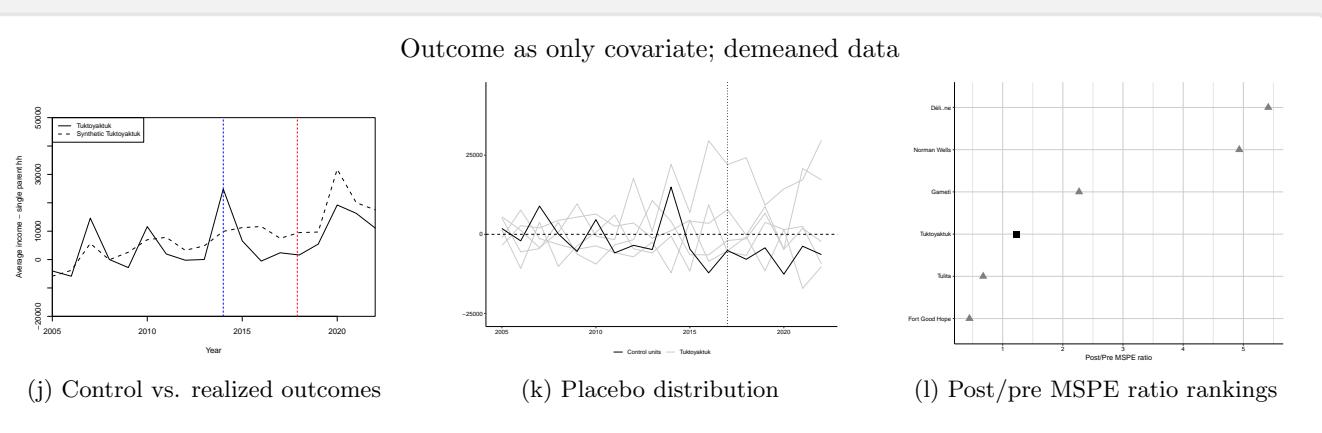
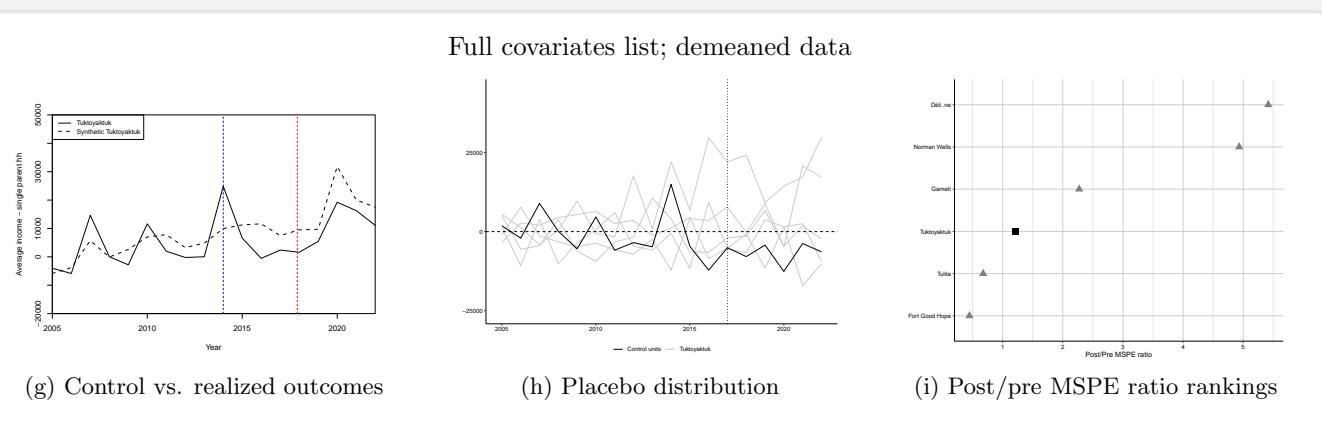
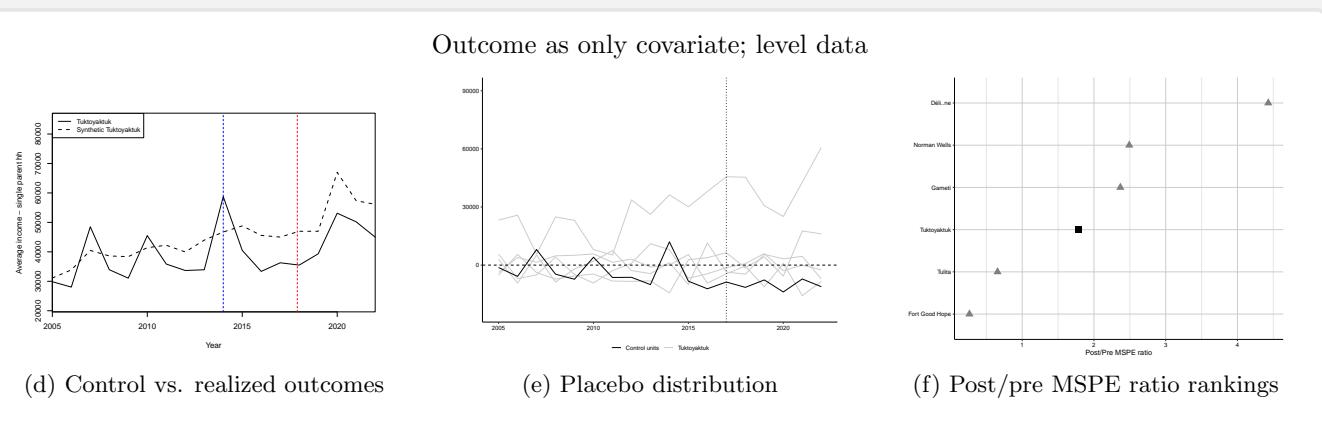
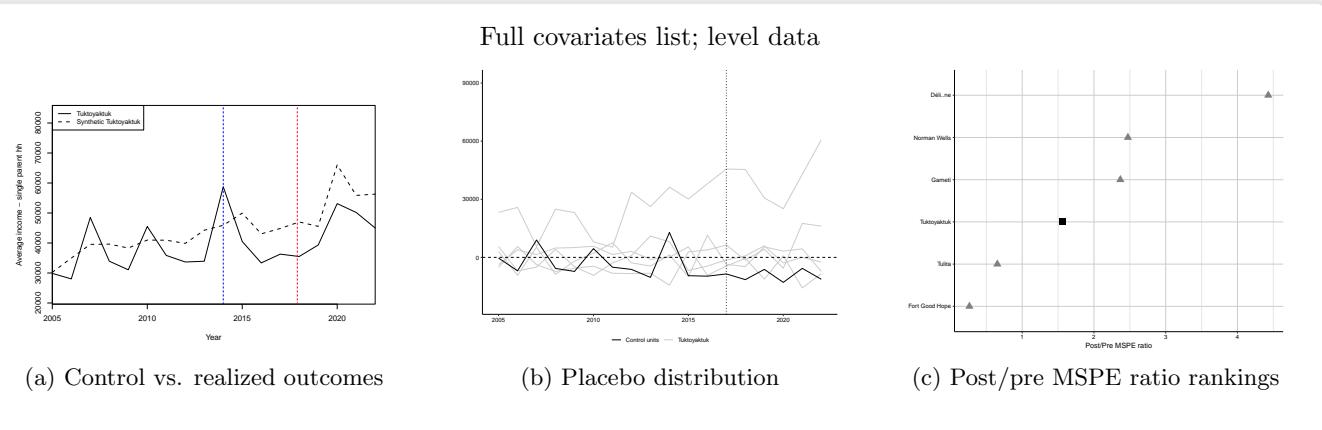
Figure 9: Single parent household's average family income synthetic control results for Tuktoyaktuk

2017 treatment; Other NWT communities as donor pool



NOTES: Average family income for single parent households. A household is defined as SOMETHING SOMETHING. The synthetic control vs. realized outcomes graph shows a blue dotted line at 2014, the year construction started and a red line in November 2017, when the road opened. The control pool includes every community in the Northwest Territories that has a consistent population above 100 people during the study period.

Figure 10: Single parent household's average family income synthetic control results for Tuktoyaktuk 2017 treatment; Mackenzie valley ice road communities as donor pool



NOTES: Average family income for single parent households. A household is defined as SOMETHING SOMETHING. The synthetic control vs. realized outcomes graph shows a blue dotted line at 2014, the year construction started and a red line in November 2017, when the road opened. The control pool includes communities on the proposed Mackenzie valley highway that currently only have seasonal ice road overland access.

LOW INCOME STATUS

Figure 11: Percent of individuals who have low income status results for Tuktoyaktuk

PREFERRED SPECIFICATION

2014 treatment; Other NWT communities as donor pool

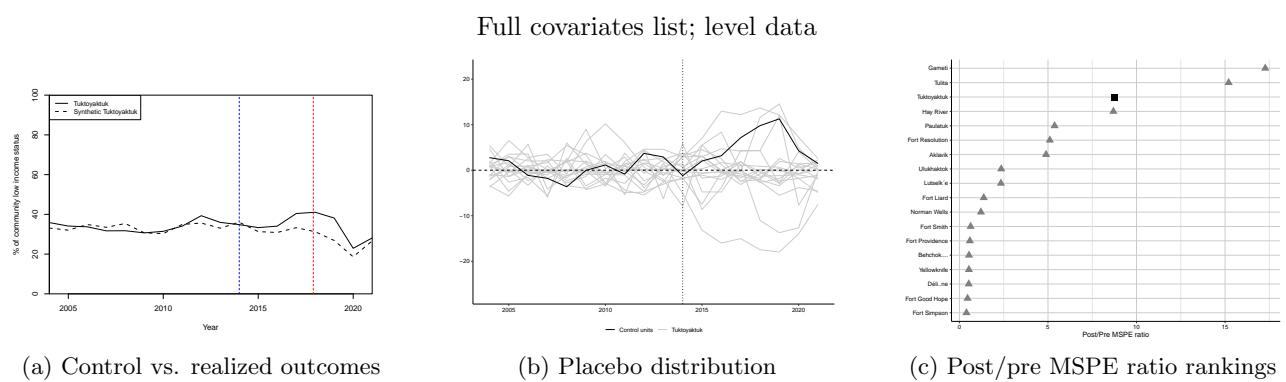
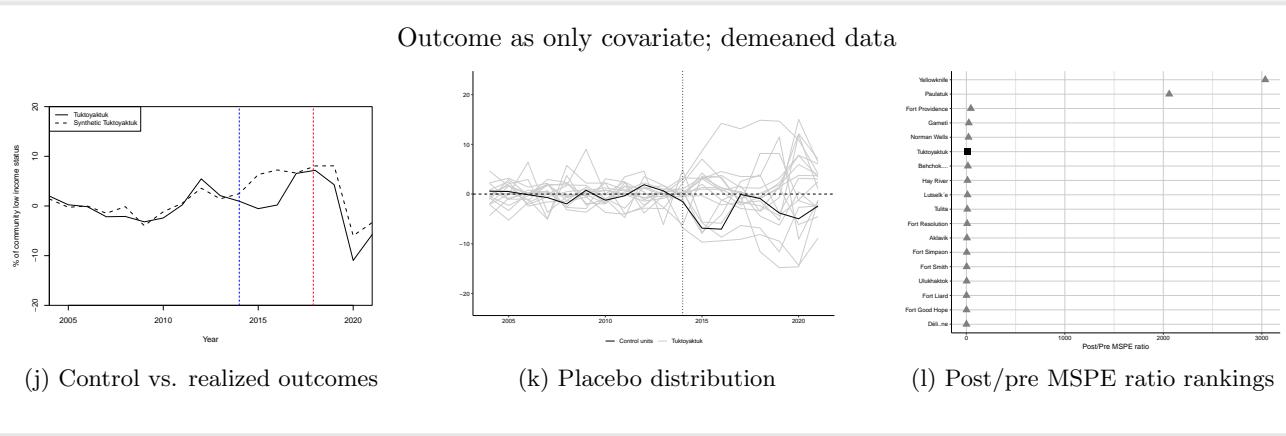
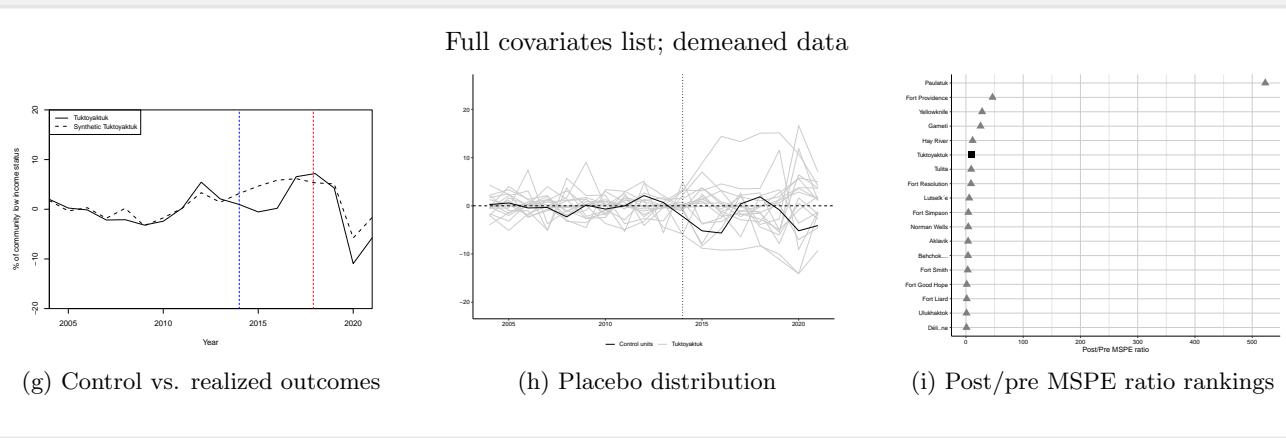
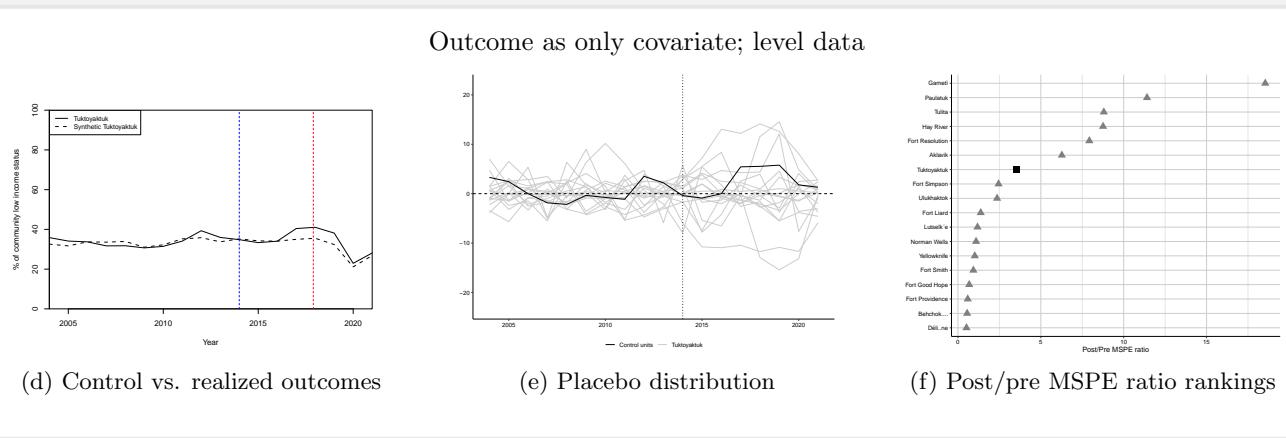
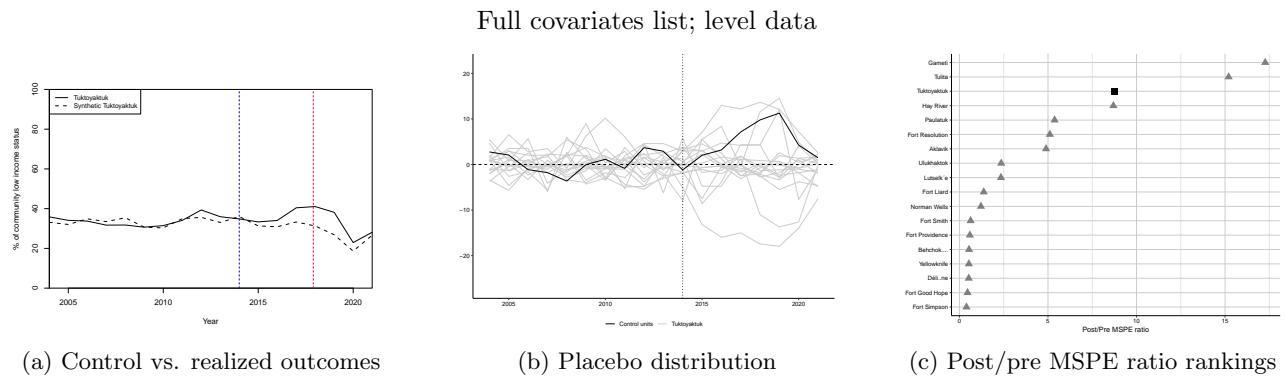


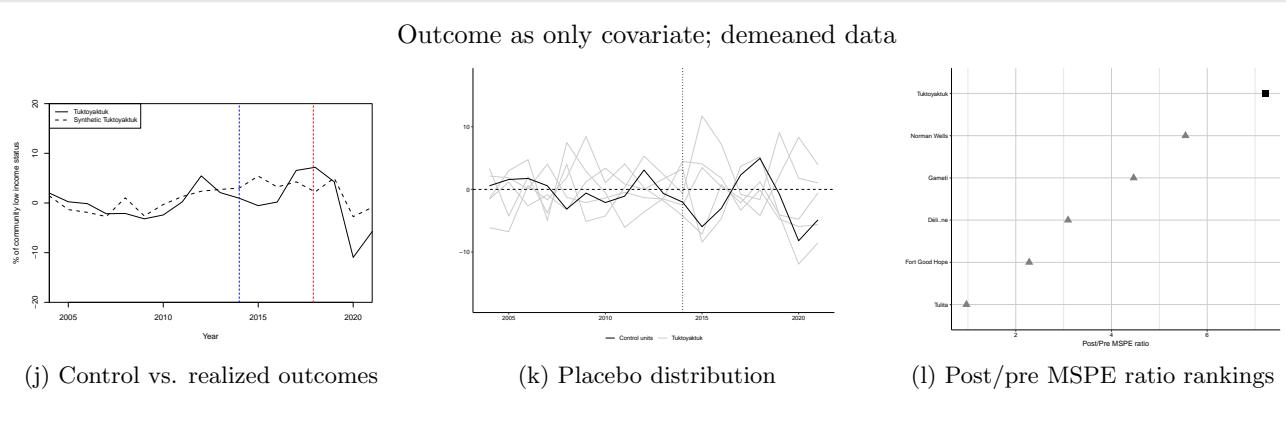
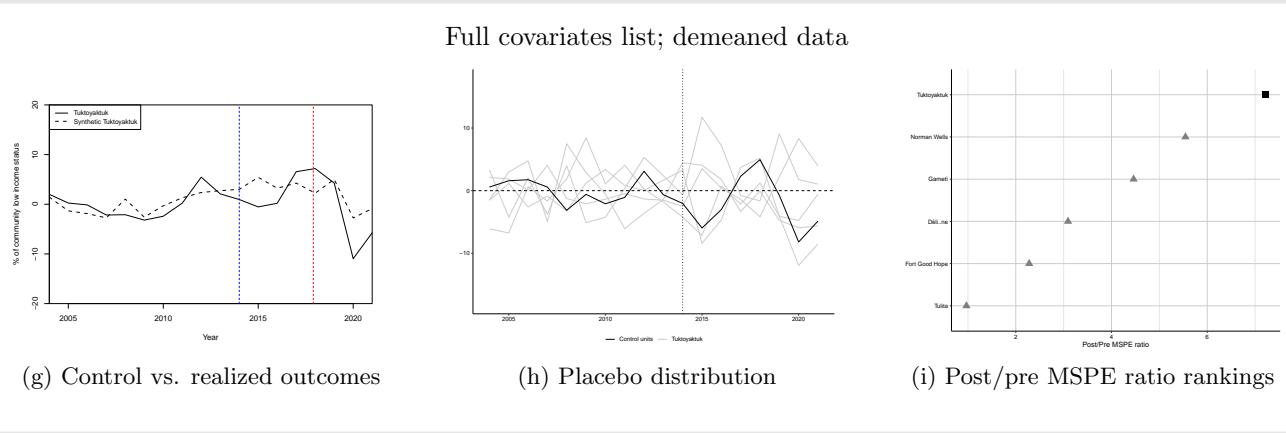
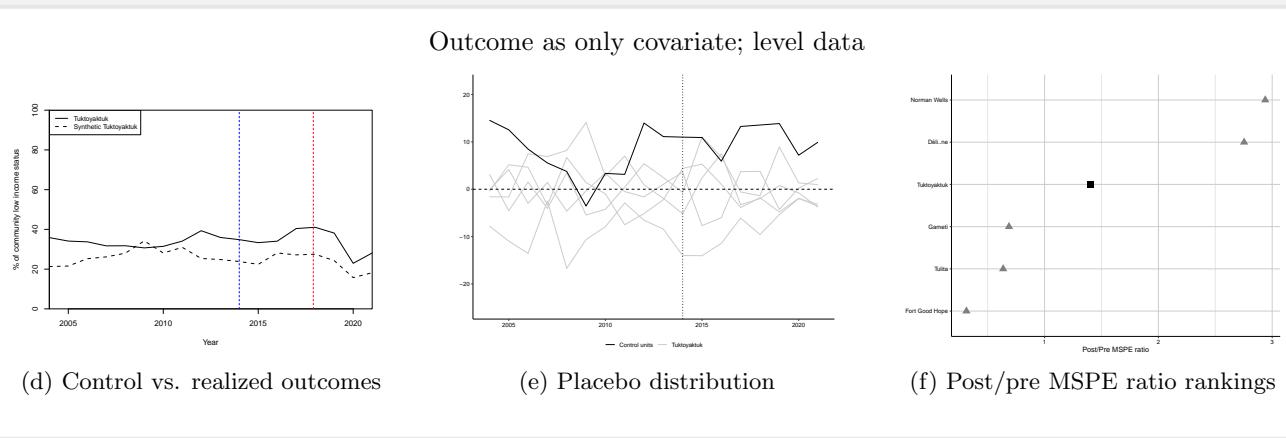
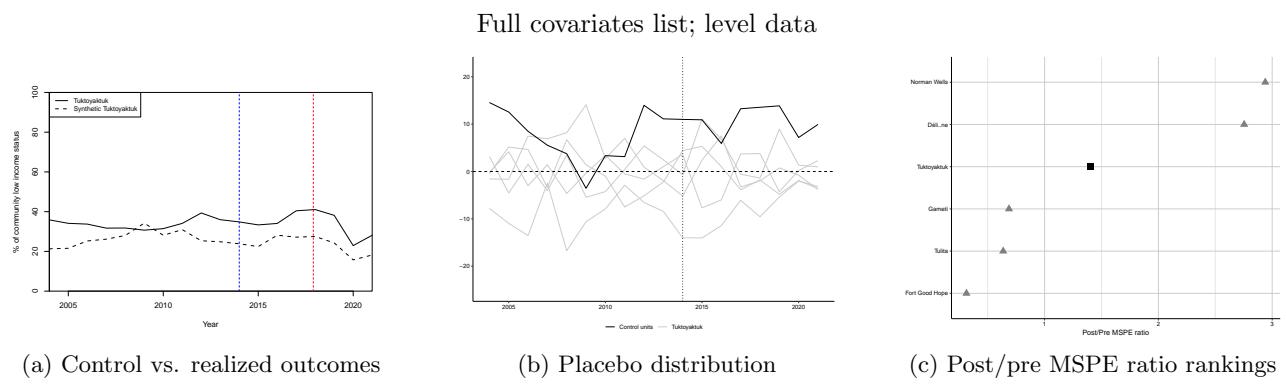
Figure 12: Low income status synthetic control results for Tuktoyaktuk

2014 treatment; Other NWT communities as donor pool



NOTES: Low income status is the proportion of the community that earns 50% of the median Canadian income. The synthetic control vs. realized outcomes graph shows a blue dotted line at 2014, the year construction started and a red line in November 2017, when the road opened. The control pool includes every community in the Northwest Territories that has a consistent population above 100 people during the study period.

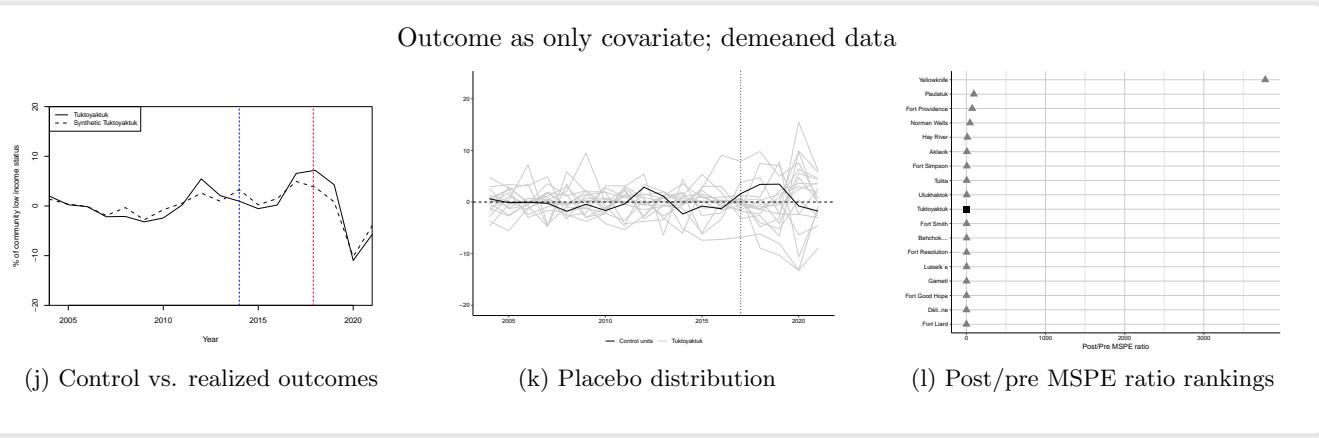
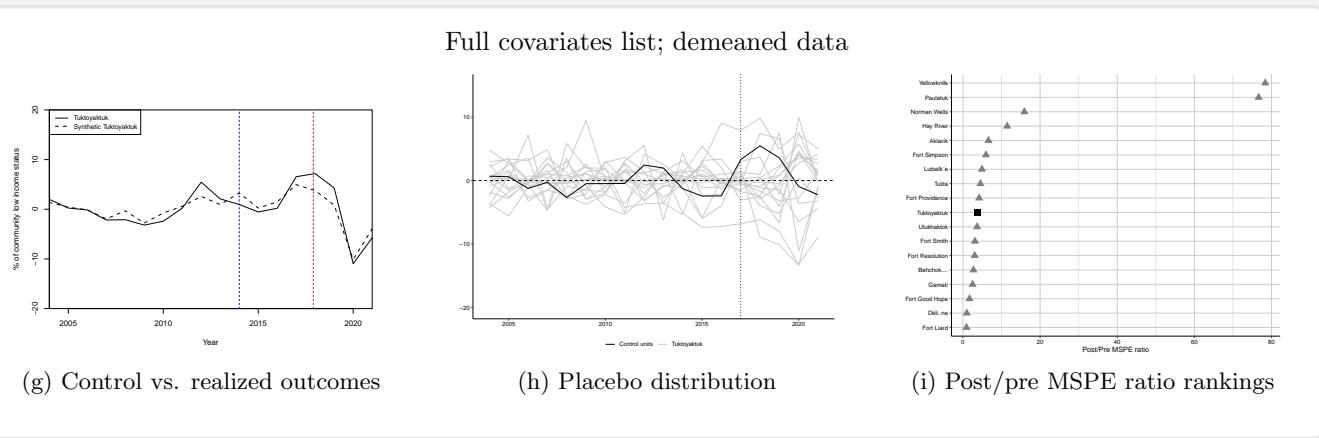
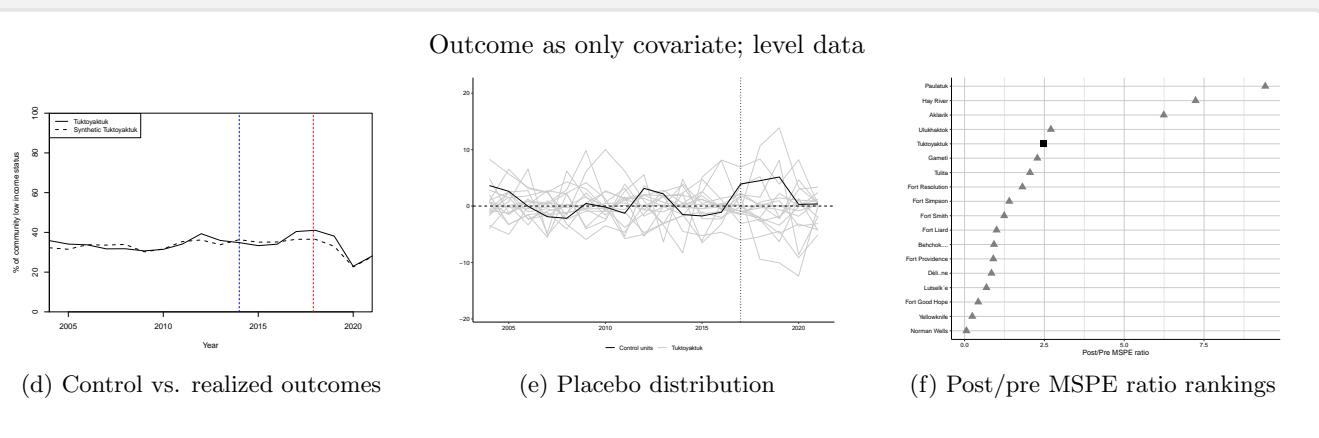
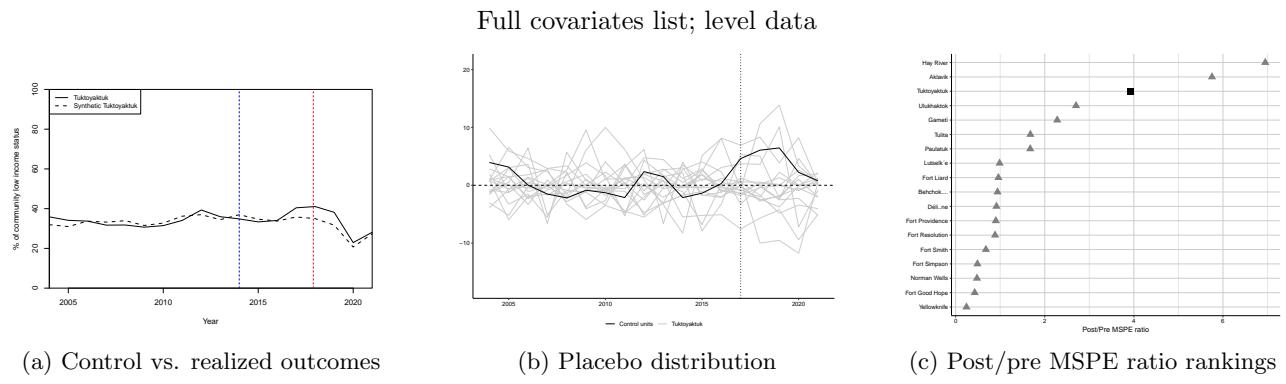
Figure 13: Low income status synthetic control results for Tuktoyaktuk
2014 treatment; Mackenzie valley ice road communities as donor pool



NOTES: Low income status is the proportion of the community that earns 50% of the median Canadian income. The synthetic control vs. realized outcomes graph shows a blue dotted line at 2014, the year construction started and a red line in November 2017, when the road opened. The control pool includes communities on the proposed Mackenzie valley highway that currently only have seasonal ice road overland access.

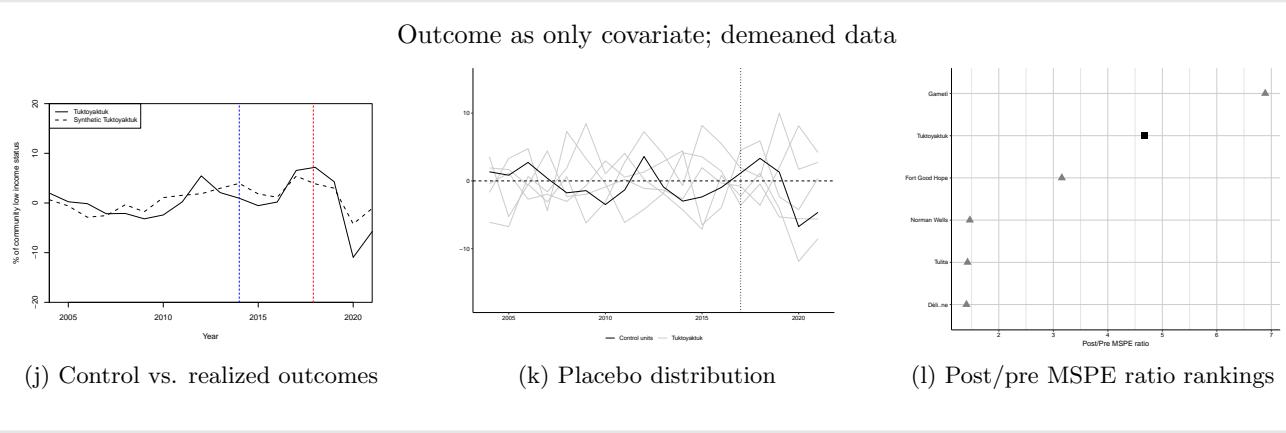
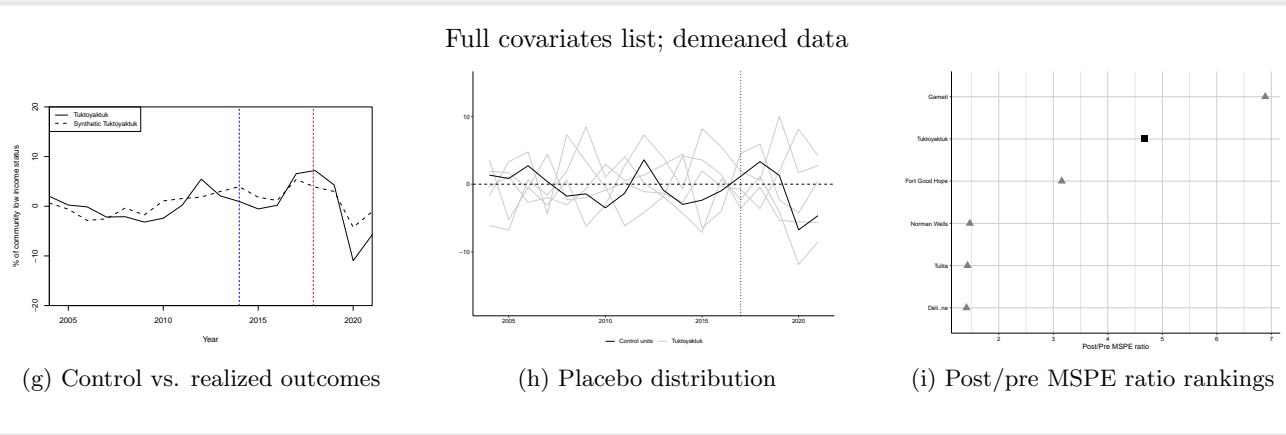
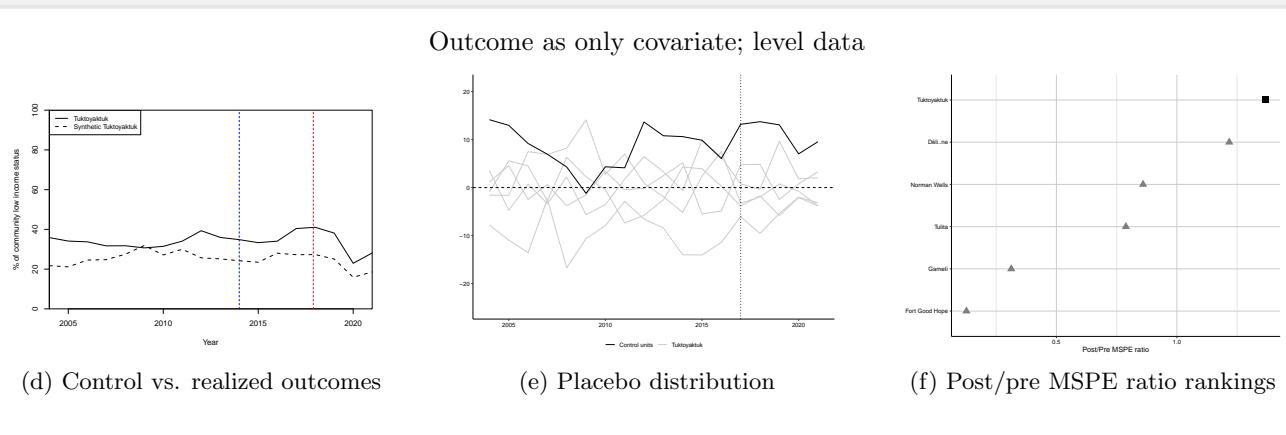
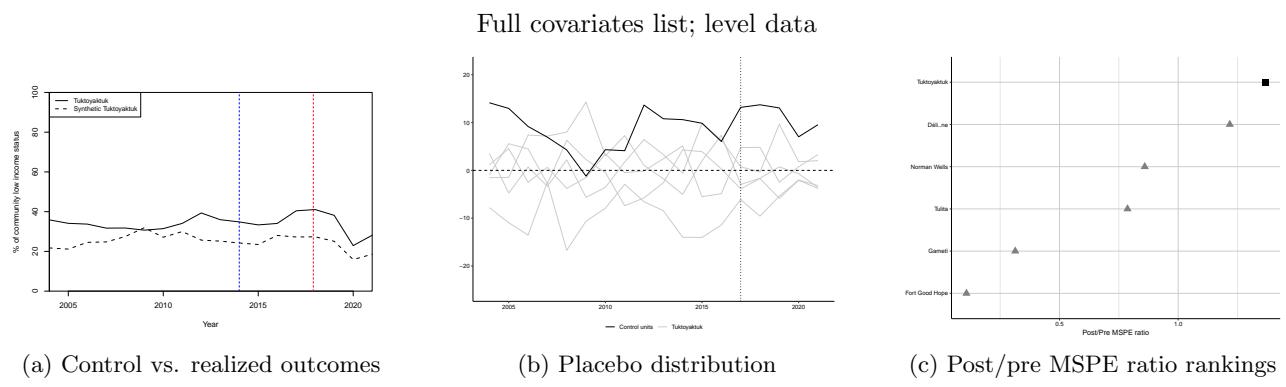
Figure 14: Low income status synthetic control results for Tuktoyaktuk

2017 treatment; Other NWT communities as donor pool



NOTES: Low income status is the proportion of the community that earns 50% of the median Canadian income. The synthetic control vs. realized outcomes graph shows a blue dotted line at 2014, the year construction started and a red line in November 2017, when the road opened. The control pool includes every community in the Northwest Territories that has a consistent population above 100 people during the study period.

Figure 15: Low income status synthetic control results for Tuktoyaktuk
2017 treatment; Mackenzie valley ice road communities as donor pool



NOTES: Low income status is the proportion of the community that earns 50% of the median Canadian income. The synthetic control vs. realized outcomes graph shows a blue dotted line at 2014, the year construction started and a red line in November 2017, when the road opened. The control pool includes communities on the proposed Mackenzie valley highway that currently only have seasonal ice road overland access.

PERCENT OF FAMILIES MAKING LESS THAN \$ 30 000 A YEAR

Figure 16: Percent of families making less than \$ 30 000 a year synthetic control results for Tuktoyaktuk

PREFERRED SPECIFICATION

2014 treatment; Other NWT communities as donor pool

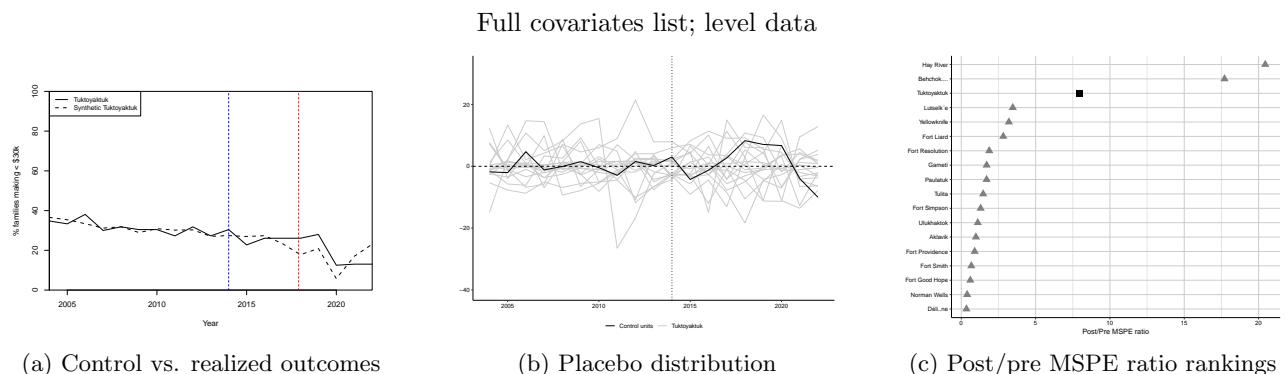
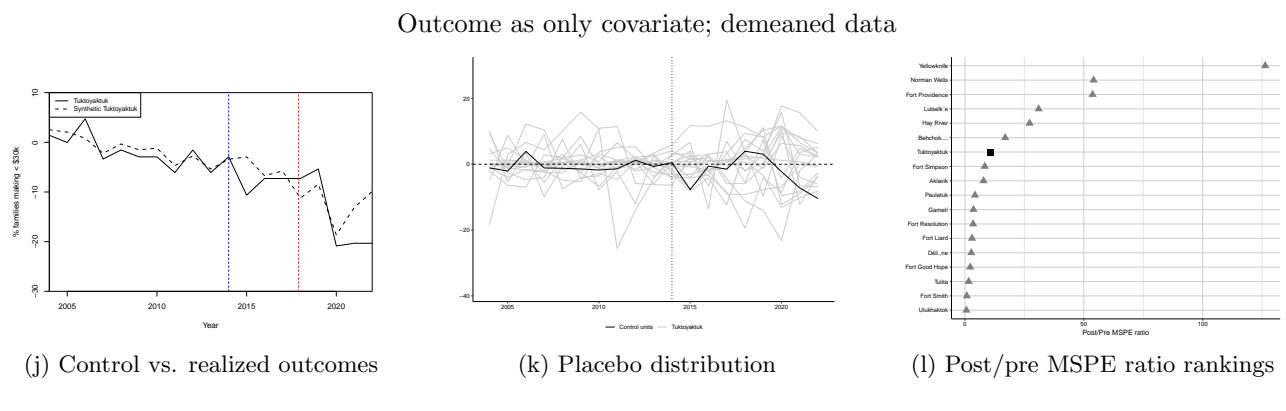
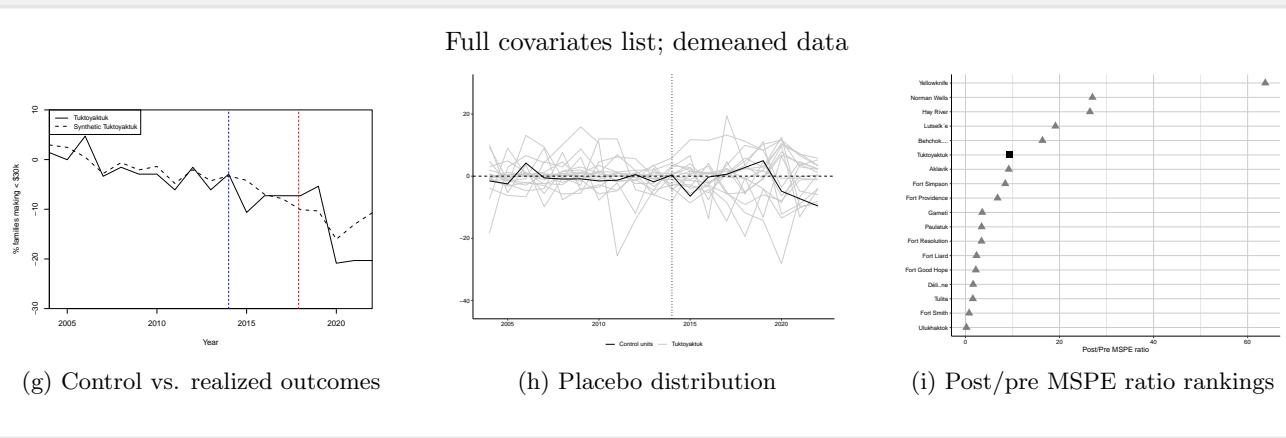
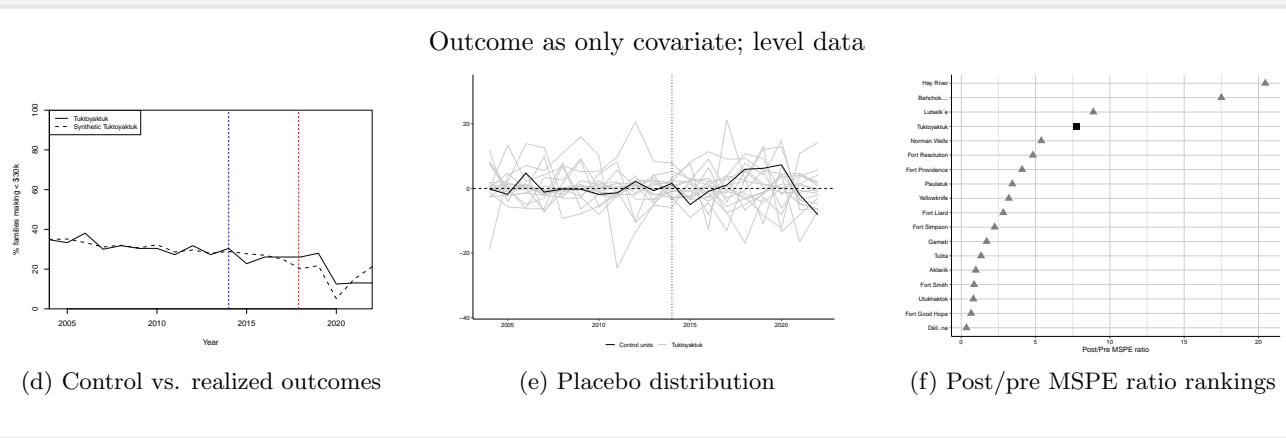
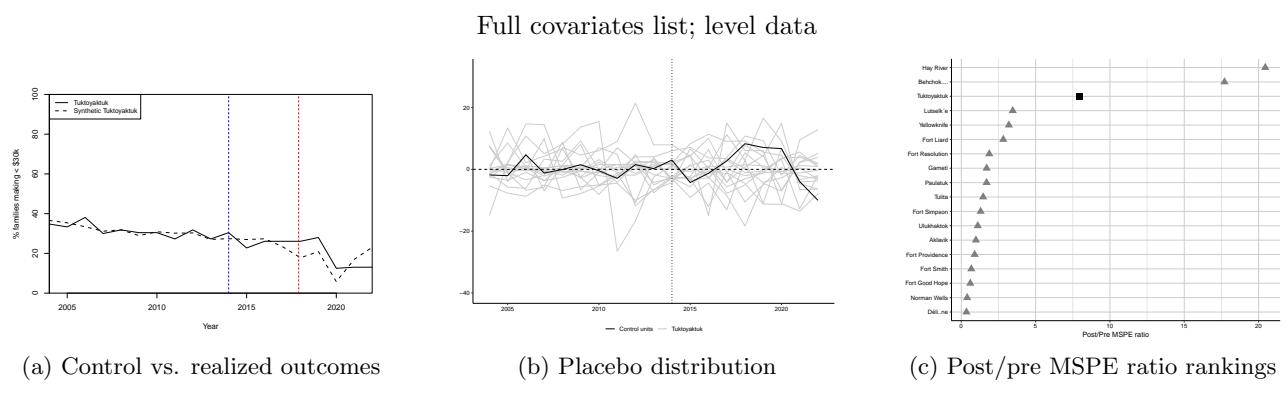
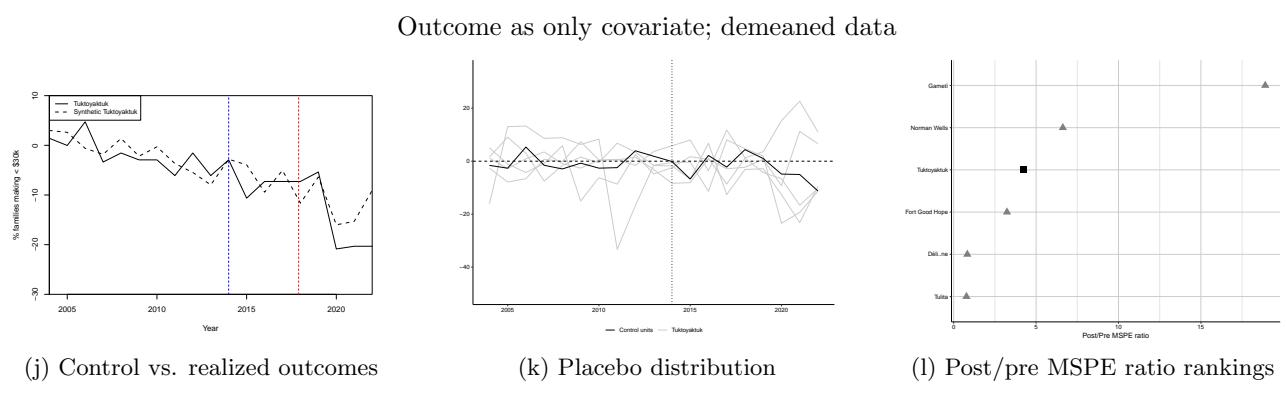
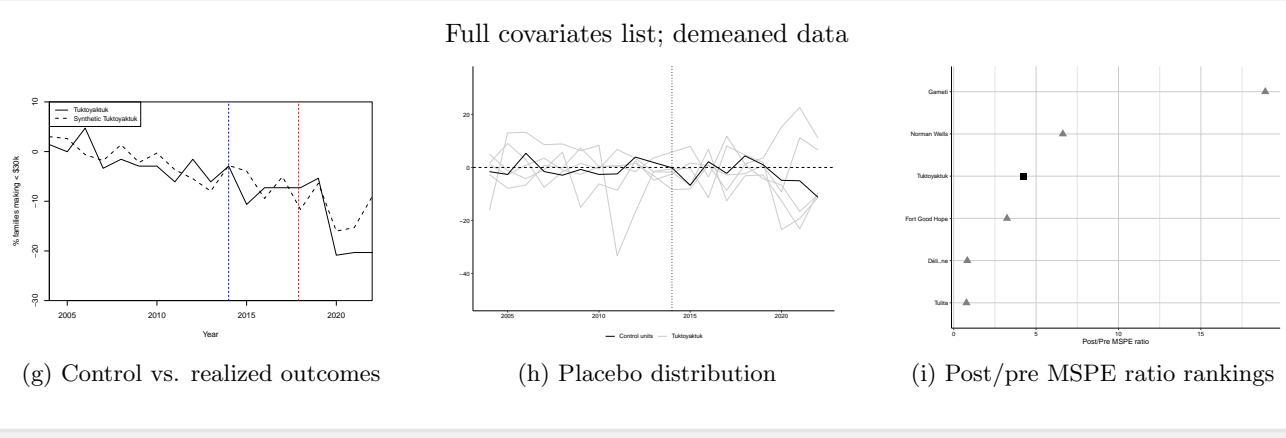
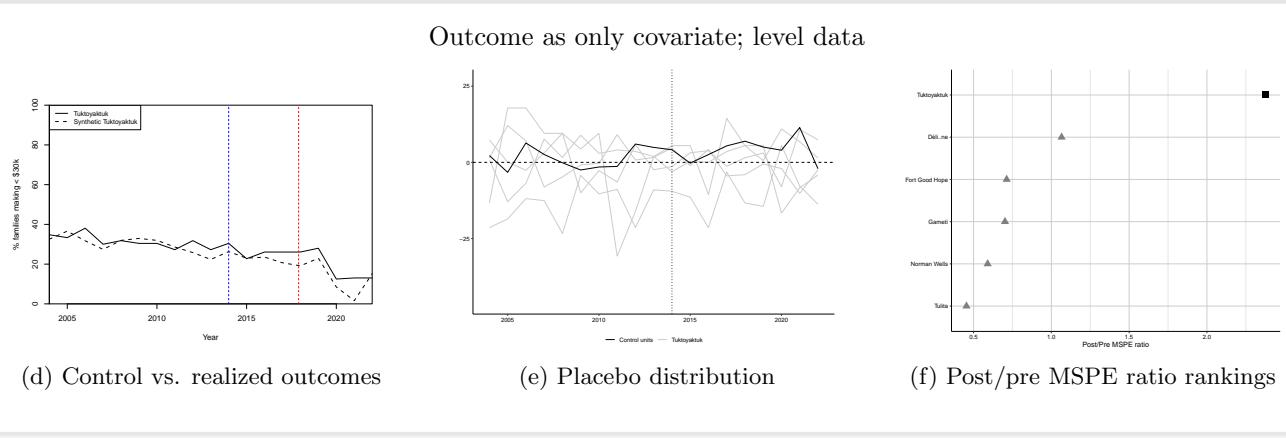
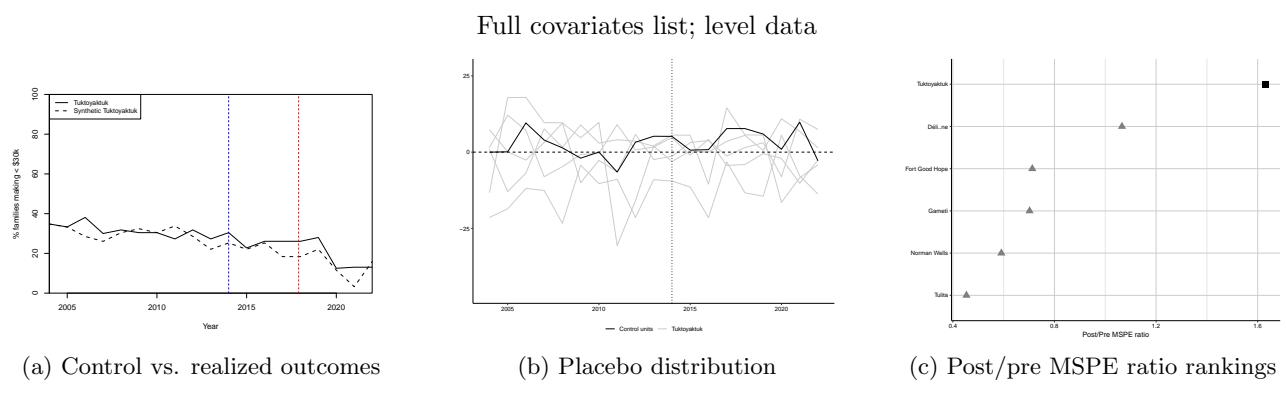


Figure 17: Percent of families making less than \$ 30 000 k a year synthetic control results for Tuktoyaktuk
2014 treatment; Other NWT communities as donor pool



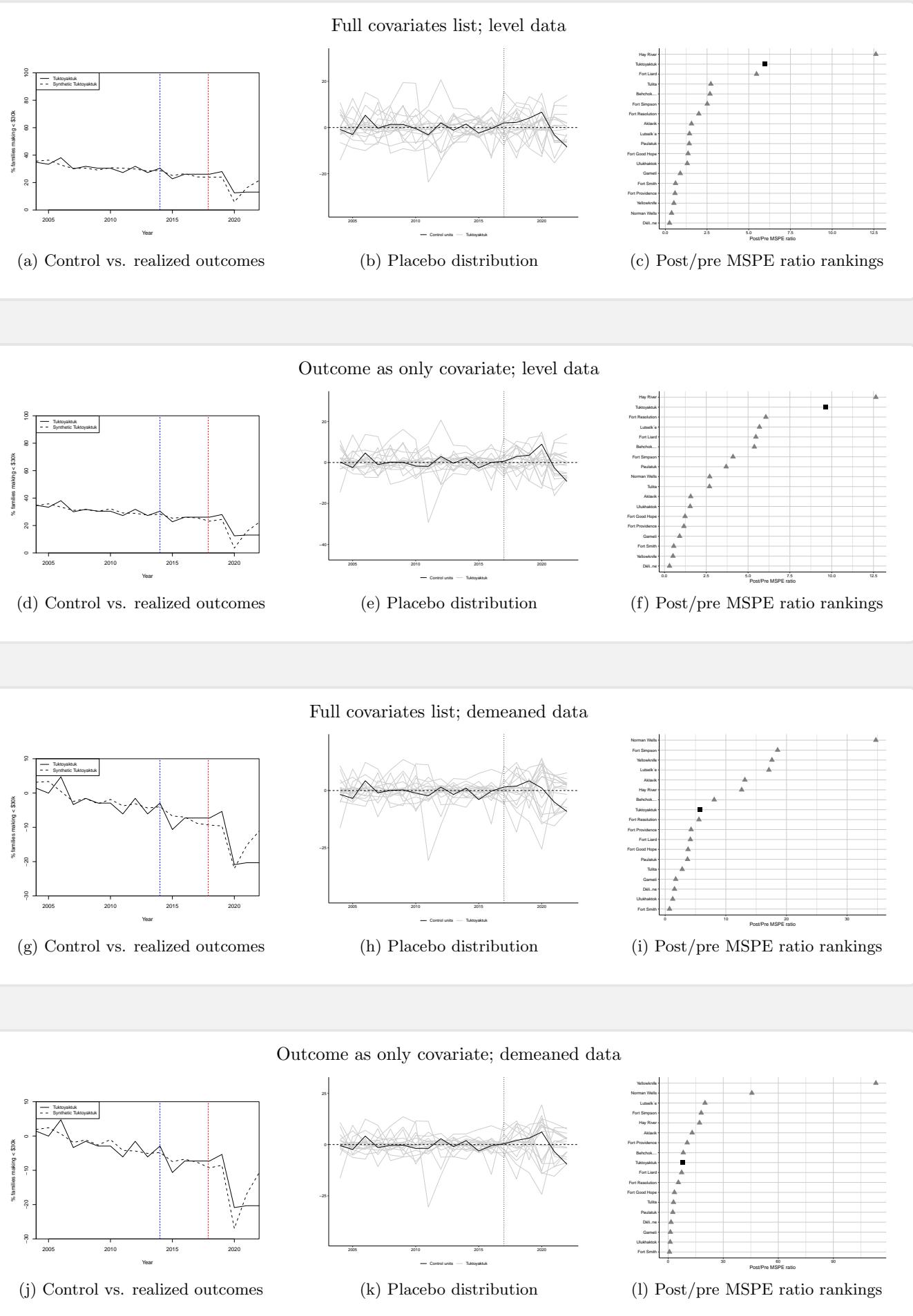
NOTES: A family is an economic family as defined by Statistics Canada - a group of two or more people living in the same dwelling who are related by blood, marriage, a common-law partnership, adoption or a foster relationship. The synthetic control vs. realized outcomes graph shows a blue dotted line at 2014, the year construction started and a red line in November 2017, when the road opened. The control pool includes every community in the Northwest Territories that has a consistent population above 100 people during the study period.

Figure 18: Percent of families making less than \$ 30 000 a year synthetic control results for Tuktoyaktuk
2014 treatment; Mackenzie valley ice road communities as donor pool



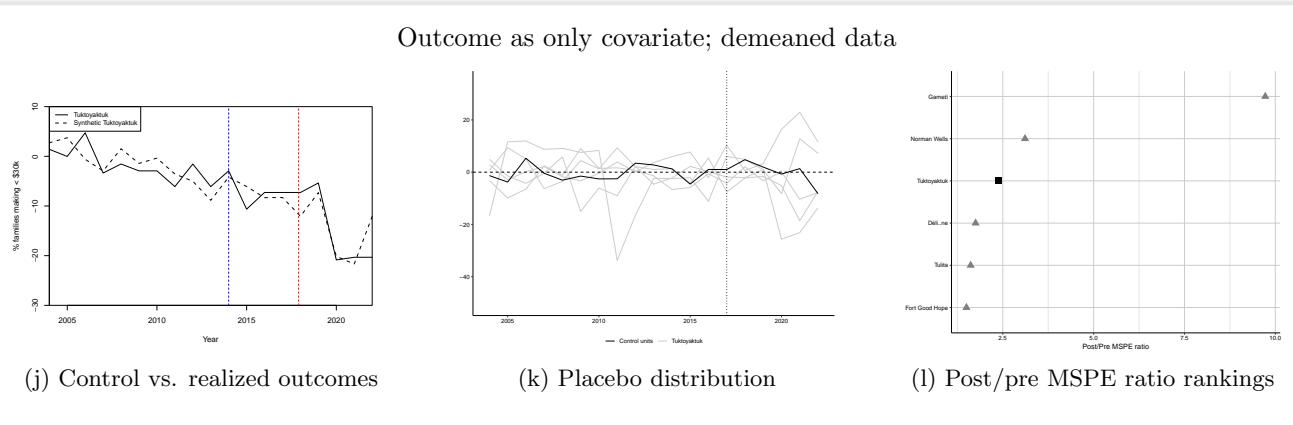
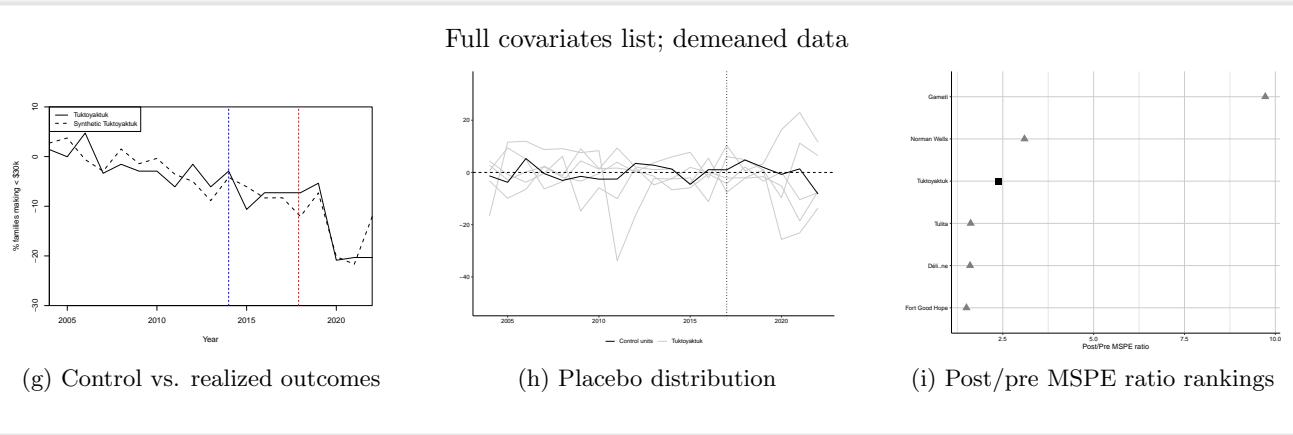
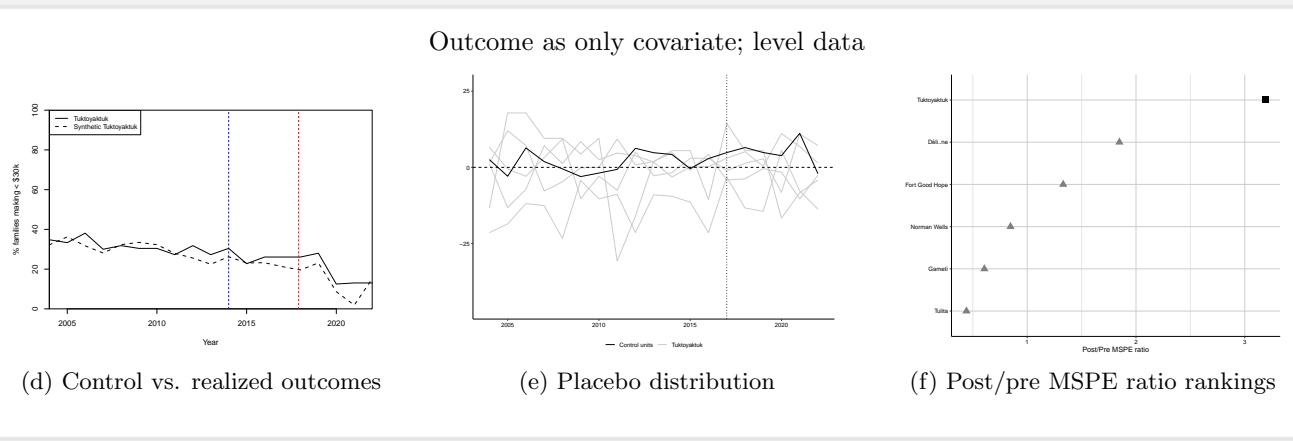
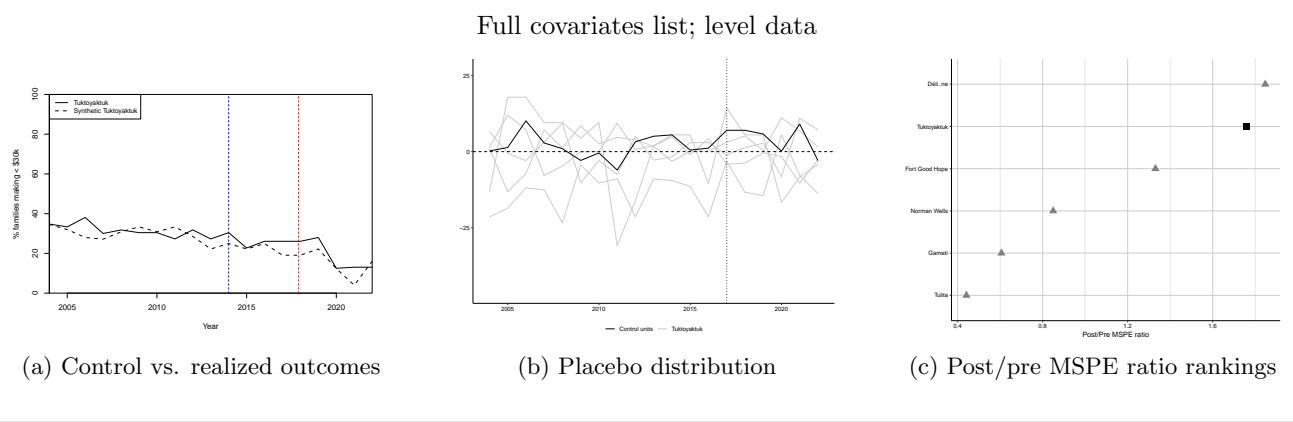
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Figure 19: Families making less than \$ 30 000 a year synthetic control results for Tuktoyaktuk 2017 treatment; Other NWT communities as donor pool



NOTES: A family is an economic family as defined by Statistics Canada - a group of two or more people living in the same dwelling who are related by blood, marriage, a common-law partnership, adoption or a foster relationship. The synthetic control vs. realized outcomes graph shows a blue dotted line at 2014, the year construction started and a red line in November 2017, when the road opened. The control pool includes every community in the Northwest Territories that has a consistent population above 100 people during the study period.

Figure 20: Percent of families making less than \$ 30 000 a year synthetic control results for Tuktoyaktuk
2017 treatment; Mackenzie valley ice road communities as donor pool



NOTES: A family is an economic family as defined by Statistics Canada - a group of two or more people living in the same dwelling who are related by blood, marriage, a common-law partnership, adoption or a foster relationship. The synthetic control vs. realized outcomes graph shows a blue dotted line at 2014, the year construction started and a red line in November 2017, when the road opened. The control pool includes communities on the proposed Mackenzie valley highway that currently only have seasonal ice road overland access.

PERCENT OF FAMILIES MAKING MORE THAN \$ 75 000 A YEAR

Figure 21: Percent of families making more than \$ 75 000 a year synthetic control results for Tuktoyaktuk

PREFERRED SPECIFICATION

2014 treatment; Other NWT communities as donor pool

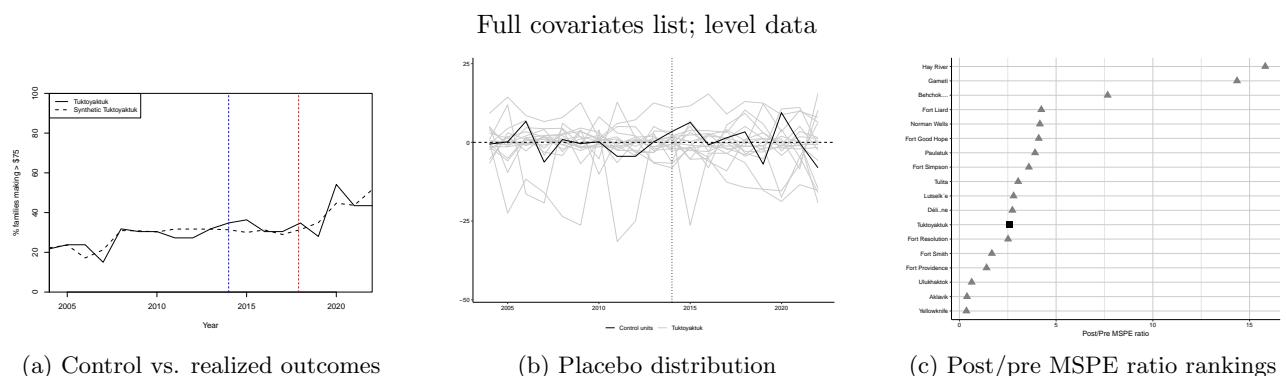
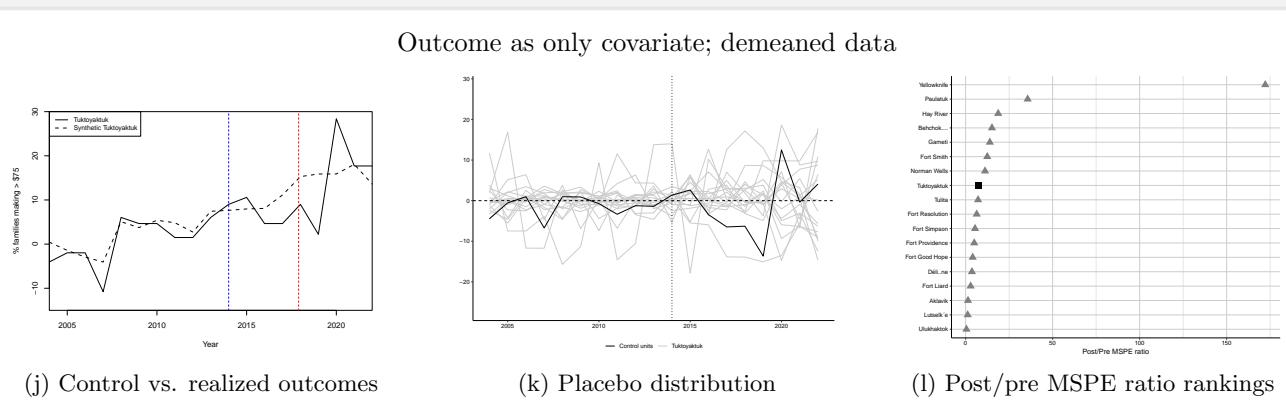
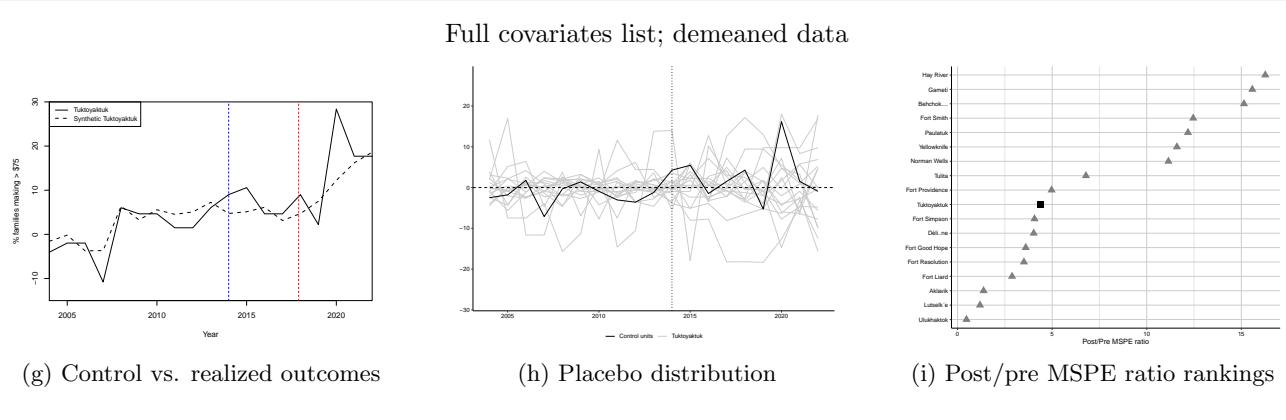
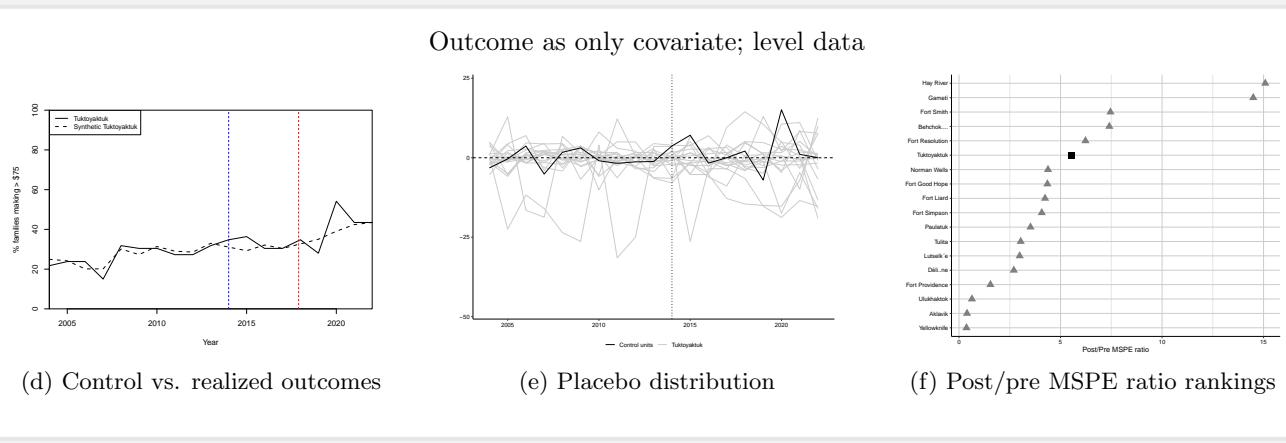
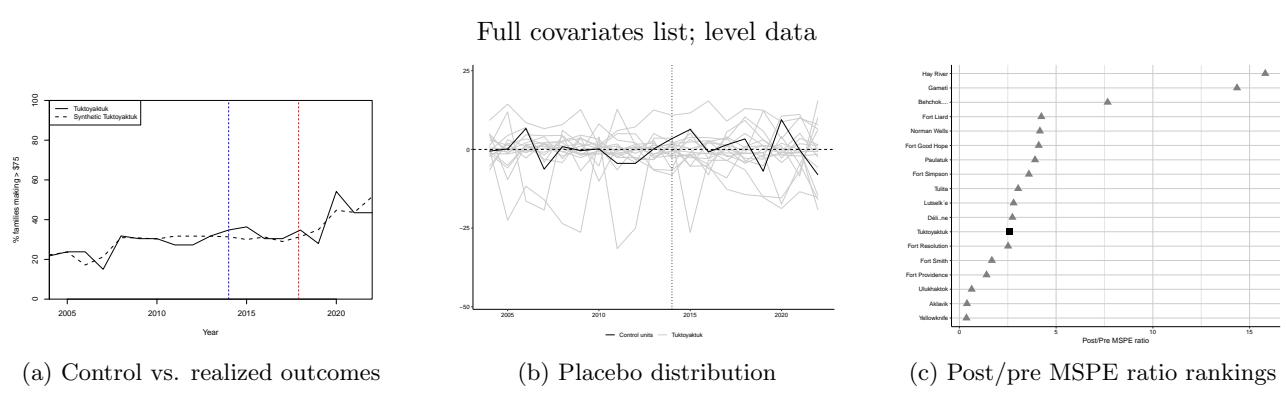
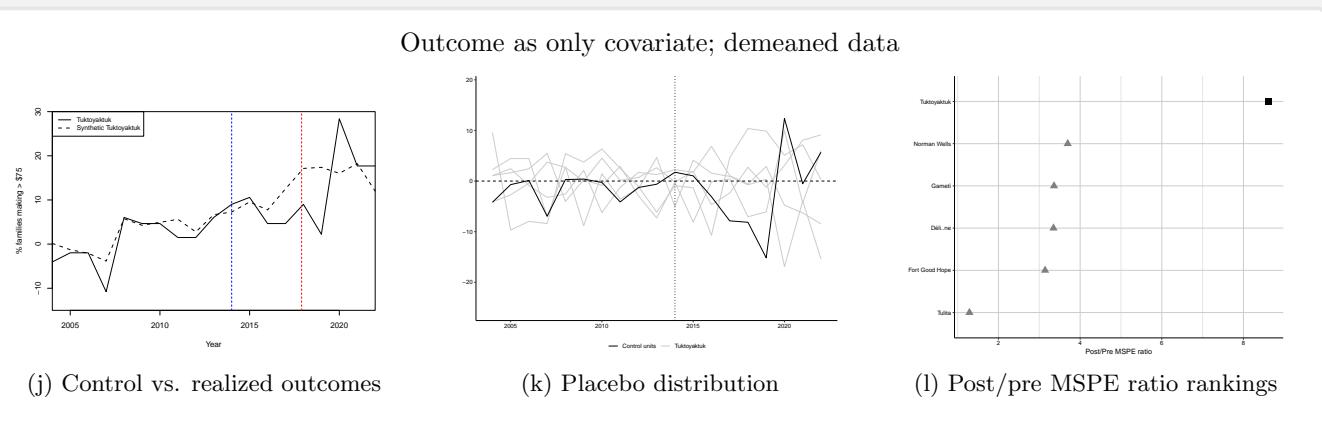
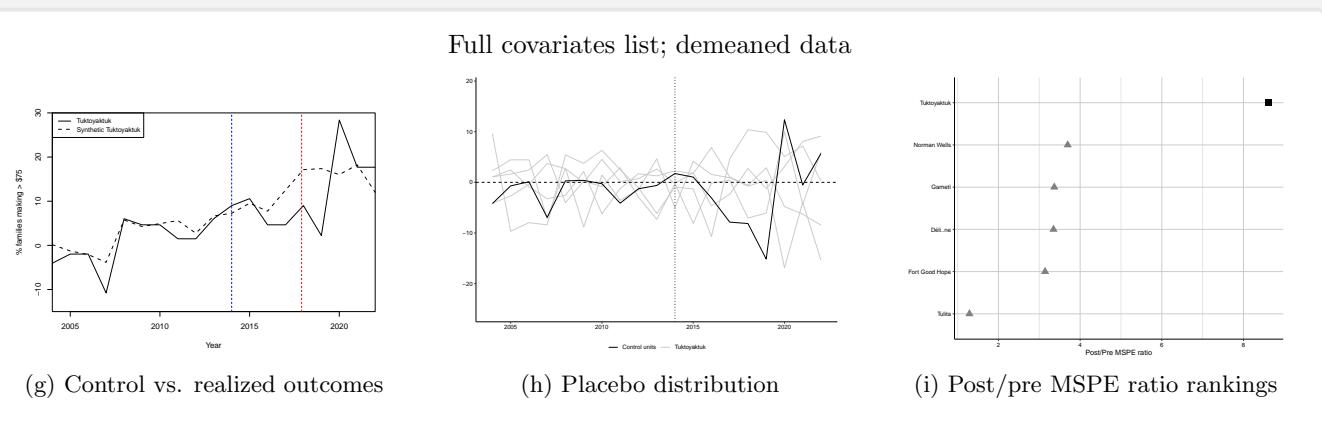
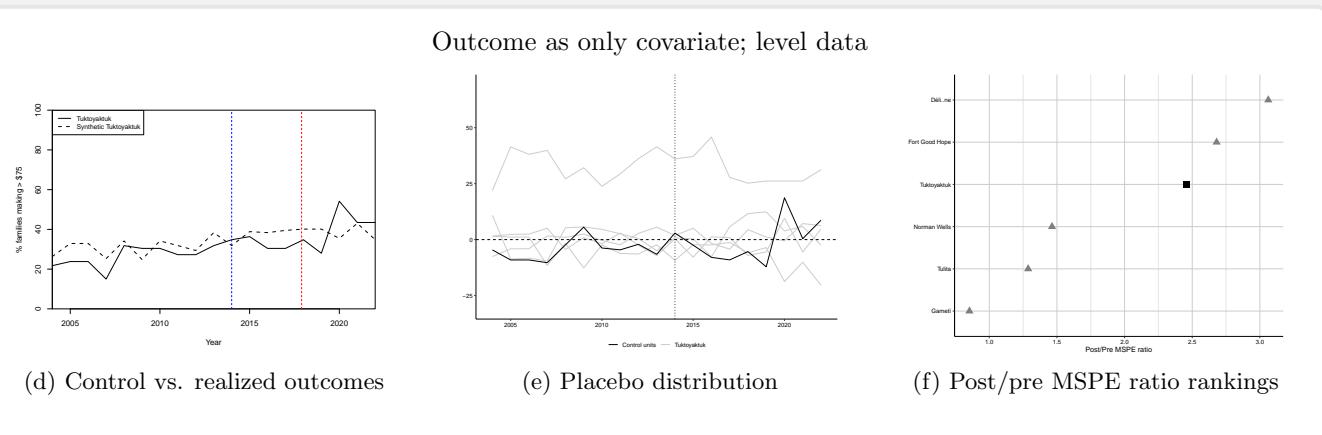
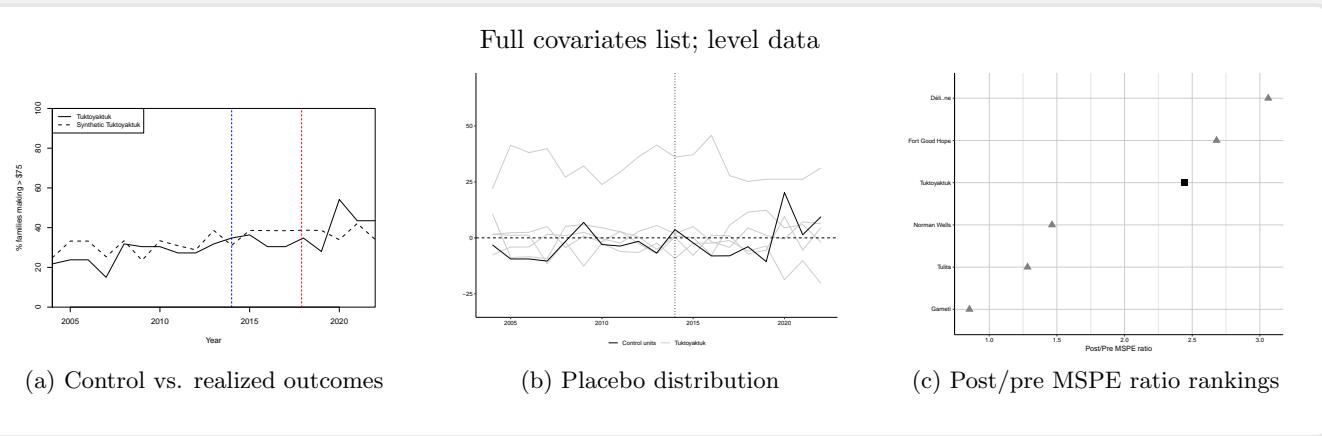


Figure 22: Percent of families making more than \$ 75 000 a year synthetic control results for Tuktoyaktuk
2014 treatment; Other NWT communities as donor pool



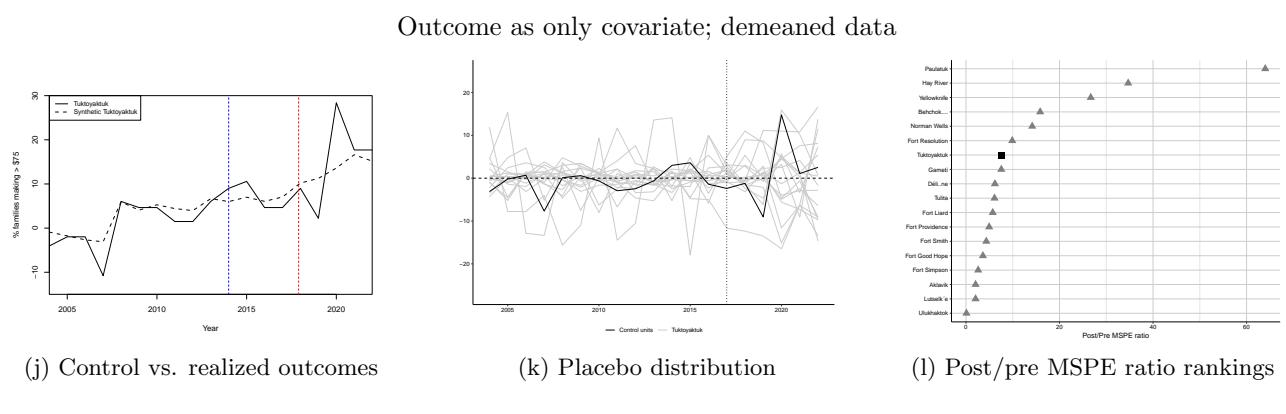
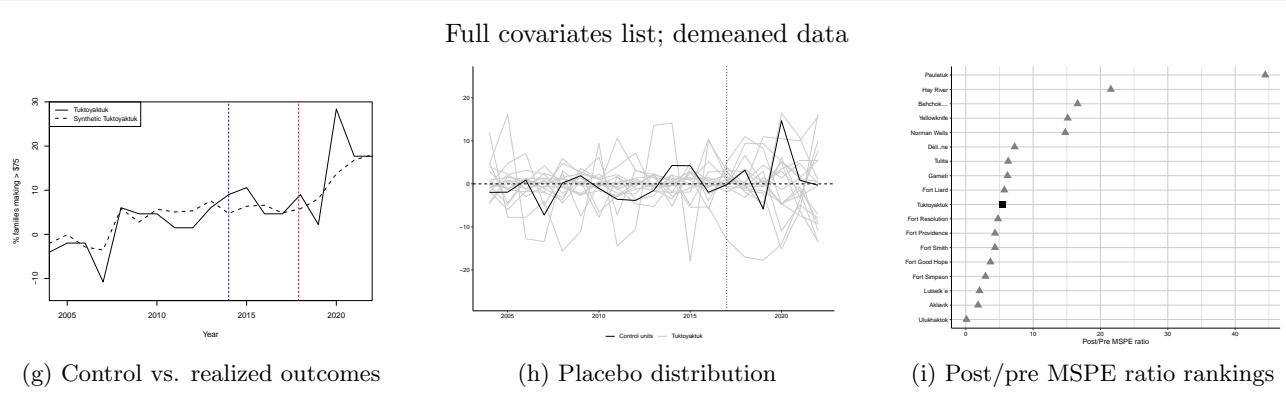
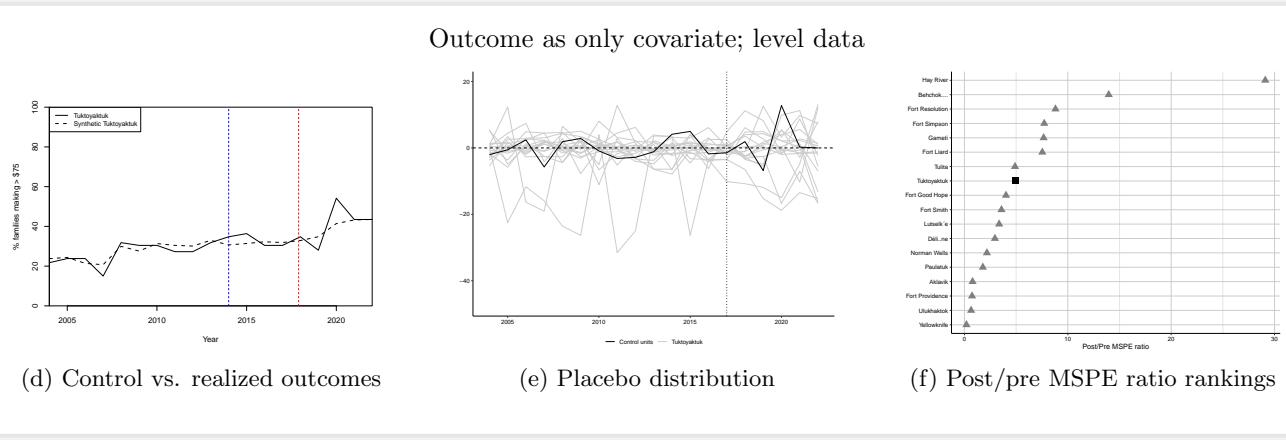
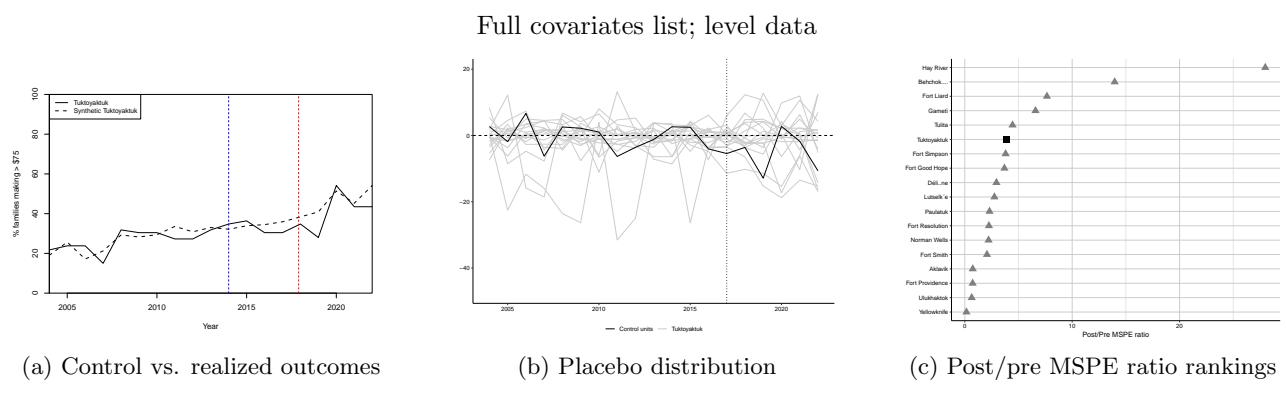
NOTES: A family is an economic family as defined by Statistics Canada - a group of two or more people living in the same dwelling who are related by blood, marriage, a common-law partnership, adoption or a foster relationship. The synthetic control vs. realized outcomes graph shows a blue dotted line at 2014, the year construction started and a red line in November 2017, when the road opened. The control pool includes every community in the Northwest Territories that has a consistent population above 100 people during the study period.

Figure 23: Percent of families making more than \$ 75 000 a year synthetic control results for Tuktoyaktuk
2014 treatment; Mackenzie valley ice road communities as donor pool



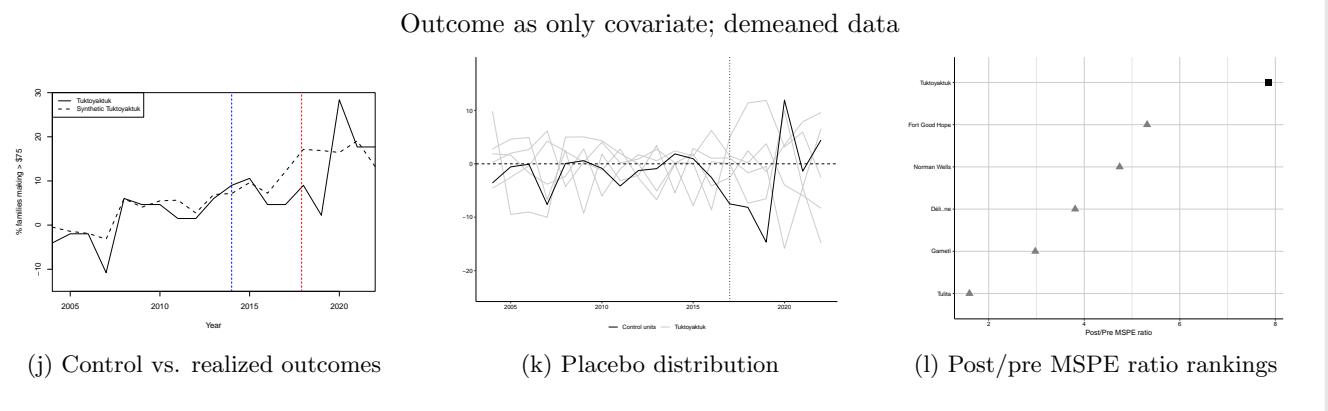
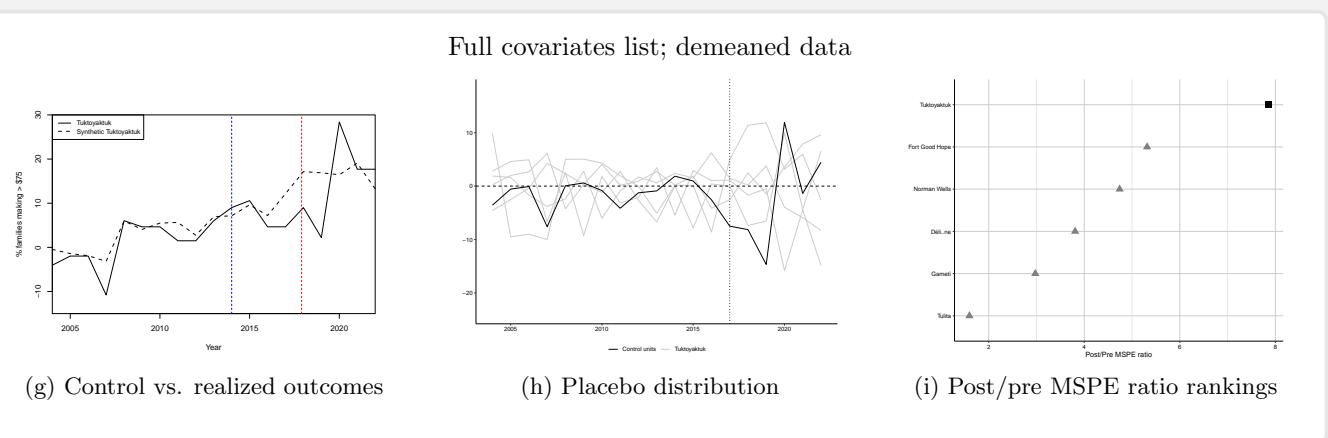
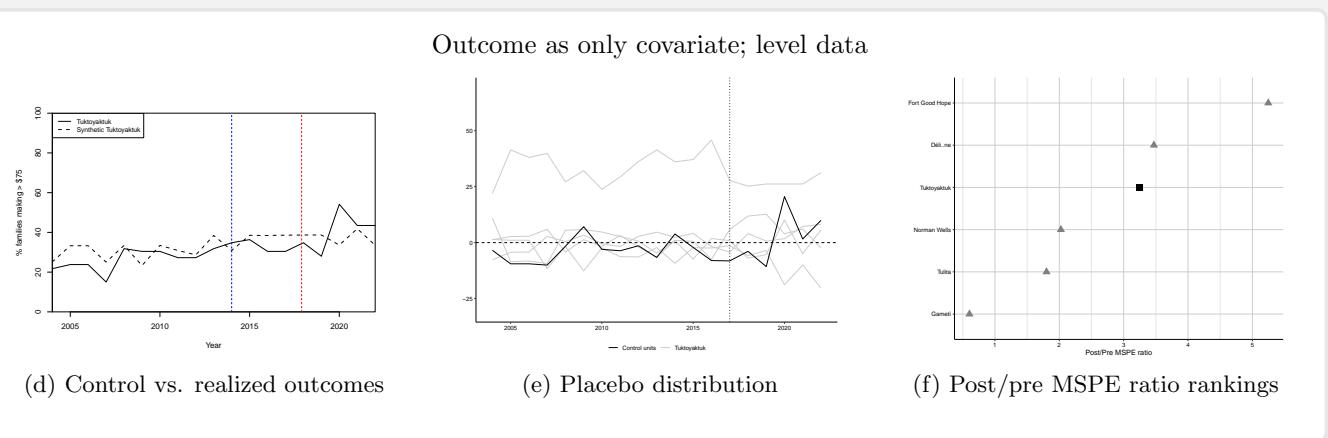
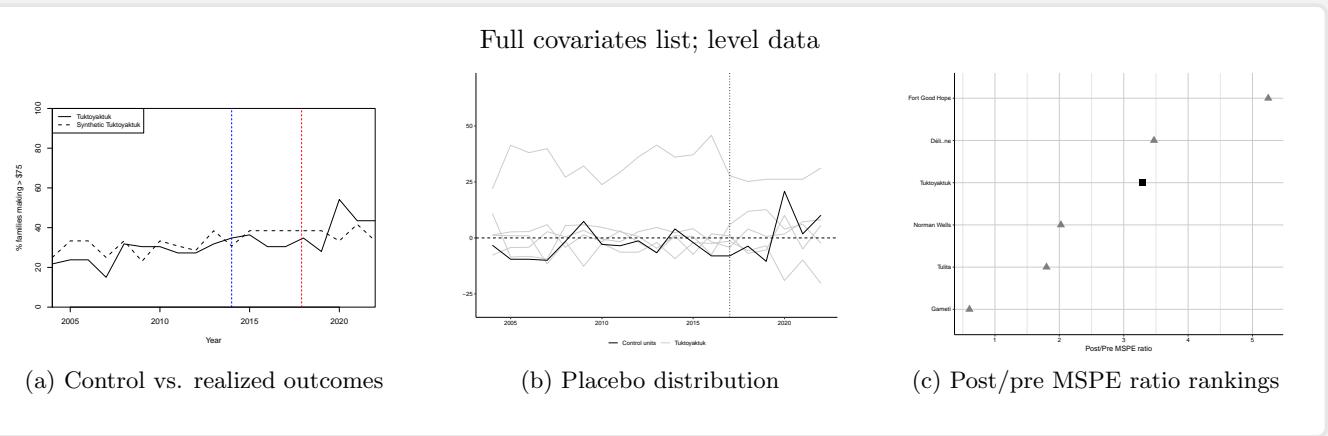
NOTES: A family is an economic family as defined by Statistics Canada - a group of two or more people living in the same dwelling who are related by blood, marriage, a common-law partnership, adoption or a foster relationship. The synthetic control vs. realized outcomes graph shows a blue dotted line at 2014, the year construction started and a red line in November 2017, when the road opened. The control pool includes communities on the proposed Mackenzie valley highway that currently only have seasonal ice road overland access.

Figure 24: Percent of families making more than \$ 75 000 a year synthetic control results for Tuktoyaktuk
2017 treatment; Other NWT communities as donor pool



NOTES: A family is an economic family as defined by Statistics Canada - a group of two or more people living in the same dwelling who are related by blood, marriage, a common-law partnership, adoption or a foster relationship. The synthetic control vs. realized outcomes graph shows a blue dotted line at 2014, the year construction started and a red line in November 2017, when the road opened. The control pool includes every community in the Northwest Territories that has a consistent population above 100 people during the study period.

Figure 25: Percent of families making more than \$ 75 000 a year synthetic control results for Tuktoyaktuk
2017 treatment; Mackenzie valley ice road communities as donor pool



NOTES: A family is an economic family as defined by Statistics Canada - a group of two or more people living in the same dwelling who are related by blood, marriage, a common-law partnership, adoption or a foster relationship. The synthetic control vs. realized outcomes graph shows a blue dotted line at 2014, the year construction started and a red line in November 2017, when the road opened. The control pool includes communities on the proposed Mackenzie valley highway that currently only have seasonal ice road overland access.

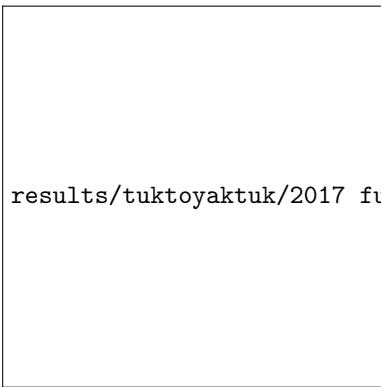
All crime

Figure 26: All crime results for Tuktoyaktuk

PREFERRED SPECIFICATION

2017 treatment; Other NWT communities as donor pool

Full covariates list; level data



(a) Control vs. realized outcomes



(b) Placebo distribution

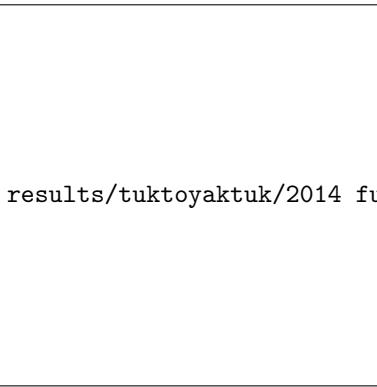


(c) Post/pre MSPE ratio rankings

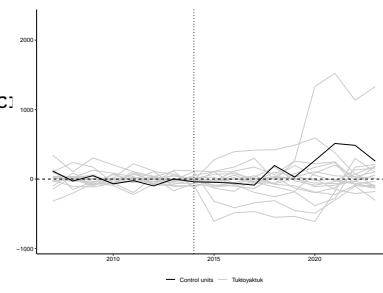
Figure 27: All crime results for Tuktoyaktuk

2014 treatment; Other NWT communities as donor pool

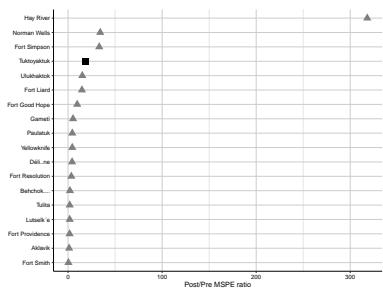
Full covariates list; level data



(a) Control vs. realized outcomes

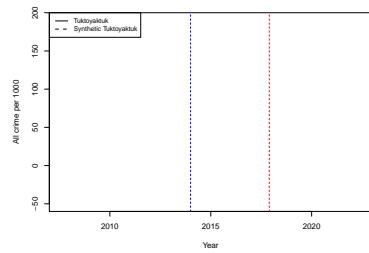


(b) Placebo distribution

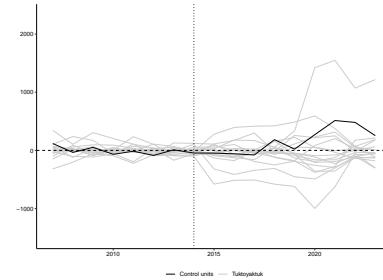


(c) Post/pre MSPE ratio rankings

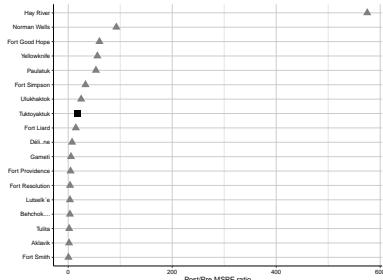
Outcome as only covariate; level data



(d) Control vs. realized outcomes

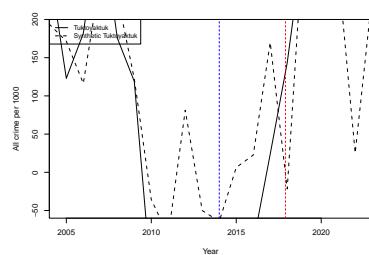


(e) Placebo distribution

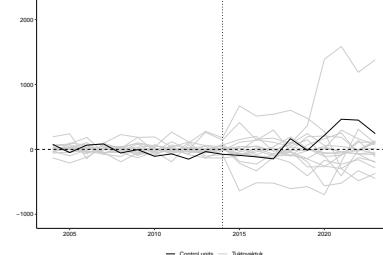


(f) Post/pre MSPE ratio rankings

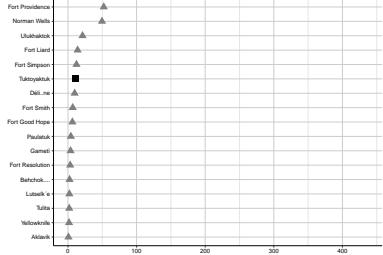
Full covariates list; demeaned data



(g) Control vs. realized outcomes

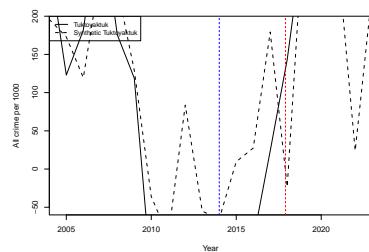


(h) Placebo distribution

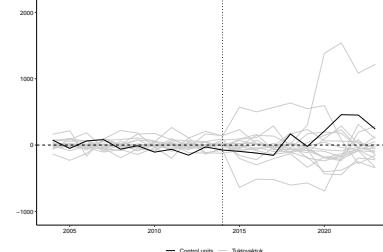


(i) Post/pre MSPE ratio rankings

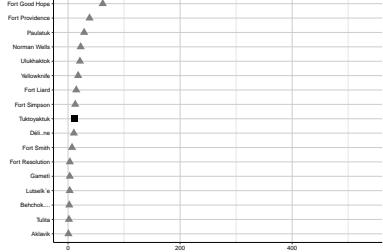
Outcome as only covariate; demeaned data



(j) Control vs. realized outcomes



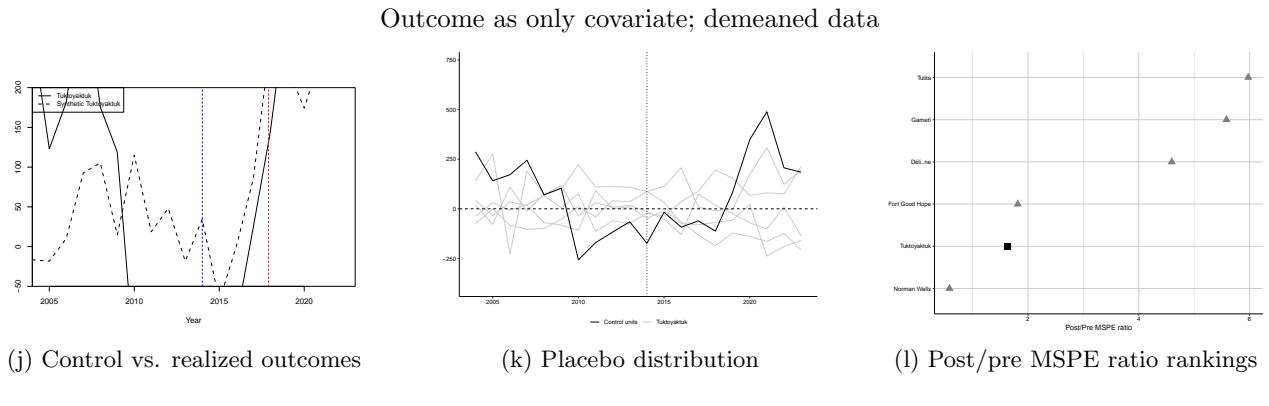
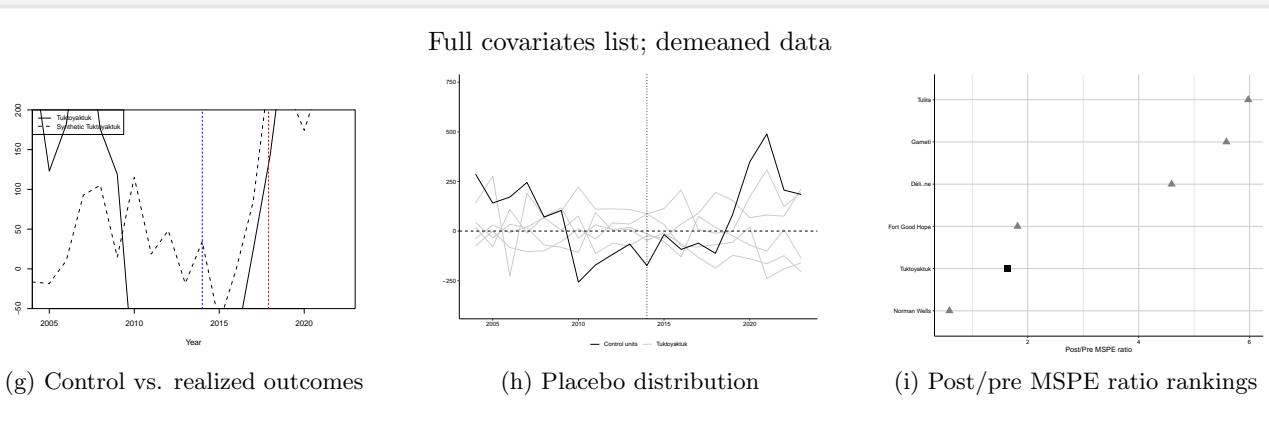
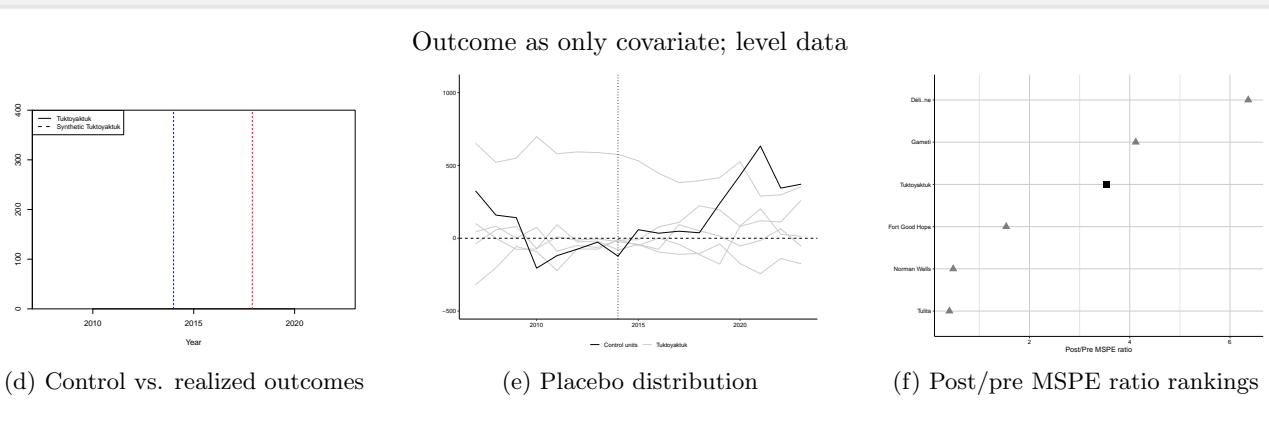
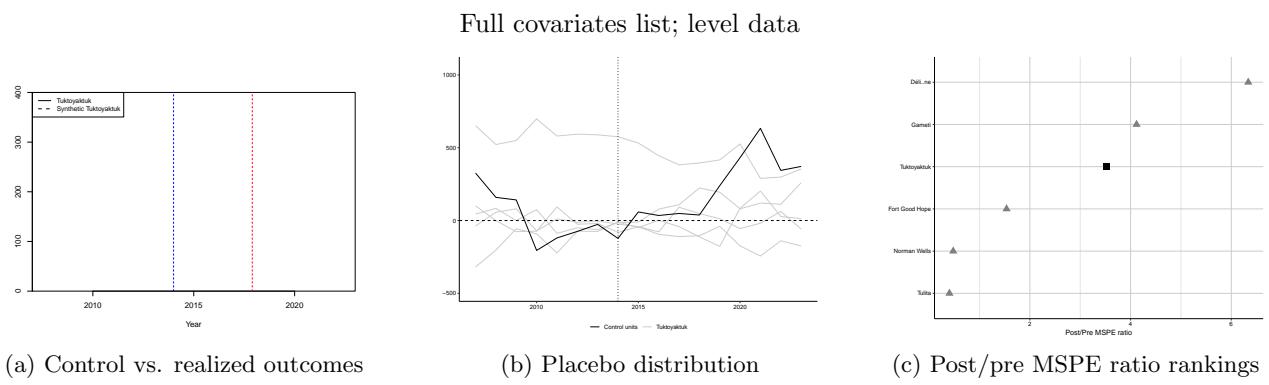
(k) Placebo distribution



(l) Post/pre MSPE ratio rankings

NOTES: Crime rates are police reported incidents per 1000 population. The synthetic control vs. realized outcomes graph shows a blue dotted line at 2014, the year construction started and a red line in November 2017, when the road opened. The control pool includes every community in the Northwest Territories that has a consistent population above 100 people during the study period.

Figure 28: All crime results results for Tuktoyaktuk
2014 treatment; Mackenzie valley ice road communities as donor pool

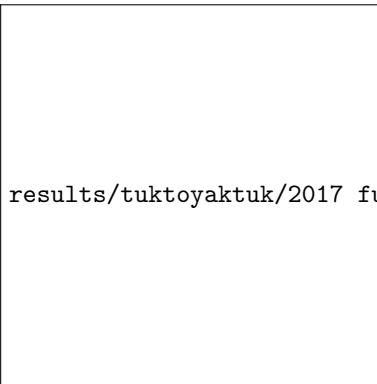


NOTES: Crime rates are police reported incidents per 1000 population. The synthetic control vs. realized outcomes graph shows a blue dotted line at 2014, the year construction started and a red line in November 2017, when the road opened. The control pool includes communities on the proposed Mackenzie valley highway that currently only have seasonal ice road overland access.

Figure 29: All crime synthetic control results for Tuktoyaktuk

2017 treatment; Other NWT communities as donor pool

Full covariates list; level data



(a) Control vs. realized outcomes

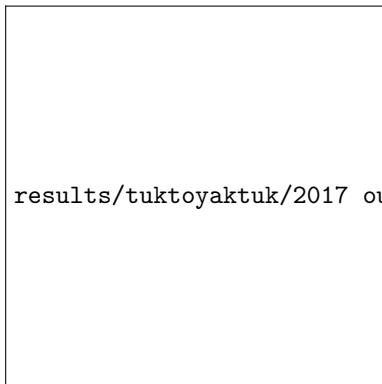


(b) Placebo distribution



(c) Post/pre MSPE ratio rankings

Outcome as only covariate; level data



(d) Control vs. realized outcomes

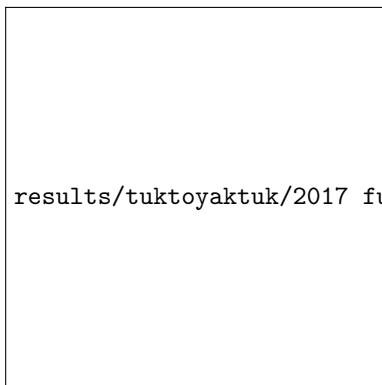


(e) Placebo distribution



(f) Post/pre MSPE ratio rankings

Full covariates list; demeaned data



(g) Control vs. realized outcomes

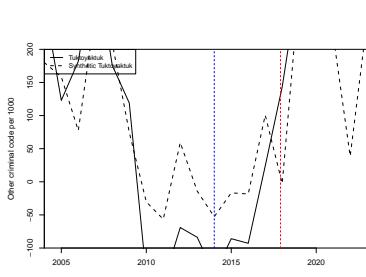


(h) Placebo distribution

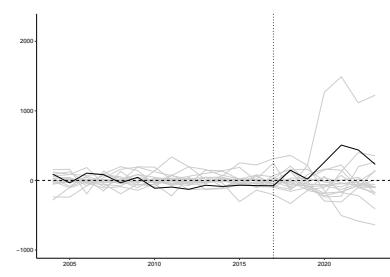


(i) Post/pre MSPE ratio rankings

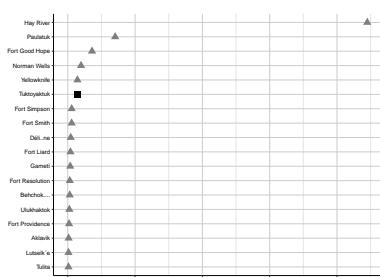
Outcome as only covariate; demeaned data



(j) Control vs. realized outcomes



(k) Placebo distribution

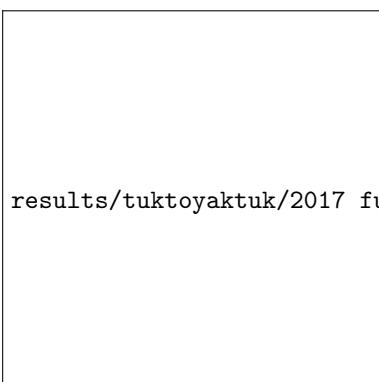


(l) Post/pre MSPE ratio rankings

NOTES: Crime rates are police reported incidents per 1000 population. The synthetic control vs. realized outcomes graph shows a blue dotted line at 2014, the year construction started and a red line in November 2017, when the road opened. The control pool includes every community in the Northwest Territories that has a consistent population above 100 people during the study period.

Figure 30: All crime results results for Tuktoyaktuk
2017 treatment; Mackenzie valley ice road communities as donor pool

Full covariates list; level data



(a) Control vs. realized outcomes

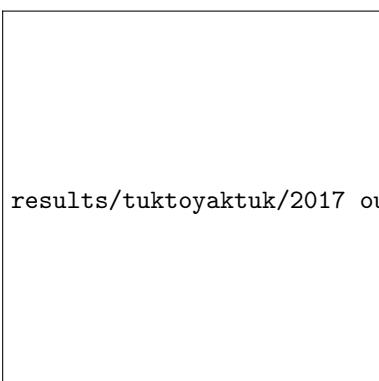


(b) Placebo distribution

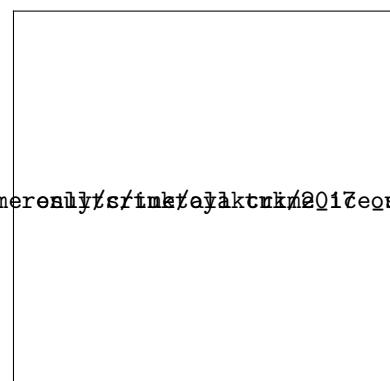


(c) Post/pre MSPE ratio rankings

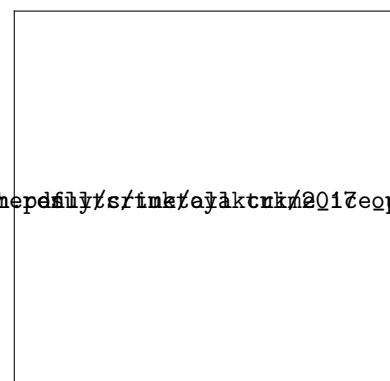
Outcome as only covariate; level data



(d) Control vs. realized outcomes

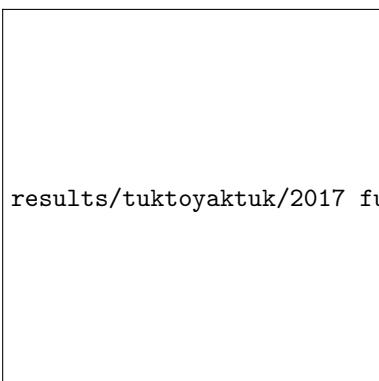


(e) Placebo distribution



(f) Post/pre MSPE ratio rankings

Full covariates list; demeaned data



(g) Control vs. realized outcomes

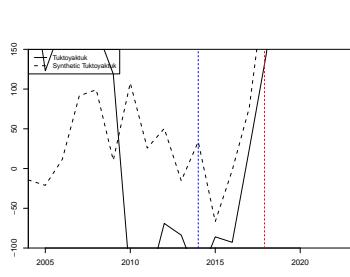


(h) Placebo distribution

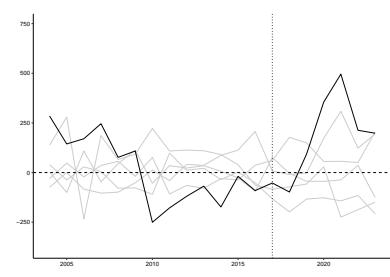


(i) Post/pre MSPE ratio rankings

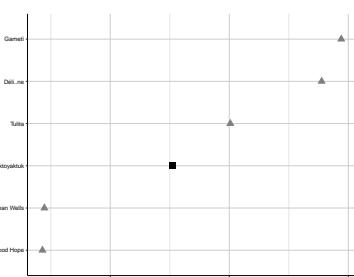
Outcome as only covariate; demeaned data



(j) Control vs. realized outcomes



(k) Placebo distribution



(l) Post/pre MSPE ratio rankings

NOTES: Crime rates are police reported incidents per 1000 population. The synthetic control vs. realized outcomes graph shows a blue dotted line at 2014, the year construction started and a red line in November 2017, when the road opened. The control pool includes communities on the proposed Mackenzie valley highway that currently only have seasonal ice road overland access.

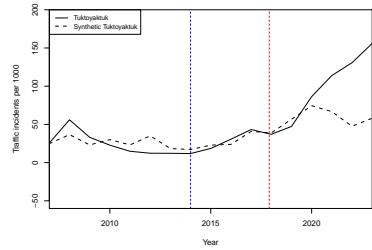
Traffic crime

Figure 31: Traffic crime results for Tuktoyaktuk

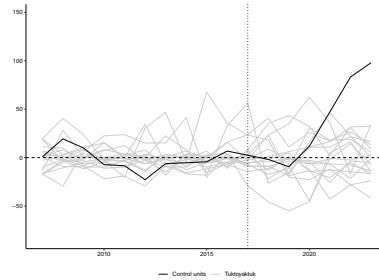
PREFERRED SPECIFICATION

2017 treatment; Other NWT communities as donor pool

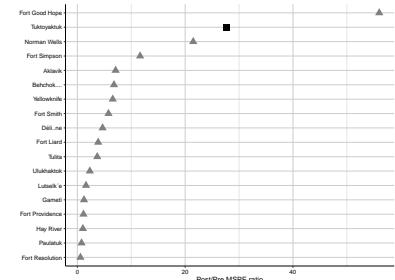
Full covariates list; level data



(a) Control vs. realized outcomes



(b) Placebo distribution

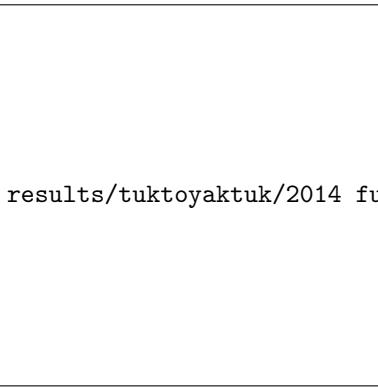


(c) Post/pre MSPE ratio rankings

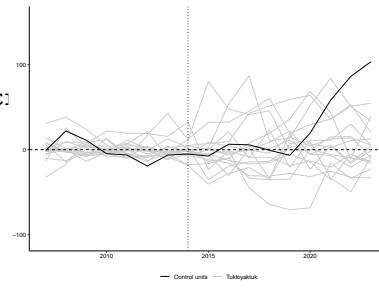
Figure 32: Traffic crime results for Tuktoyaktuk

2014 treatment; Other NWT communities as donor pool

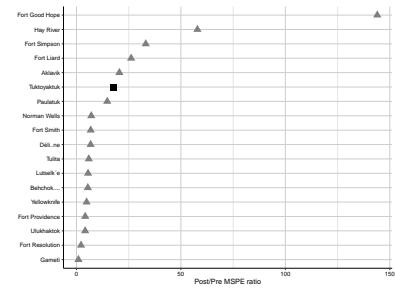
Full covariates list; level data



(a) Control vs. realized outcomes

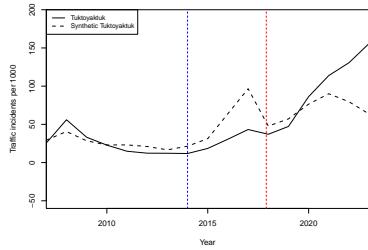


(b) Placebo distribution

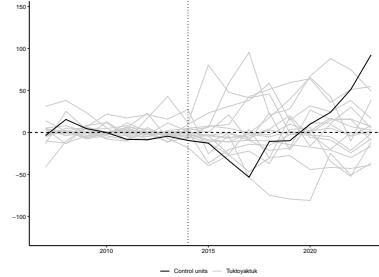


(c) Post/pre MSPE ratio rankings

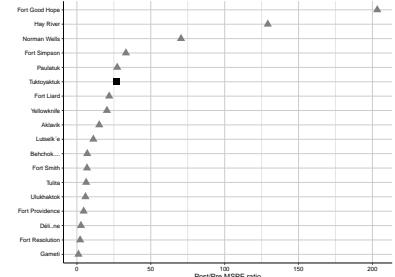
Outcome as only covariate; level data



(d) Control vs. realized outcomes

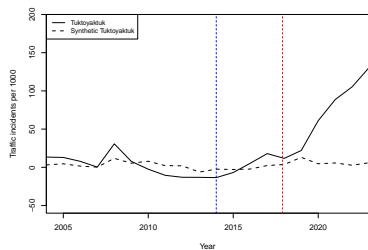


(e) Placebo distribution

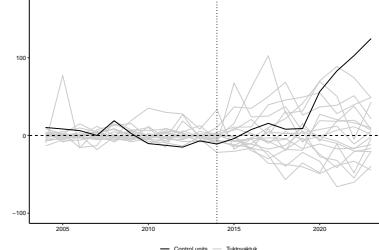


(f) Post/pre MSPE ratio rankings

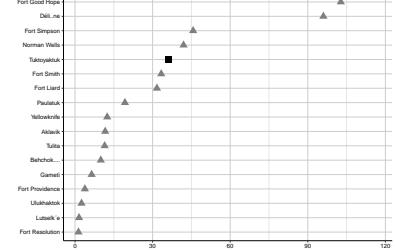
Full covariates list; demeaned data



(g) Control vs. realized outcomes

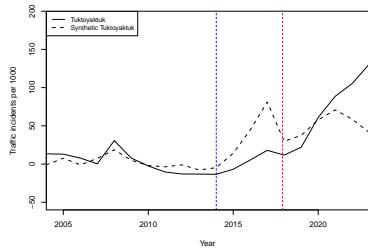


(h) Placebo distribution

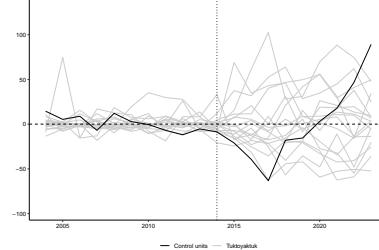


(i) Post/pre MSPE ratio rankings

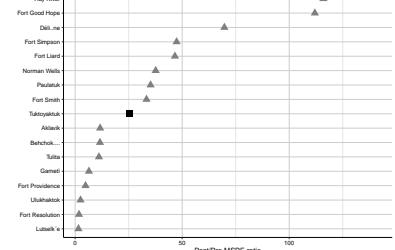
Outcome as only covariate; demeaned data



(j) Control vs. realized outcomes



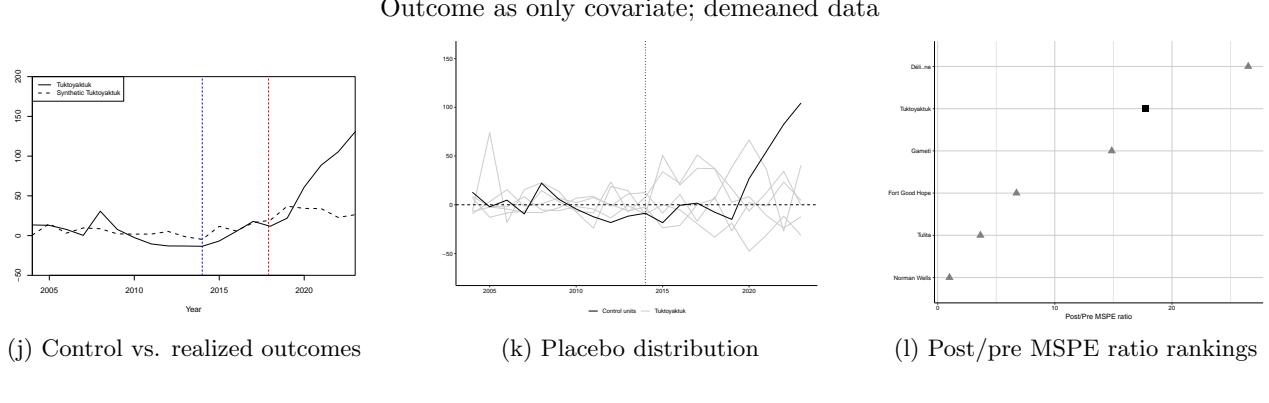
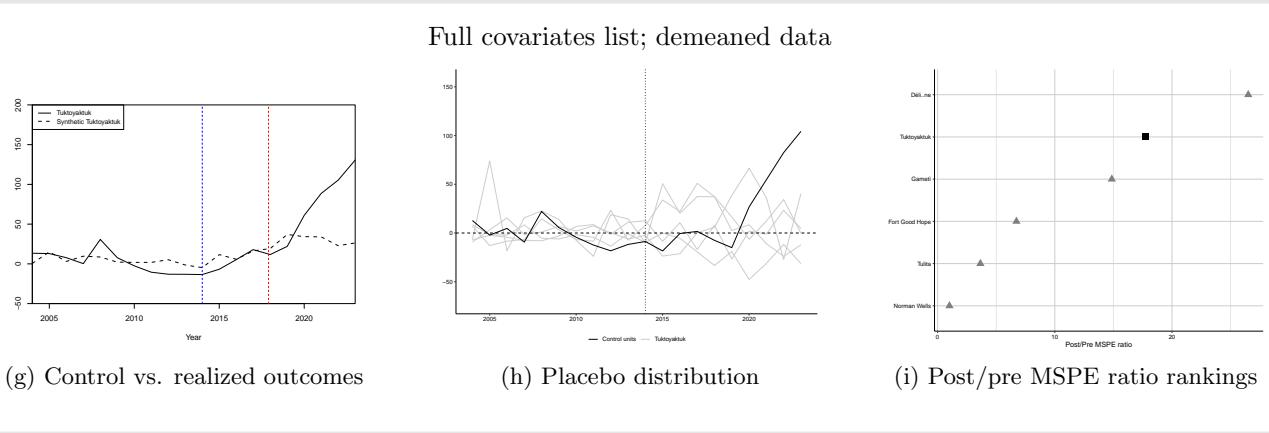
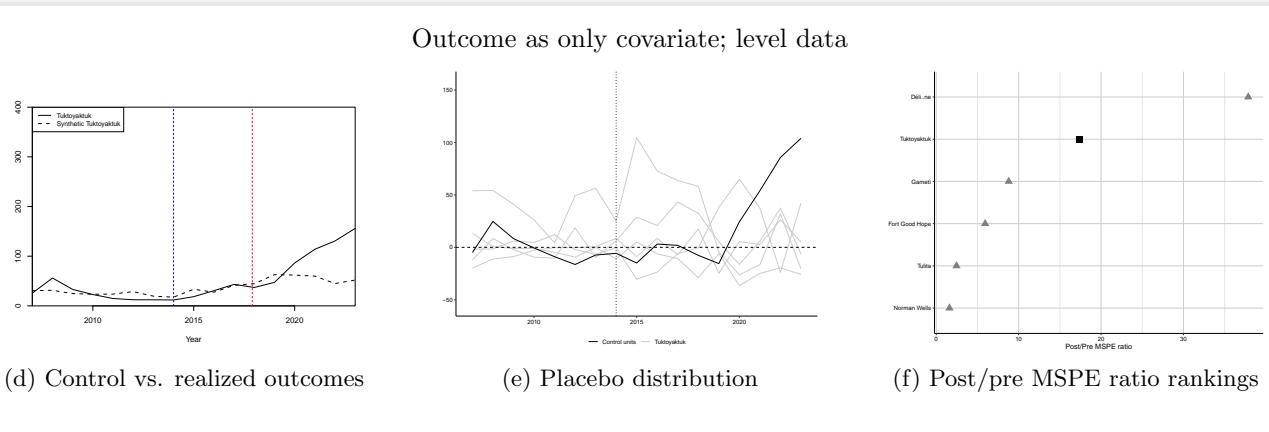
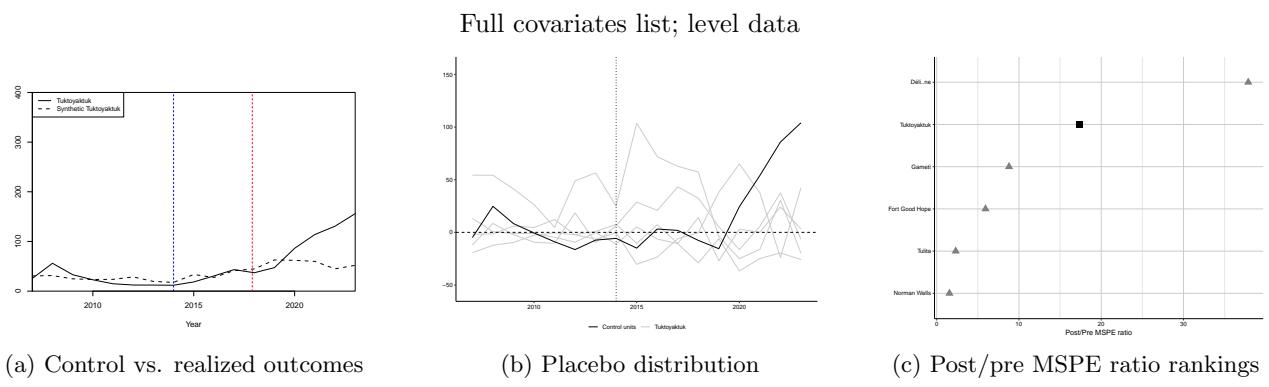
(k) Placebo distribution



(l) Post/pre MSPE ratio rankings

NOTES: Crime rates are police reported incidents per 1000 population. The synthetic control vs. realized outcomes graph shows a blue dotted line at 2014, the year construction started and a red line in November 2017, when the road opened. The control pool includes every community in the Northwest Territories that has a consistent population above 100 people during the study period.

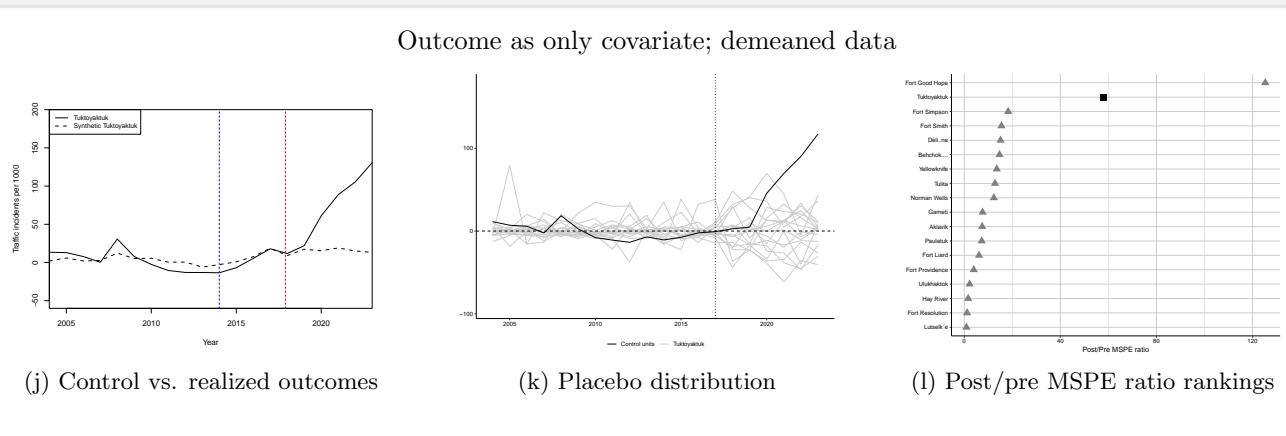
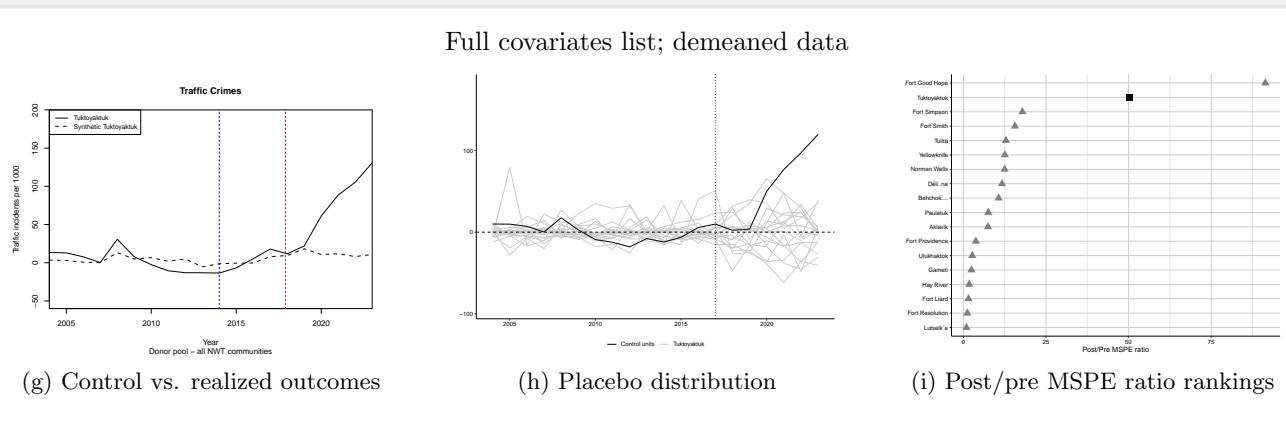
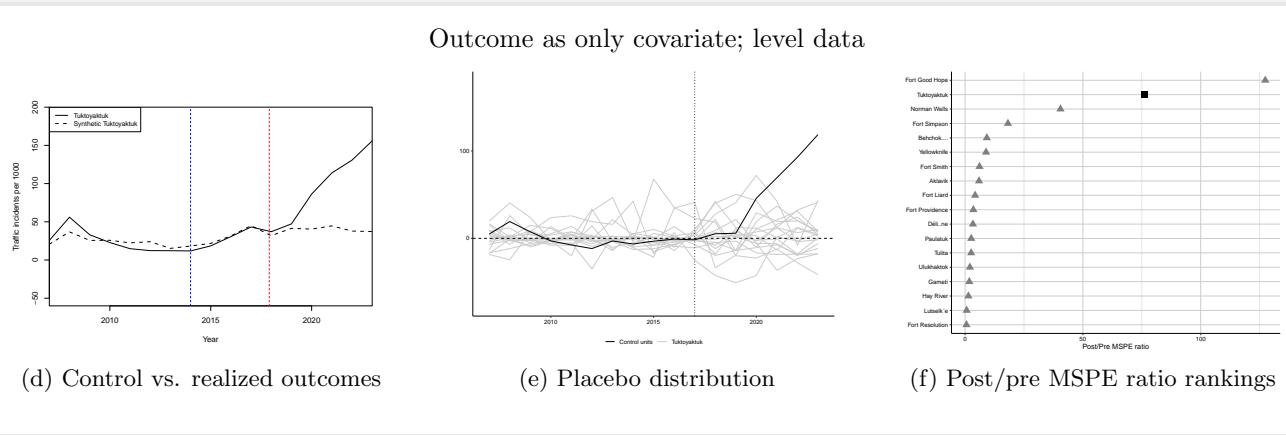
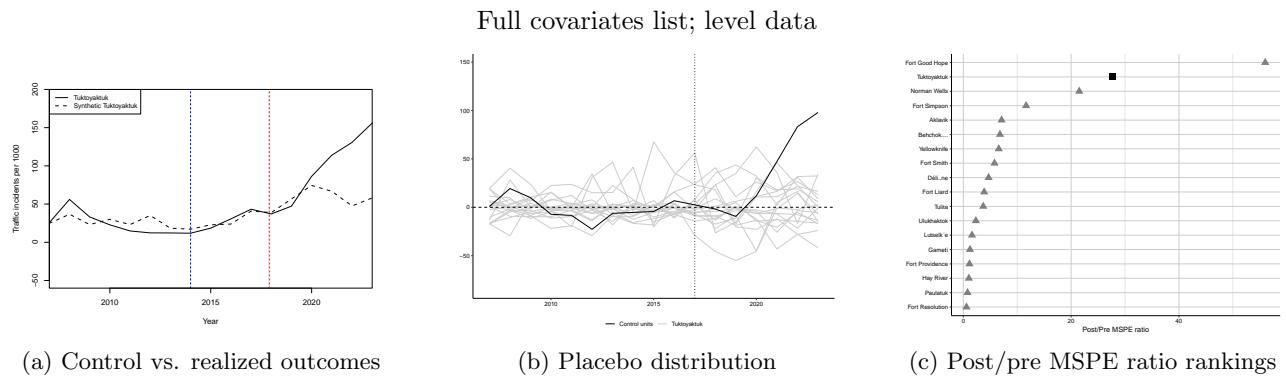
Figure 33: Traffic crime results results for Tuktoyaktuk
2014 treatment; Mackenzie valley ice road communities as donor pool



NOTES: Crime rates are police reported incidents per 1000 population. The synthetic control vs. realized outcomes graph shows a blue dotted line at 2014, the year construction started and a red line in November 2017, when the road opened. The control pool includes communities on the proposed Mackenzie valley highway that currently only have seasonal ice road overland access.

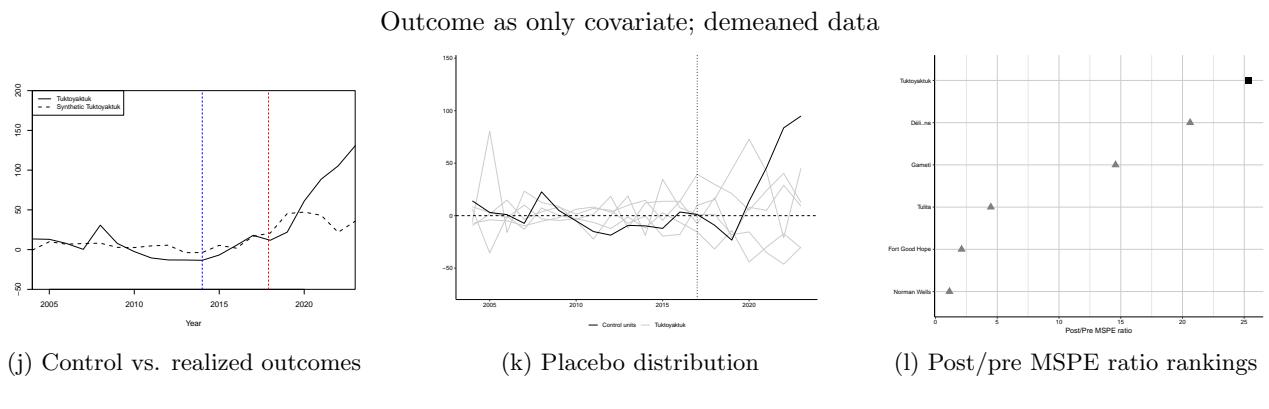
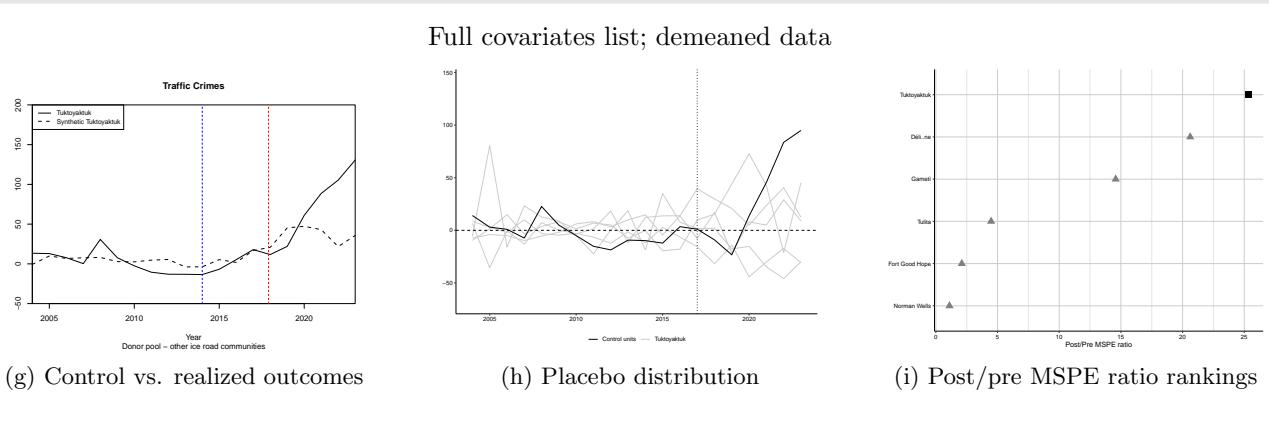
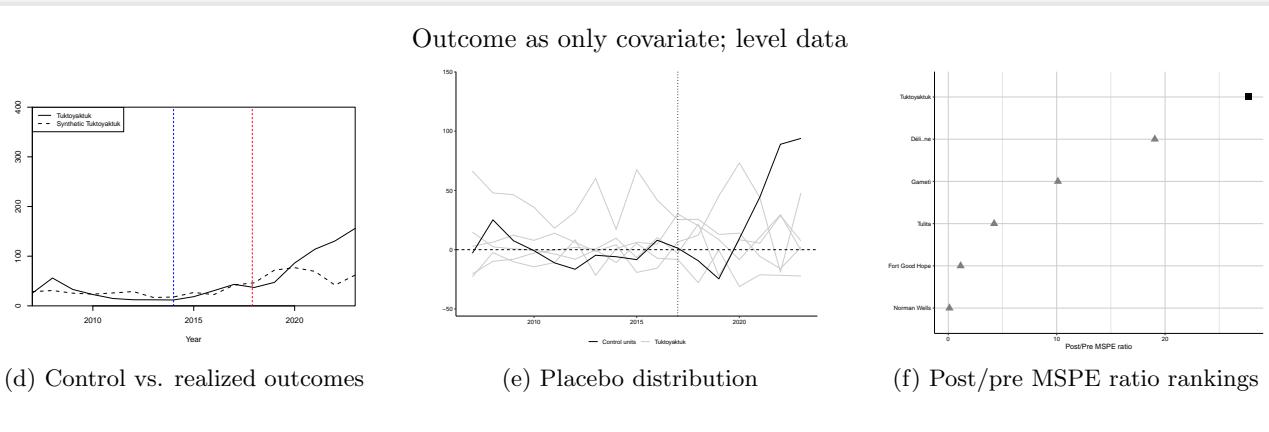
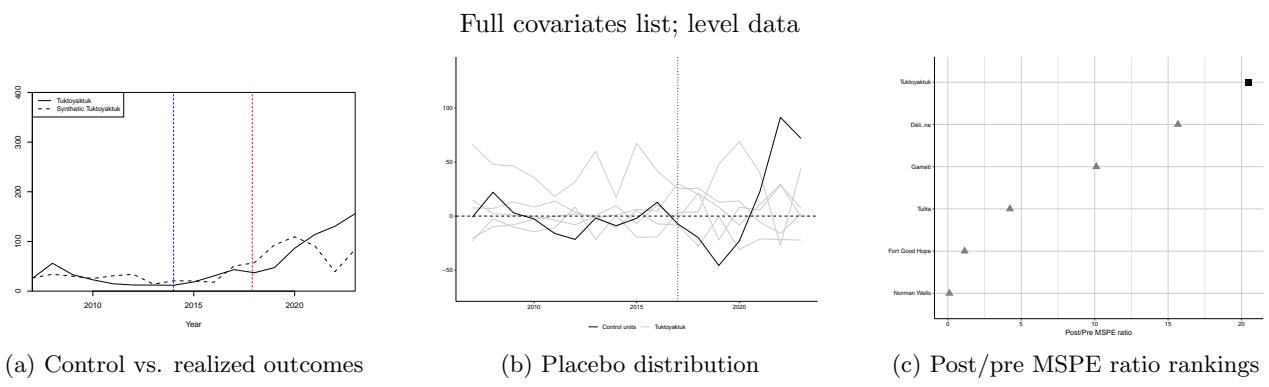
Figure 34: Traffic crime synthetic control results for Tuktoyaktuk

2017 treatment; Other NWT communities as donor pool



NOTES: Crime rates are police reported incidents per 1000 population. The synthetic control vs. realized outcomes graph shows a blue dotted line at 2014, the year construction started and a red line in November 2017, when the road opened. The control pool includes every community in the Northwest Territories that has a consistent population above 100 people during the study period.

Figure 35: Traffic crime results results for Tuktoyaktuk
2017 treatment; Mackenzie valley ice road communities as donor pool



NOTES: Crime rates are police reported incidents per 1000 population. The synthetic control vs. realized outcomes graph shows a blue dotted line at 2014, the year construction started and a red line in November 2017, when the road opened. The control pool includes communities on the proposed Mackenzie valley highway that currently only have seasonal ice road overland access.

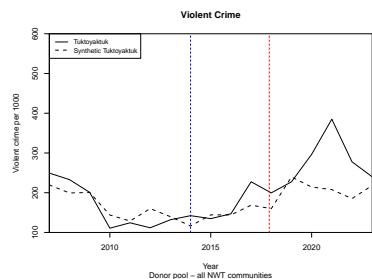
Violent crime

Figure 36: Violent crime results for Tuktoyaktuk

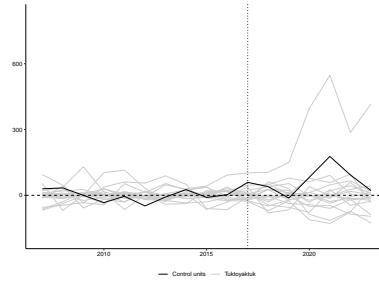
PREFERRED SPECIFICATION

2017 treatment; Other NWT communities as donor pool

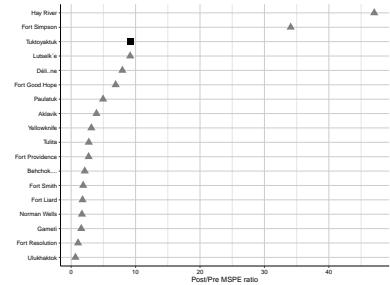
Full covariates list; level data



(a) Control vs. realized outcomes



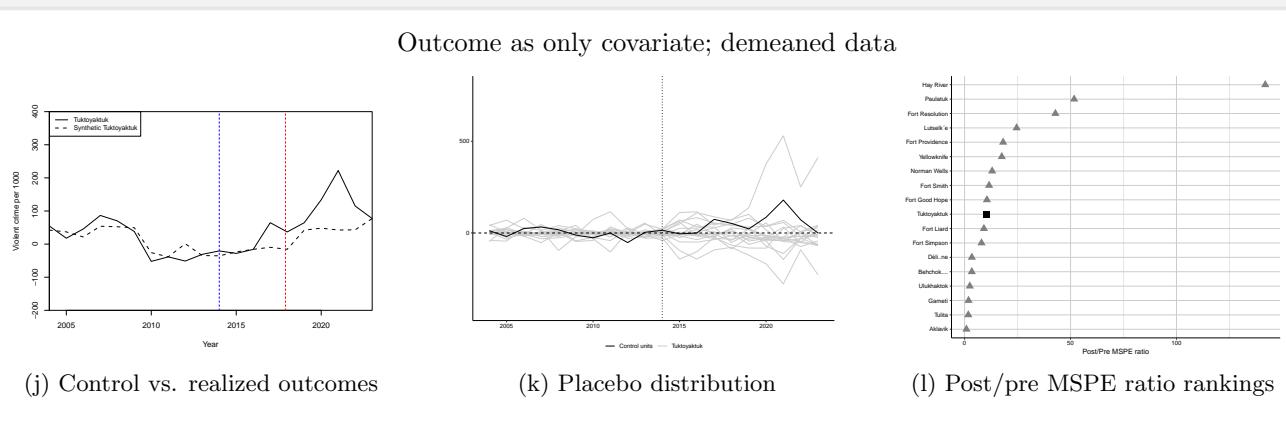
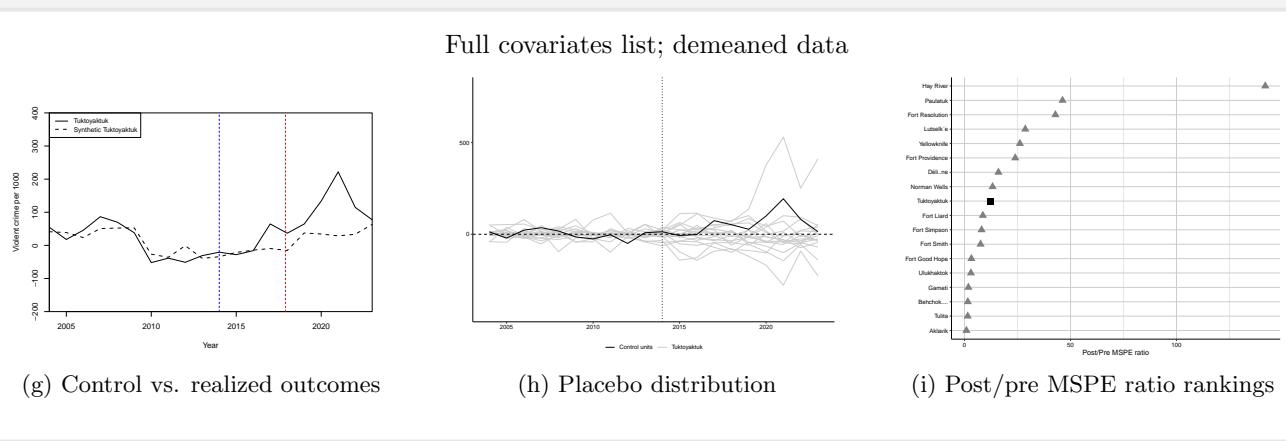
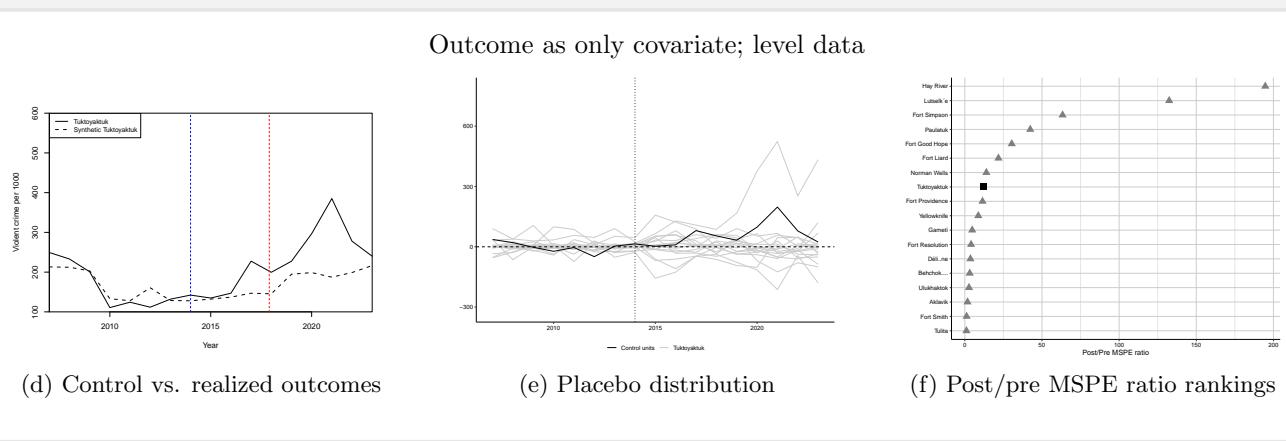
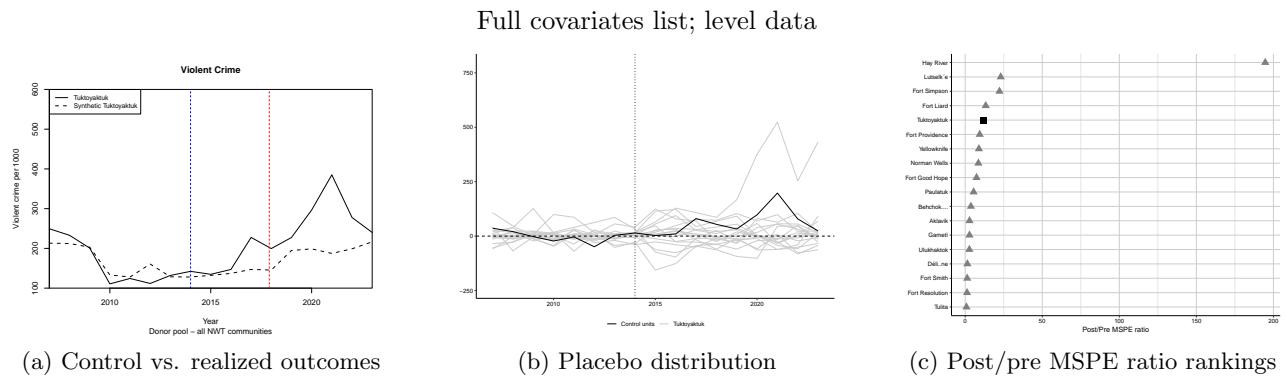
(b) Placebo distribution



(c) Post/pre MSPE ratio rankings

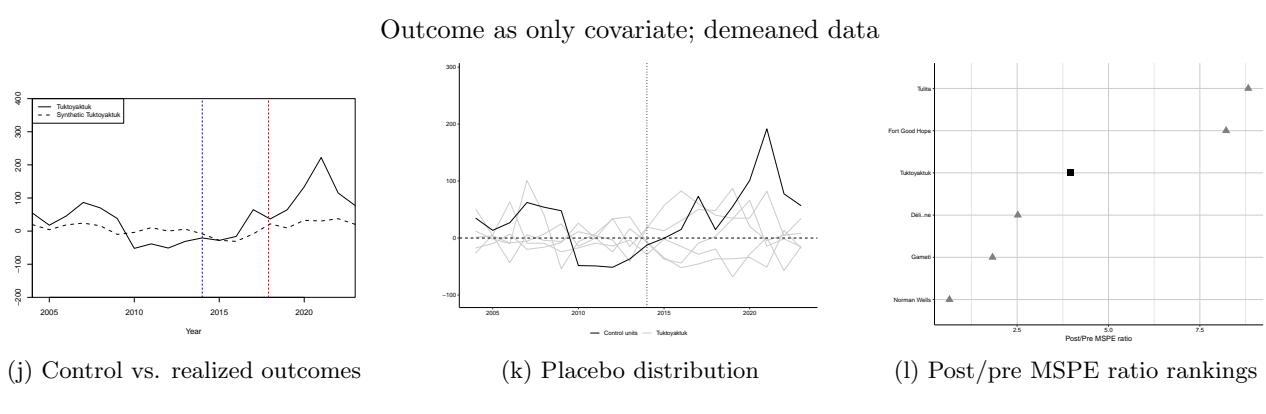
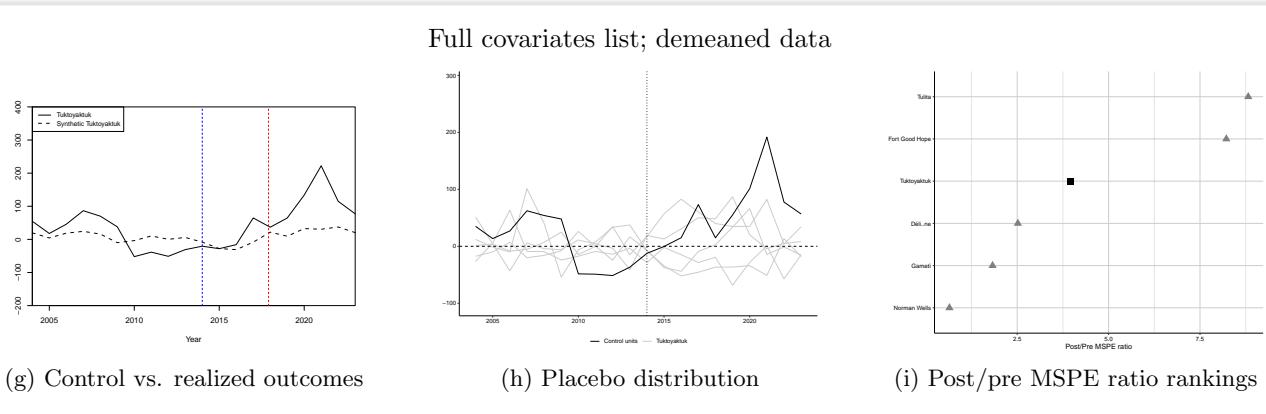
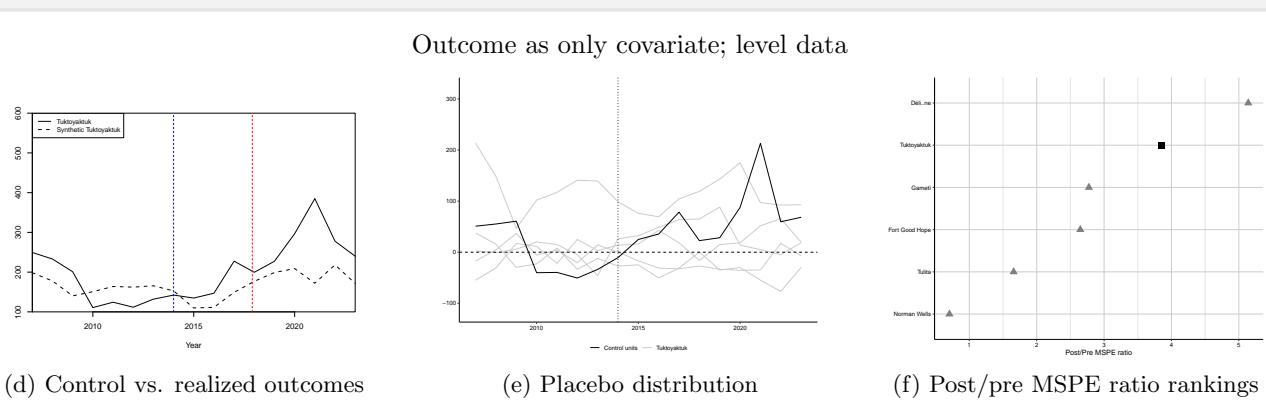
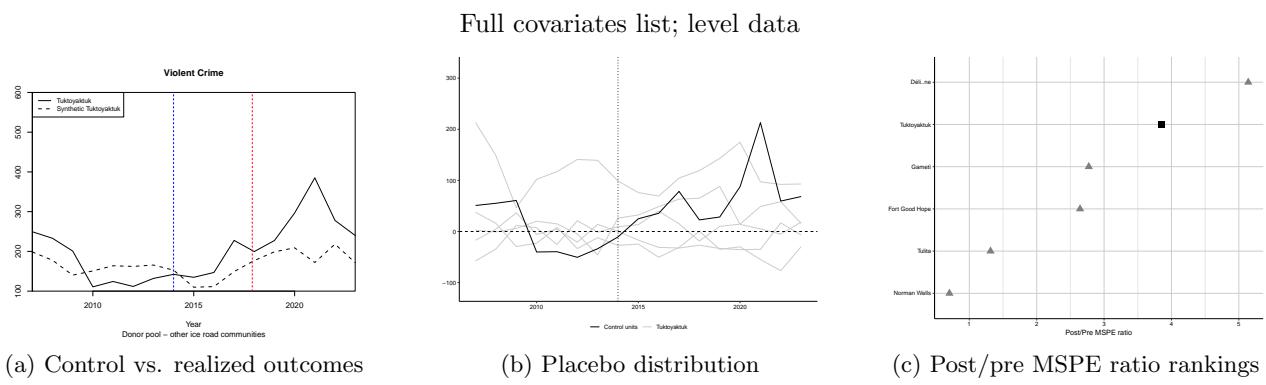
Figure 37: Violent crime results for Tuktoyaktuk

2014 treatment; Other NWT communities as donor pool



NOTES: Crime rates are police reported incidents per 1000 population. The synthetic control vs. realized outcomes graph shows a blue dotted line at 2014, the year construction started and a red line in November 2017, when the road opened. The control pool includes every community in the Northwest Territories that has a consistent population above 100 people during the study period.

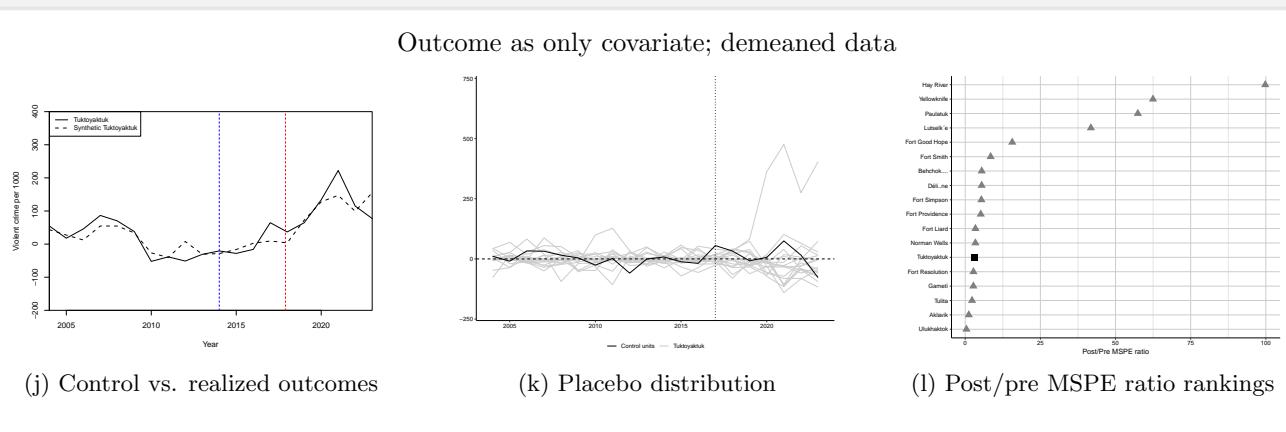
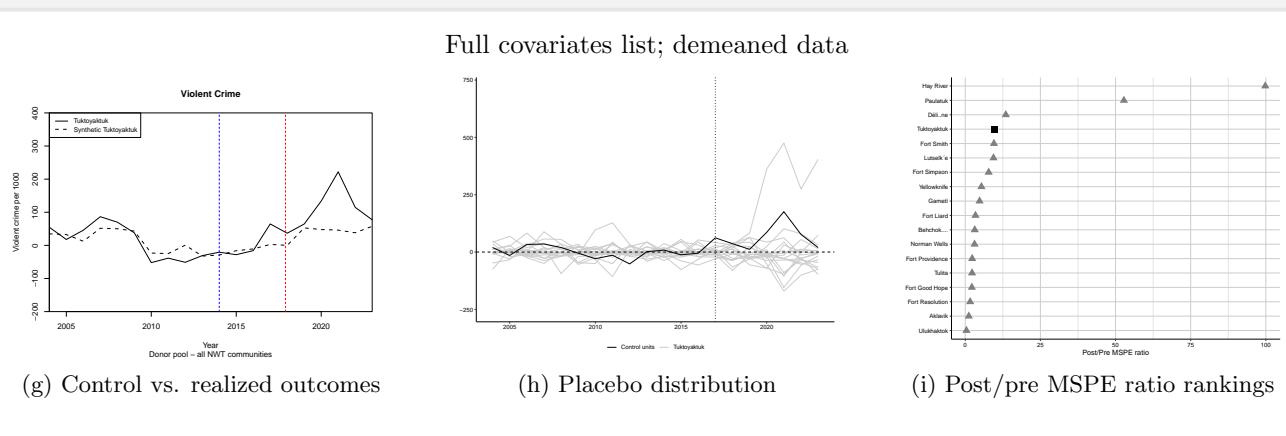
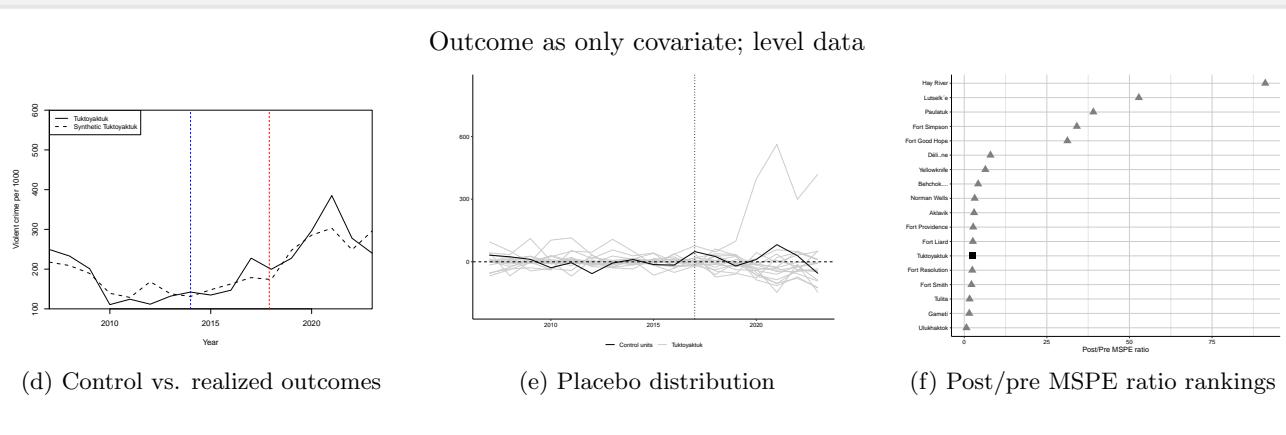
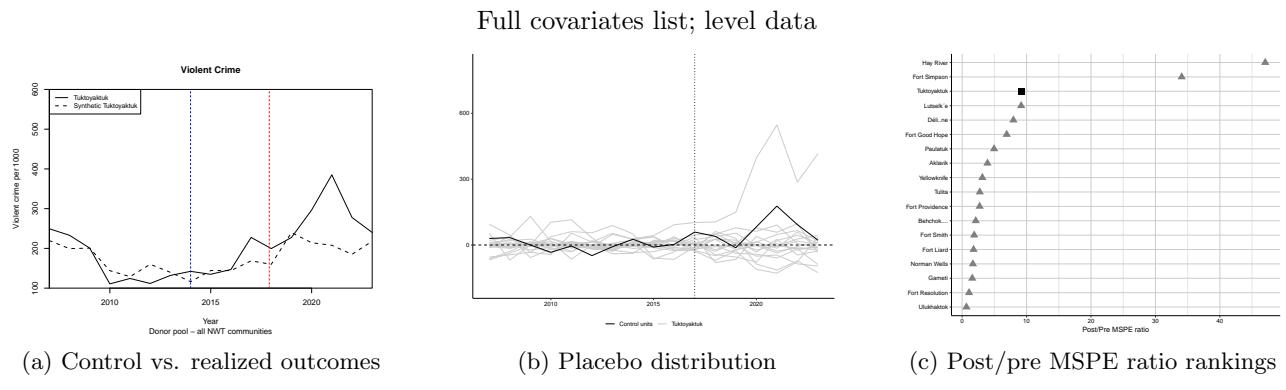
Figure 38: Violent crime results results for Tuktoyaktuk
2014 treatment; Mackenzie valley ice road communities as donor pool



NOTES: Crime rates are police reported incidents per 1000 population. The synthetic control vs. realized outcomes graph shows a blue dotted line at 2014, the year construction started and a red line in November 2017, when the road opened. The control pool includes communities on the proposed Mackenzie valley highway that currently only have seasonal ice road overland access.

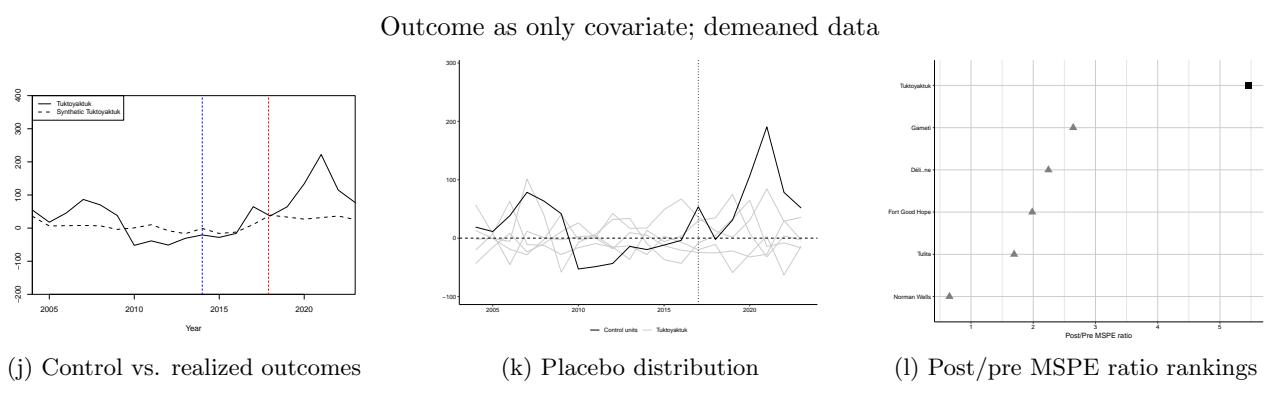
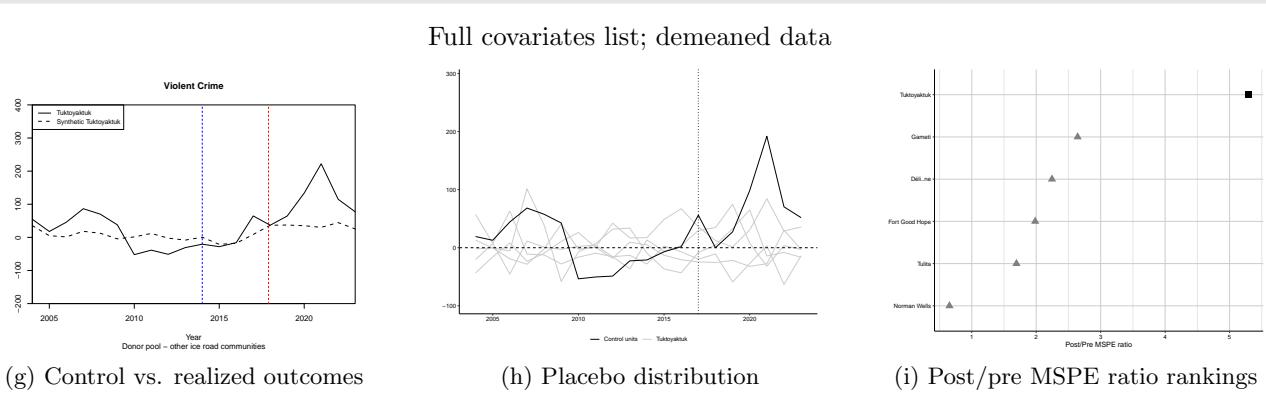
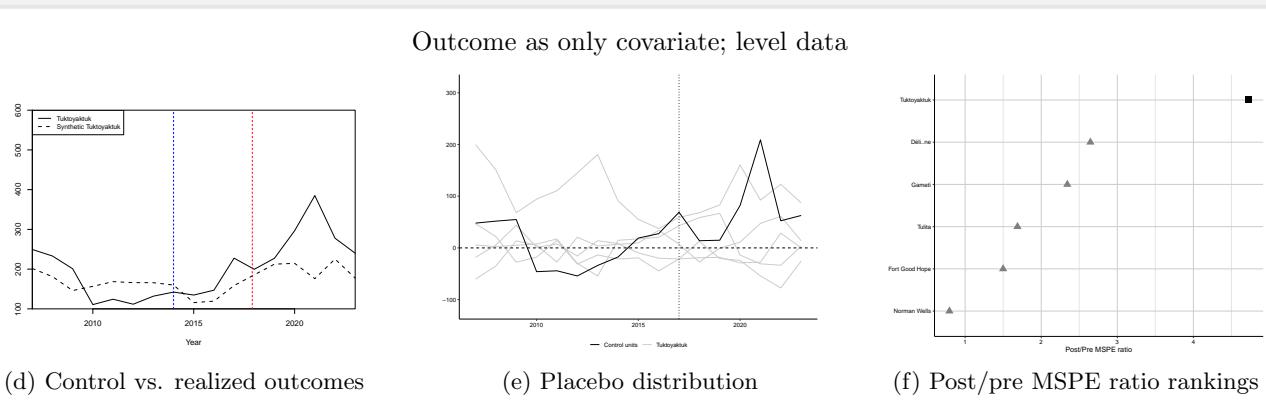
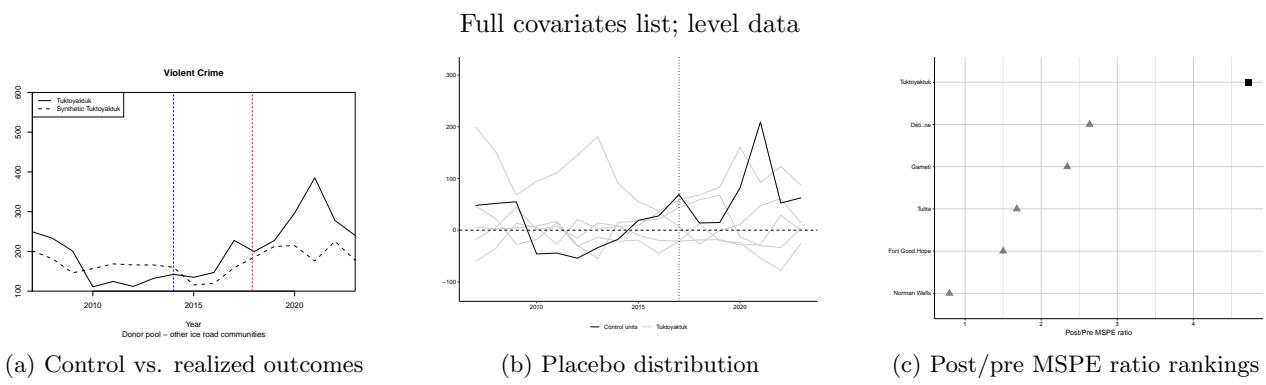
Figure 39: Violent crime synthetic control results for Tuktoyaktuk

2017 treatment; Other NWT communities as donor pool



NOTES: Crime rates are police reported incidents per 1000 population. The synthetic control vs. realized outcomes graph shows a blue dotted line at 2014, the year construction started and a red line in November 2017, when the road opened. The control pool includes every community in the Northwest Territories that has a consistent population above 100 people during the study period.

Figure 40: Violent crime results results for Tuktoyaktuk
2017 treatment; Mackenzie valley ice road communities as donor pool



NOTES: Crime rates are police reported incidents per 1000 population. The synthetic control vs. realized outcomes graph shows a blue dotted line at 2014, the year construction started and a red line in November 2017, when the road opened. The control pool includes communities on the proposed Mackenzie valley highway that currently only have seasonal ice road overland access.

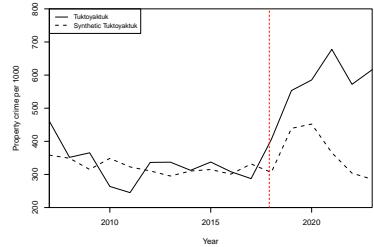
Property crime

Figure 41: Property crime results for Tuktoyaktuk

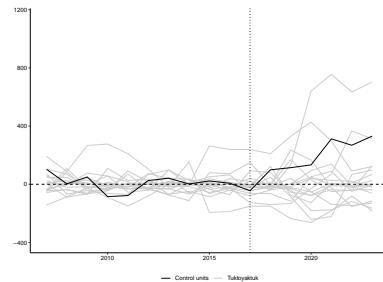
PREFERRED SPECIFICATION

2017 treatment; Other NWT communities as donor pool

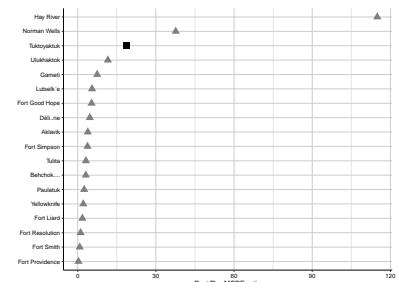
Full covariates list; level data



(a) Control vs. realized outcomes



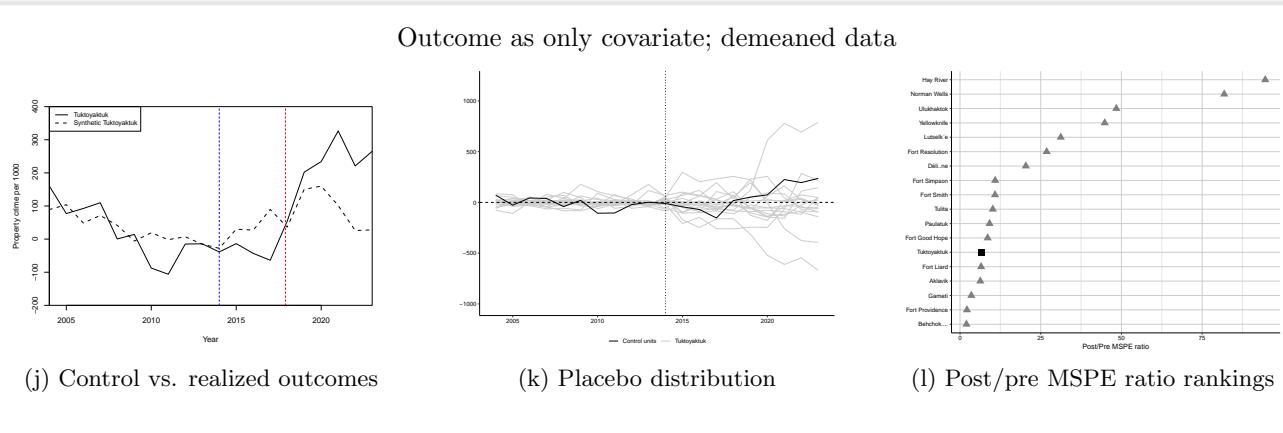
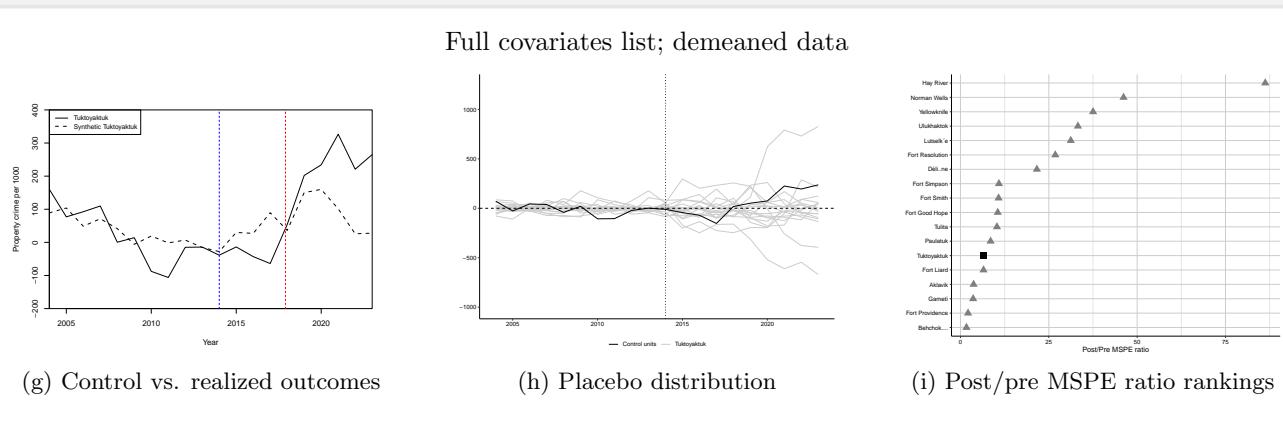
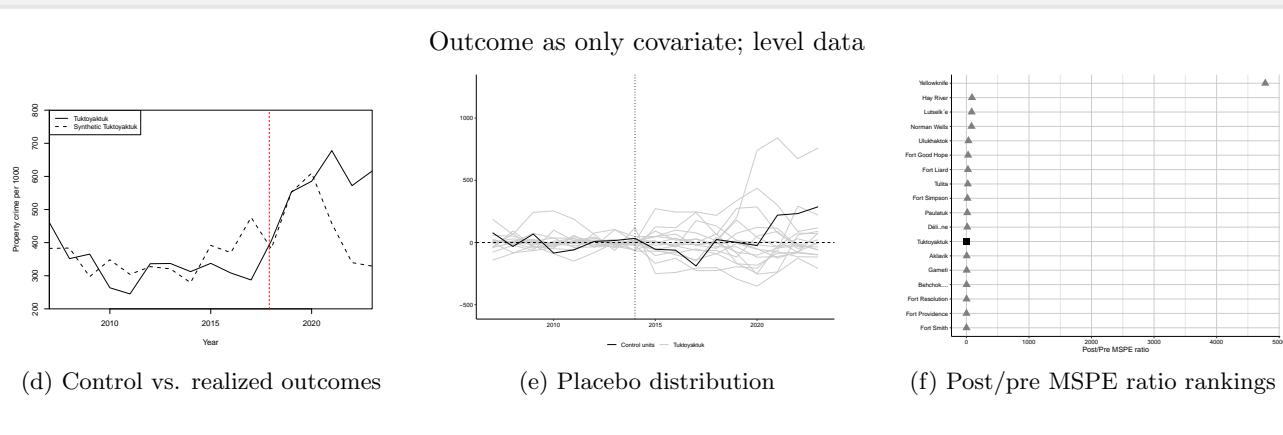
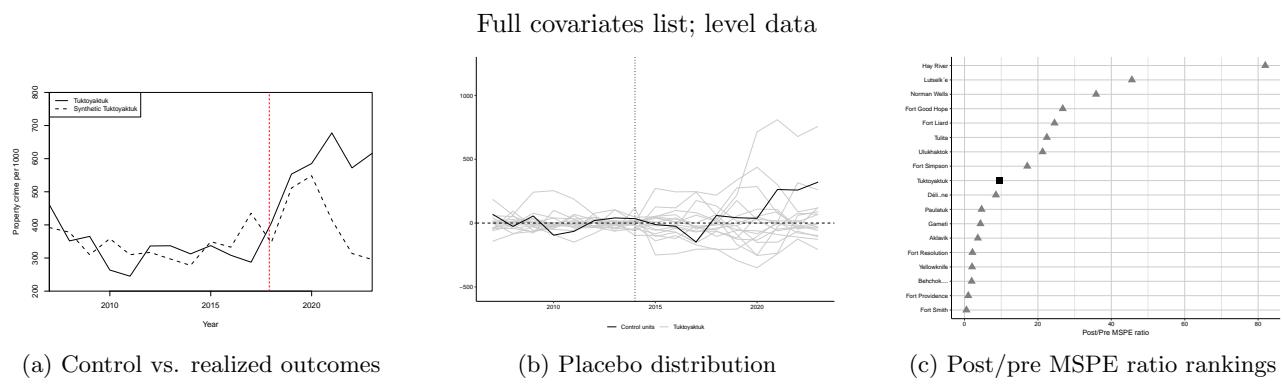
(b) Placebo distribution



(c) Post/pre MSPE ratio rankings

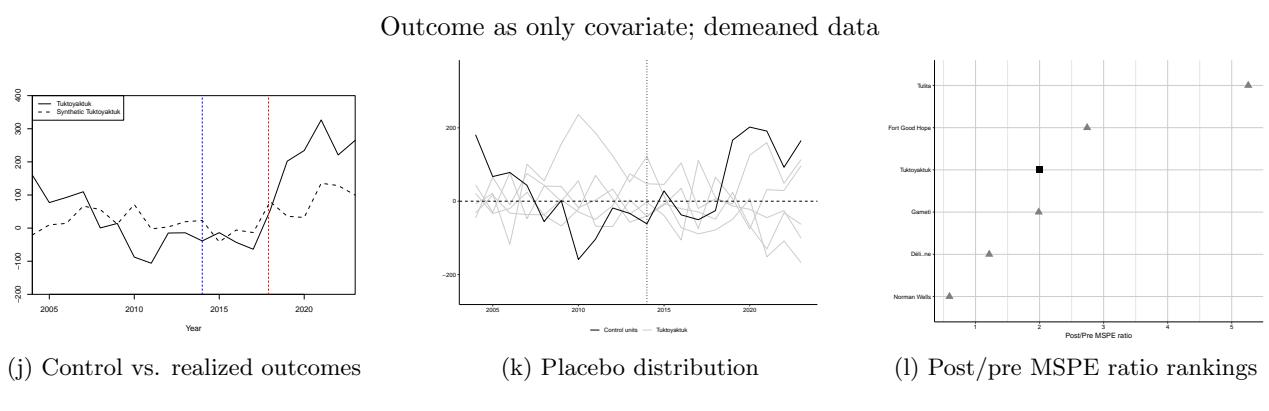
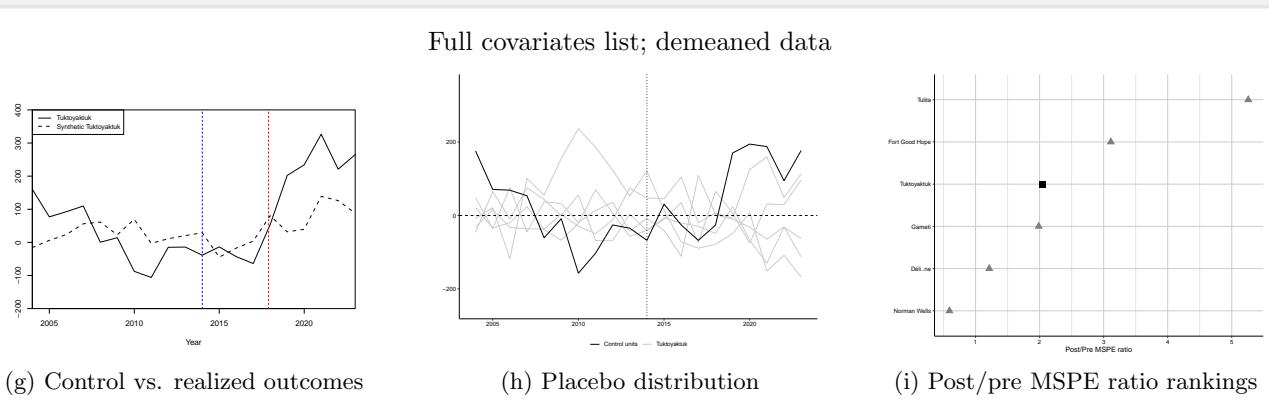
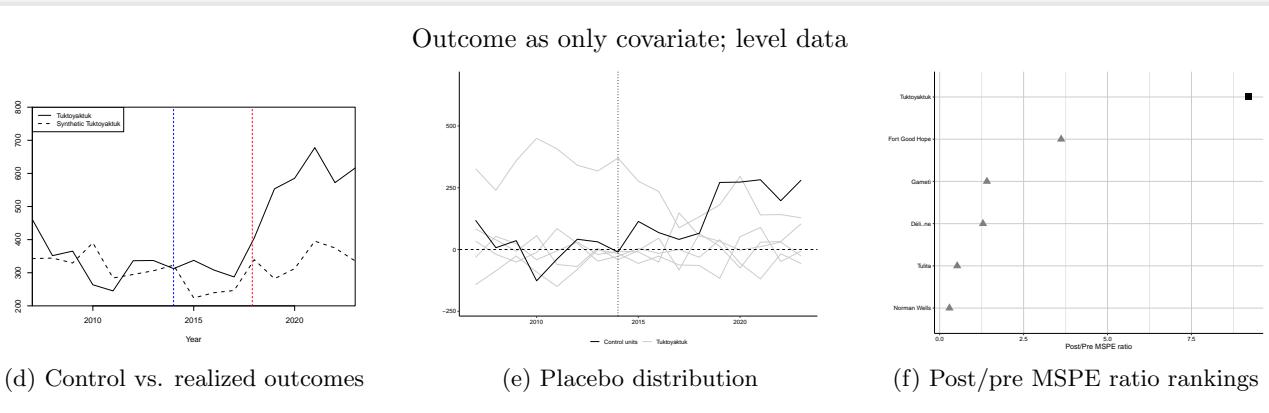
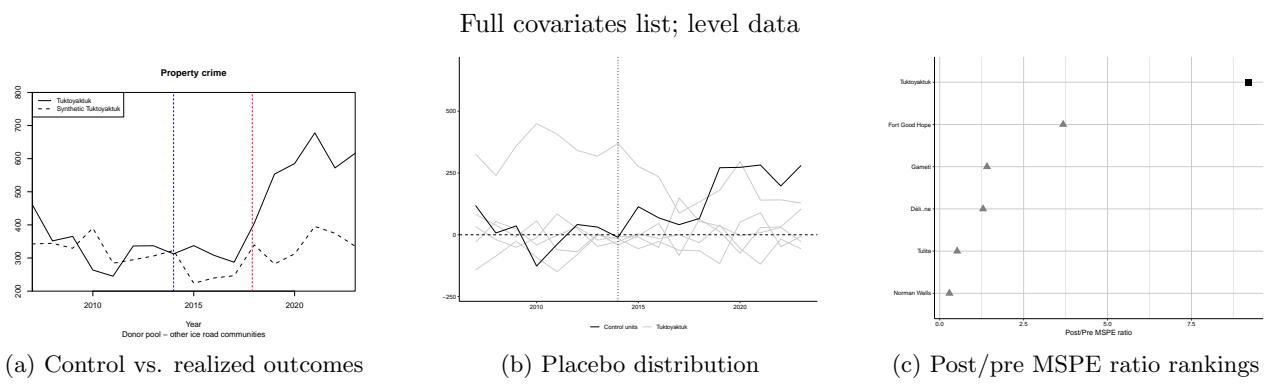
Figure 42: Property crime results for Tuktoyaktuk

2014 treatment; Other NWT communities as donor pool



NOTES: Crime rates are police reported incidents per 1000 population. The synthetic control vs. realized outcomes graph shows a blue dotted line at 2014, the year construction started and a red line in November 2017, when the road opened. The control pool includes every community in the Northwest Territories that has a consistent population above 100 people during the study period.

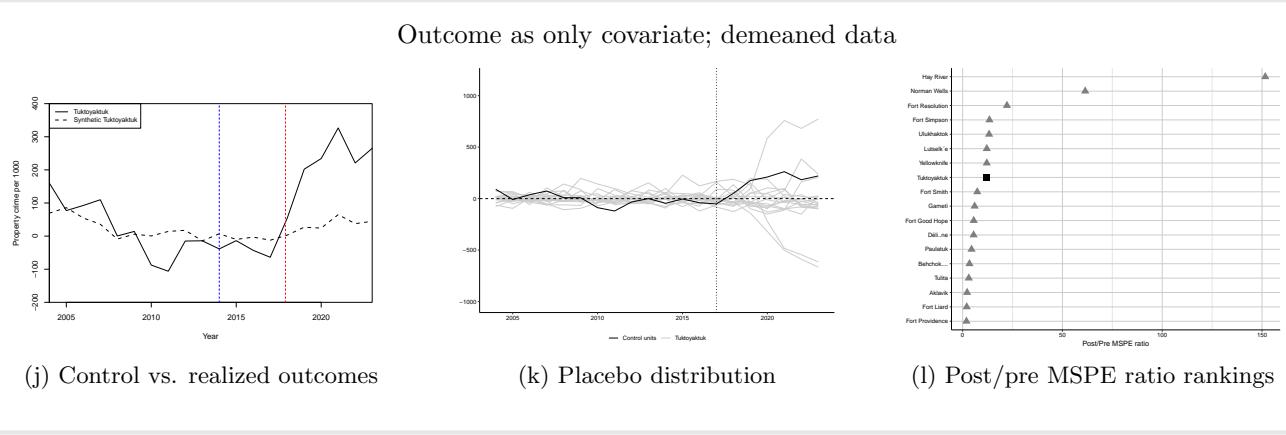
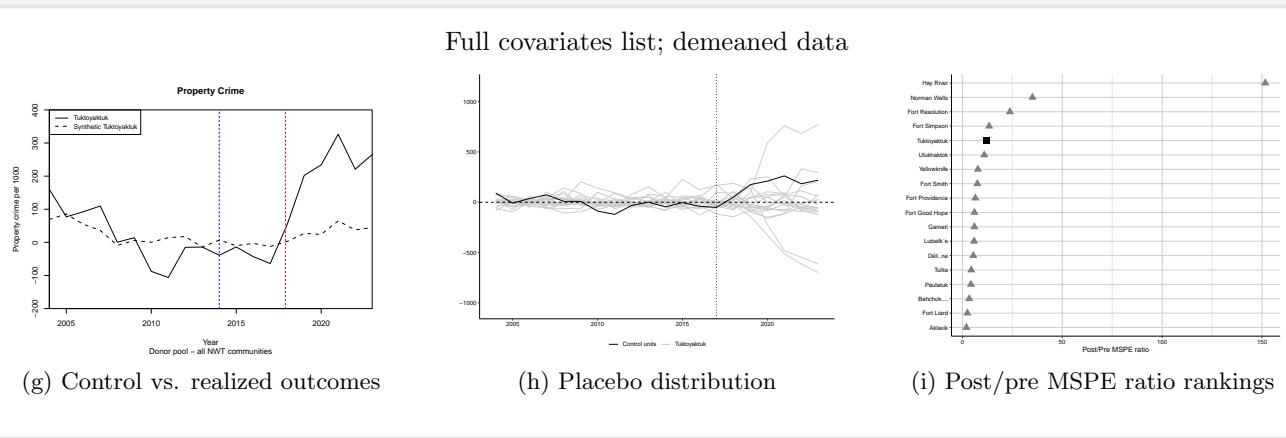
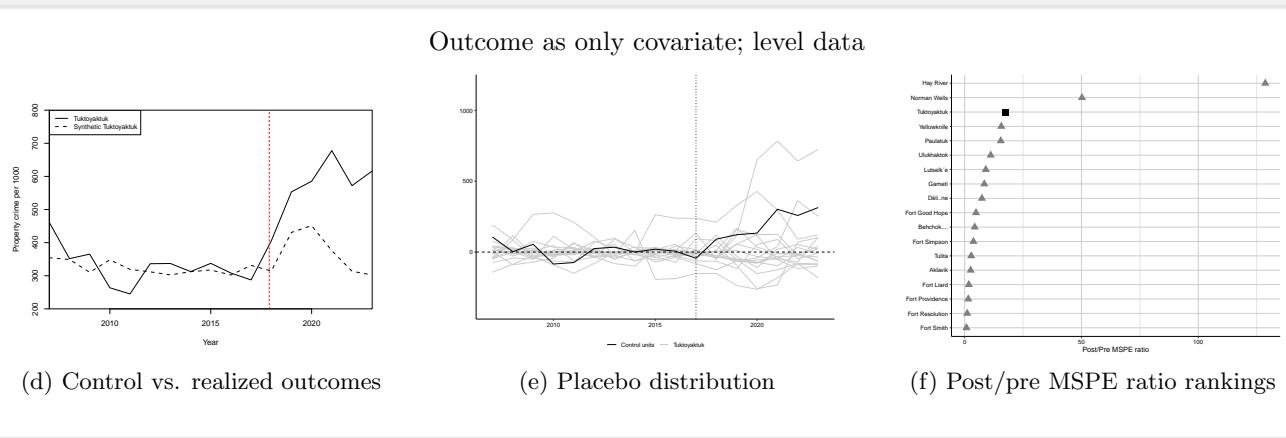
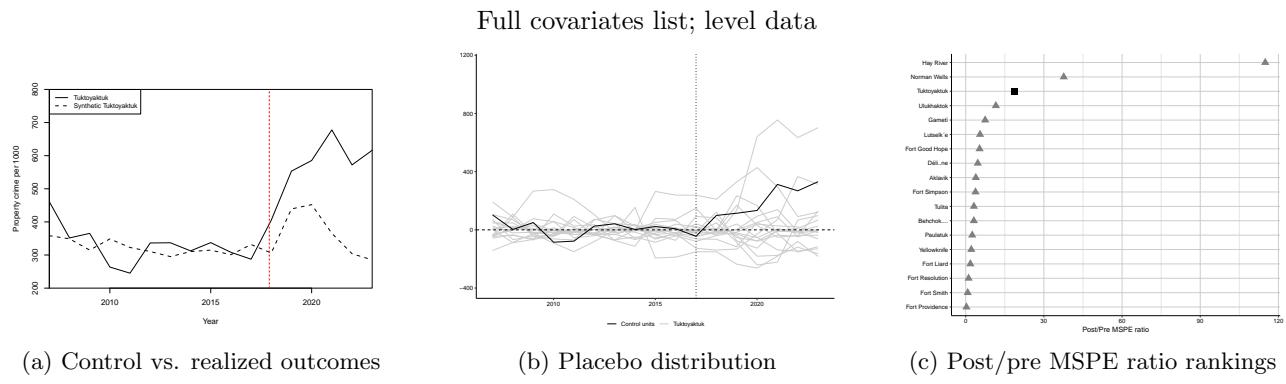
Figure 43: Property crime results results for Tuktoyaktuk
2014 treatment; Mackenzie valley ice road communities as donor pool



NOTES: Crime rates are police reported incidents per 1000 population. The synthetic control vs. realized outcomes graph shows a blue dotted line at 2014, the year construction started and a red line in November 2017, when the road opened. The control pool includes communities on the proposed Mackenzie valley highway that currently only have seasonal ice road overland access.

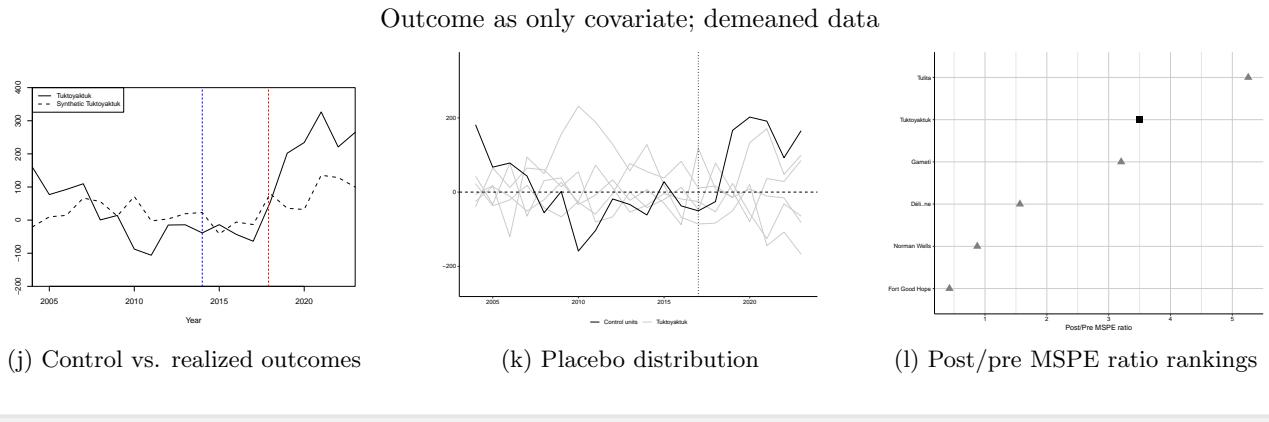
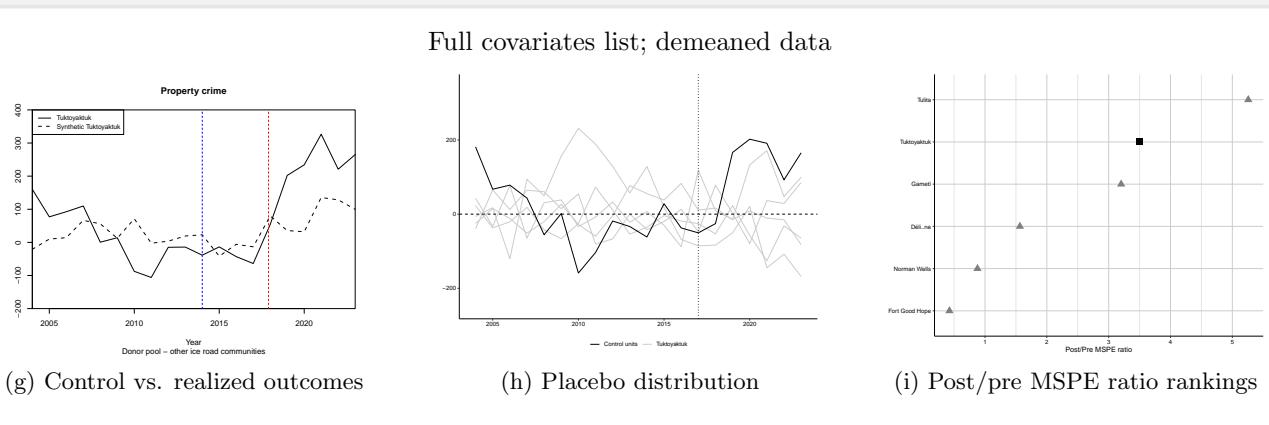
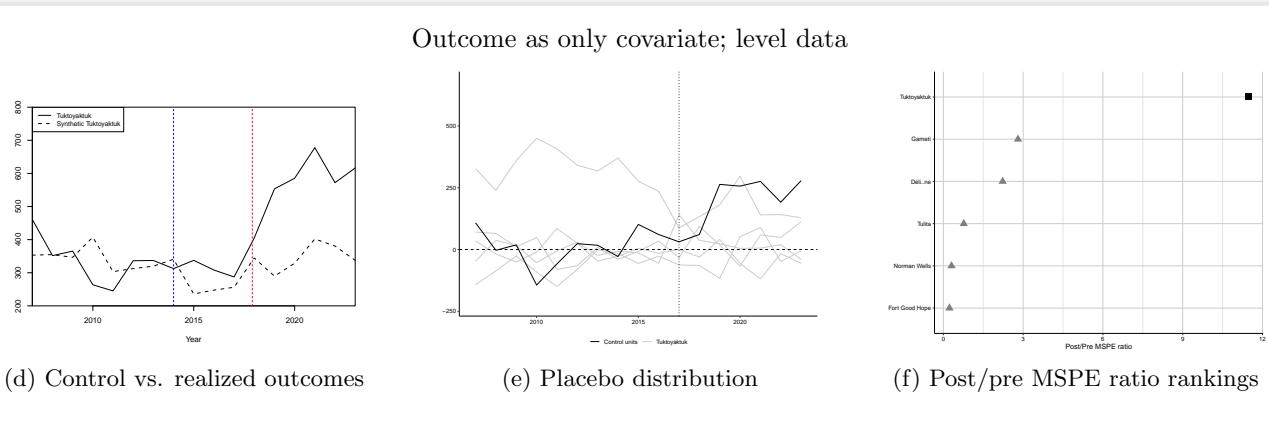
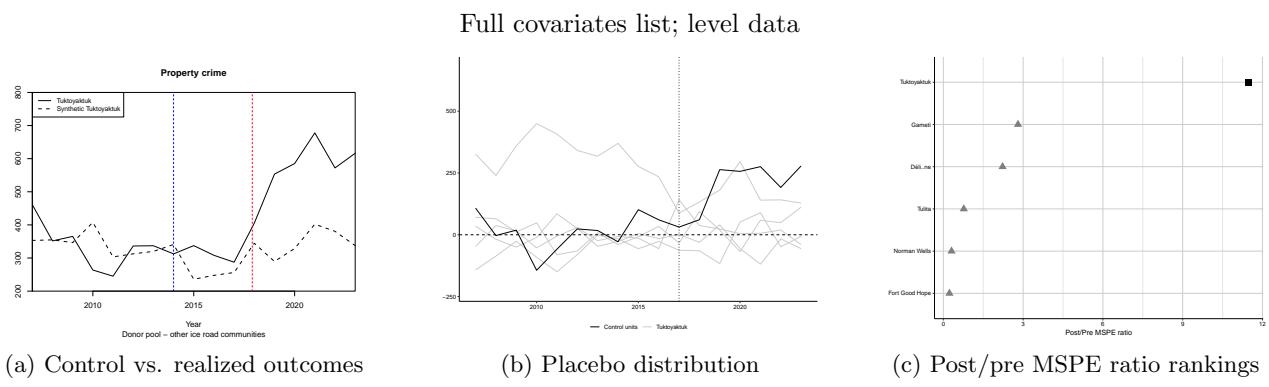
Figure 44: Property crime synthetic control results for Tuktoyaktuk

2017 treatment; Other NWT communities as donor pool



NOTES: Crime rates are police reported incidents per 1000 population. The synthetic control vs. realized outcomes graph shows a blue dotted line at 2014, the year construction started and a red line in November 2017, when the road opened. The control pool includes every community in the Northwest Territories that has a consistent population above 100 people during the study period.

Figure 45: Property crime results results for Tuktoyaktuk
2017 treatment; Mackenzie valley ice road communities as donor pool



NOTES: Crime rates are police reported incidents per 1000 population. The synthetic control vs. realized outcomes graph shows a blue dotted line at 2014, the year construction started and a red line in November 2017, when the road opened. The control pool includes communities on the proposed Mackenzie valley highway that currently only have seasonal ice road overland access.

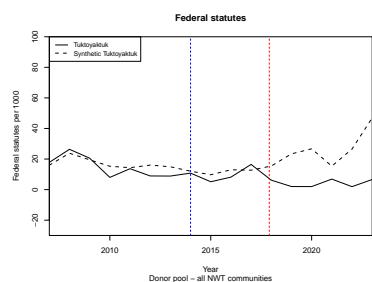
Other federal statutes crime

Figure 46: federal federal satute violations results for Tuktoyaktuk

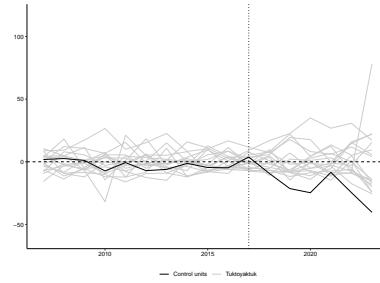
PREFERRED SPECIFICATION

2017 treatment; federal NWT communities as donor pool

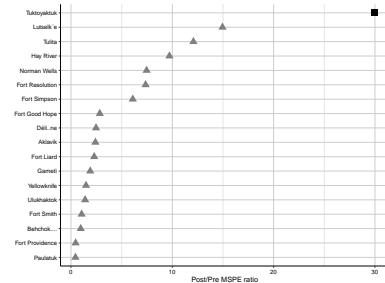
Full covariates list; level data



(a) Control vs. realized outcomes



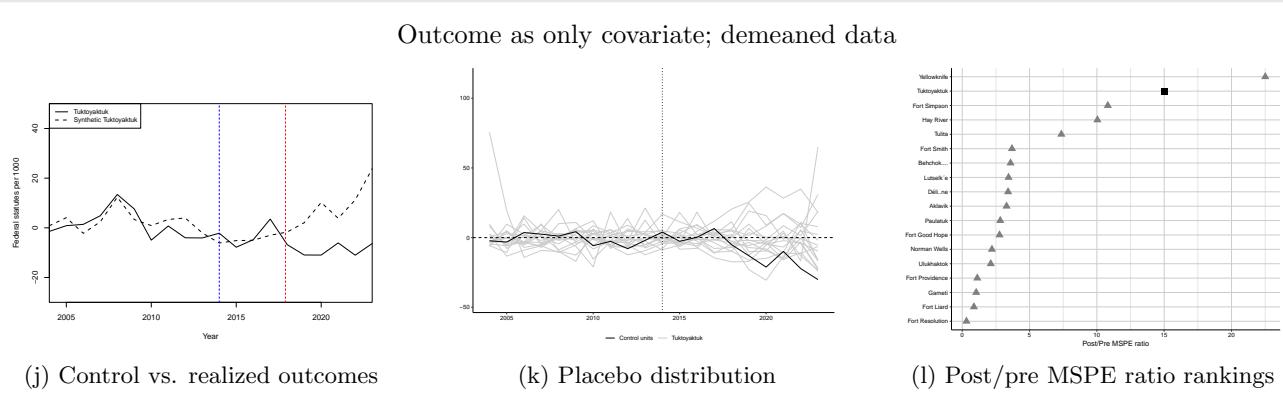
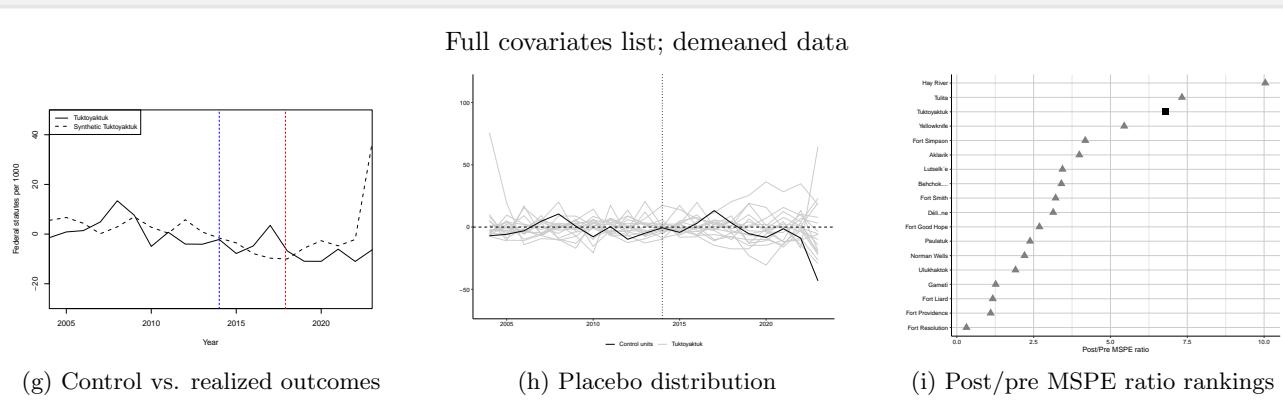
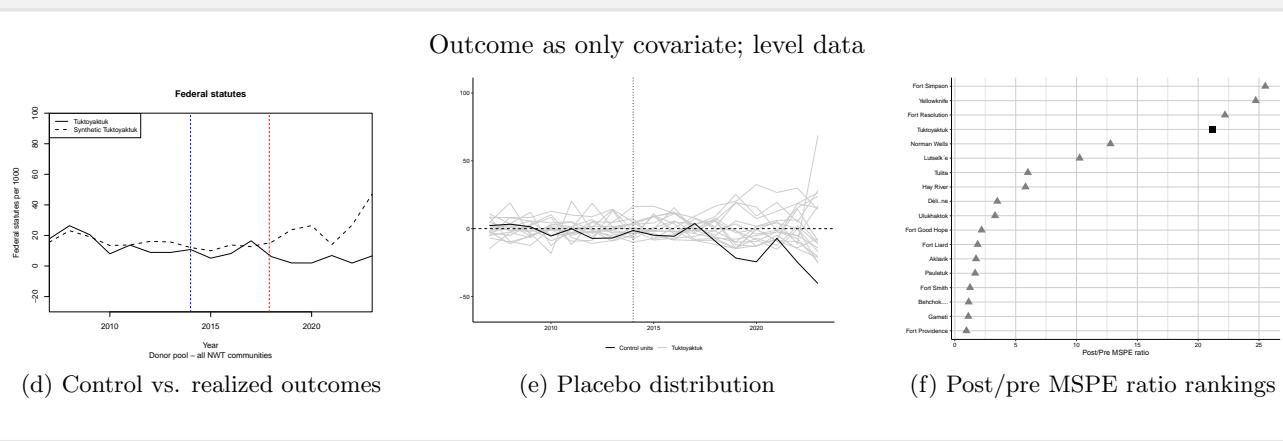
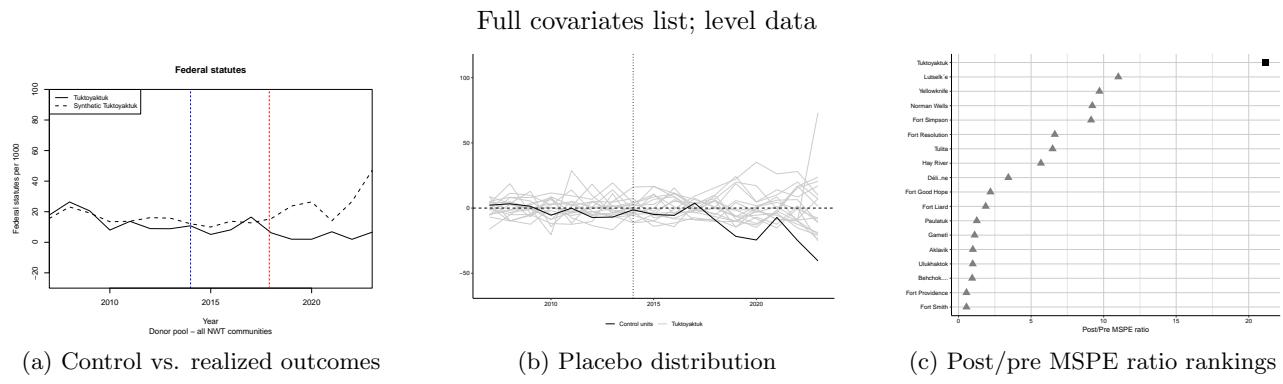
(b) Placebo distribution



(c) Post/pre MSPE ratio rankings

Figure 47: Other federal statutes crime results for Tuktoyaktuk

2014 treatment; Other NWT communities as donor pool

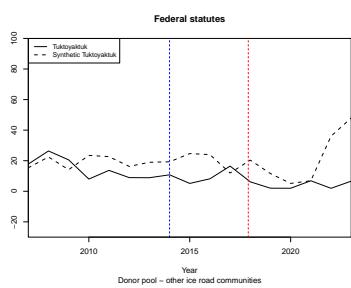


NOTES: Crime rates are police reported incidents per 1000 population. The synthetic control vs. realized outcomes graph shows a blue dotted line at 2014, the year construction started and a red line in November 2017, when the road opened. The control pool includes every community in the Northwest Territories that has a consistent population above 100 people during the study period.

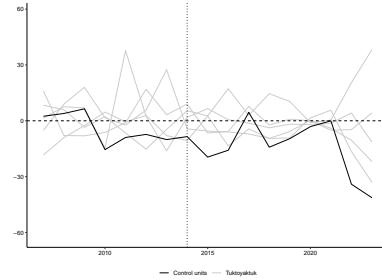
Figure 48: Other federal statutes crime results results for Tuktoyaktuk

2014 treatment; Mackenzie valley ice road communities as donor pool

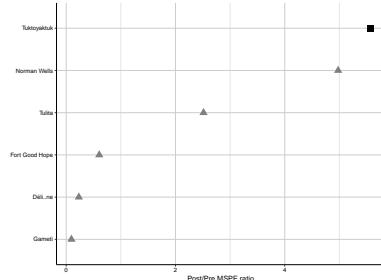
Full covariates list; level data



(a) Control vs. realized outcomes

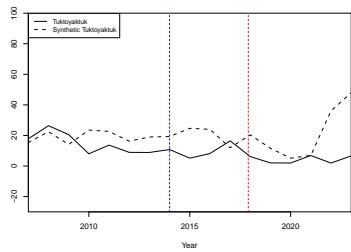


(b) Placebo distribution

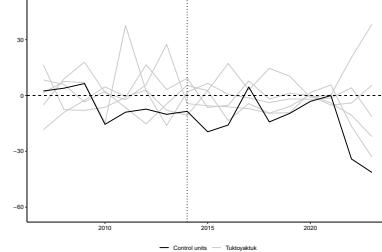


(c) Post/pre MSPE ratio rankings

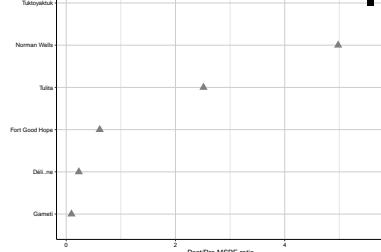
Outcome as only covariate; level data



(d) Control vs. realized outcomes

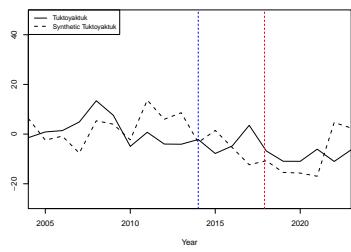


(e) Placebo distribution

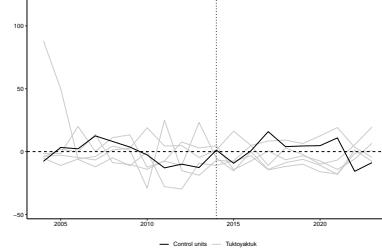


(f) Post/pre MSPE ratio rankings

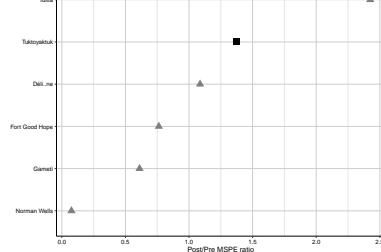
Full covariates list; demeaned data



(g) Control vs. realized outcomes

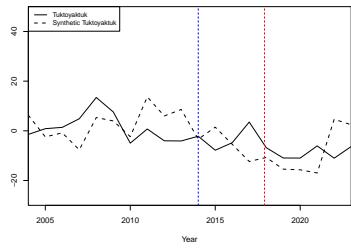


(h) Placebo distribution

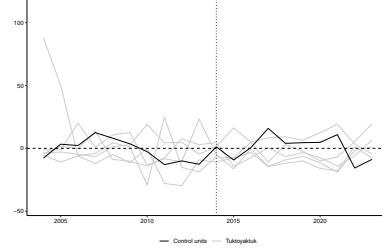


(i) Post/pre MSPE ratio rankings

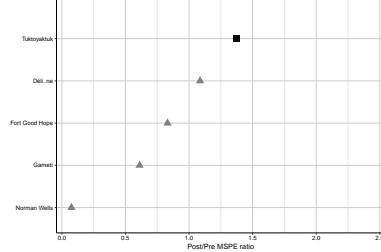
Outcome as only covariate; demeaned data



(j) Control vs. realized outcomes



(k) Placebo distribution

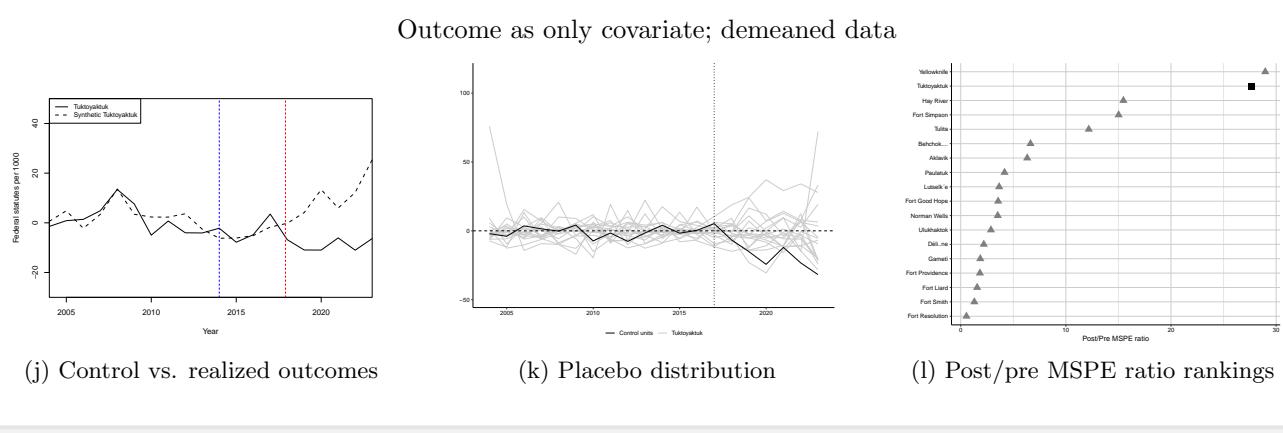
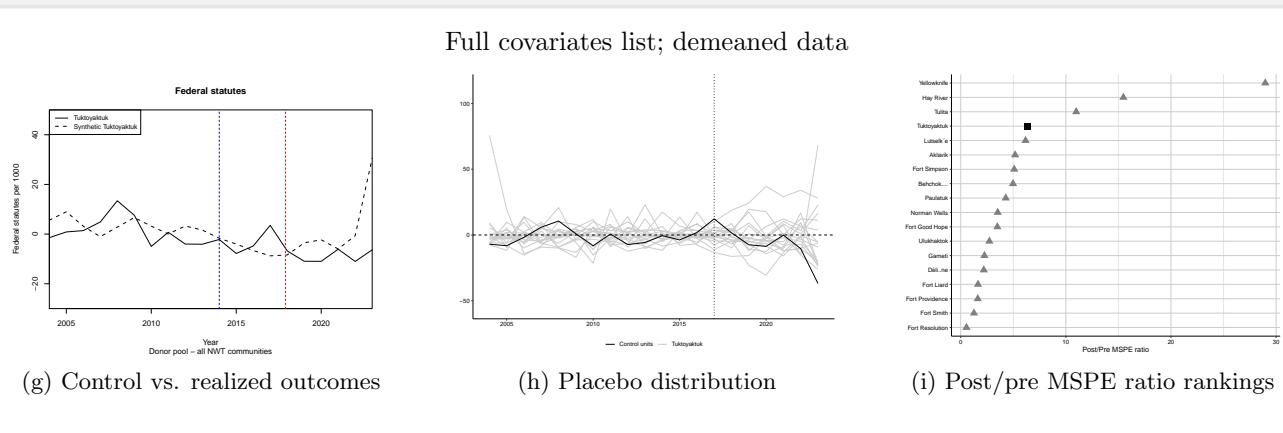
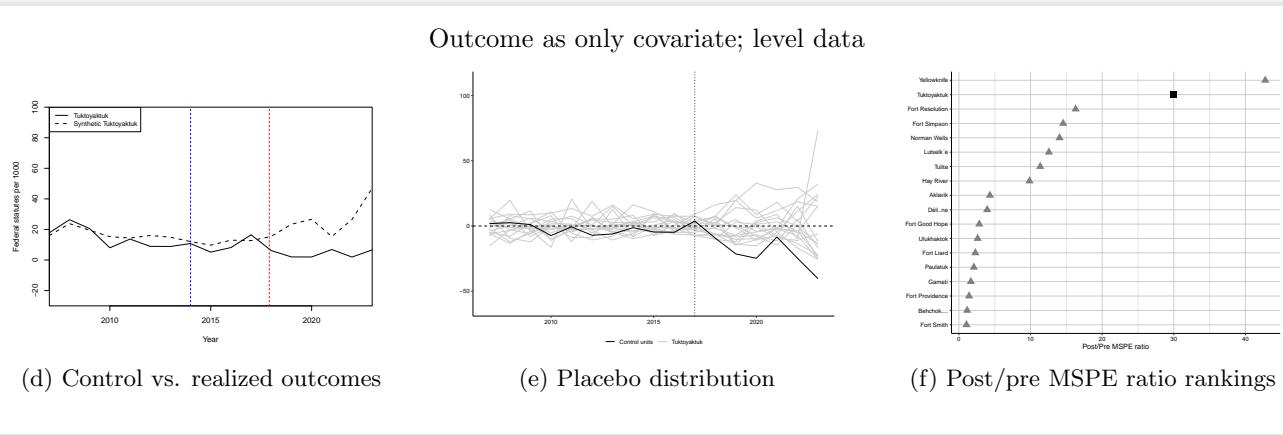
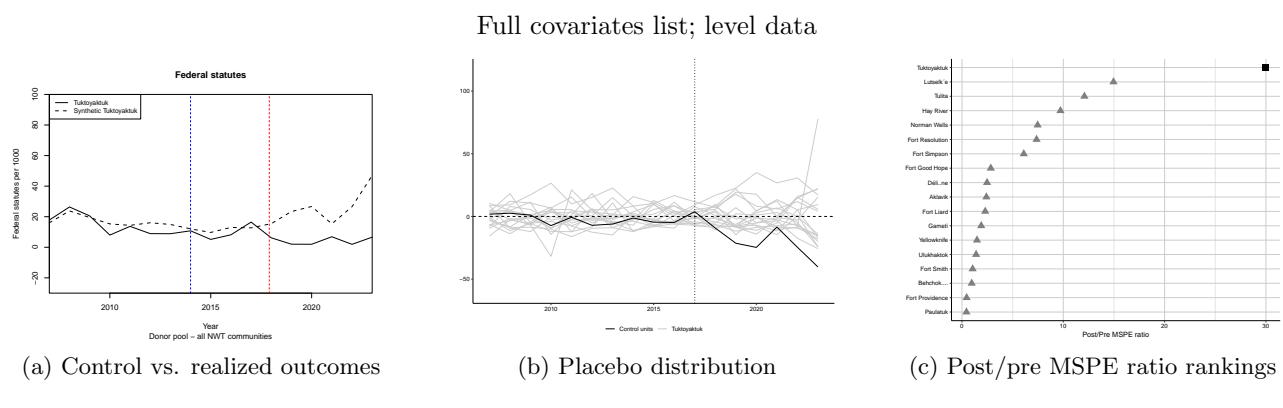


(l) Post/pre MSPE ratio rankings

NOTES: Crime rates are police reported incidents per 1000 population. The synthetic control vs. realized outcomes graph shows a blue dotted line at 2014, the year construction started and a red line in November 2017, when the road opened. The control pool includes communities on the proposed Mackenzie valley highway that currently only have seasonal ice road overland access.

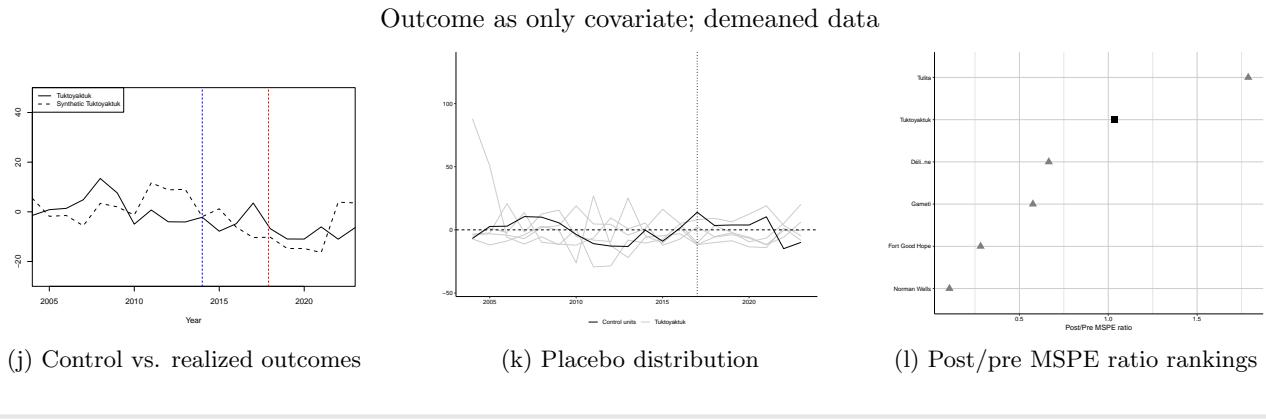
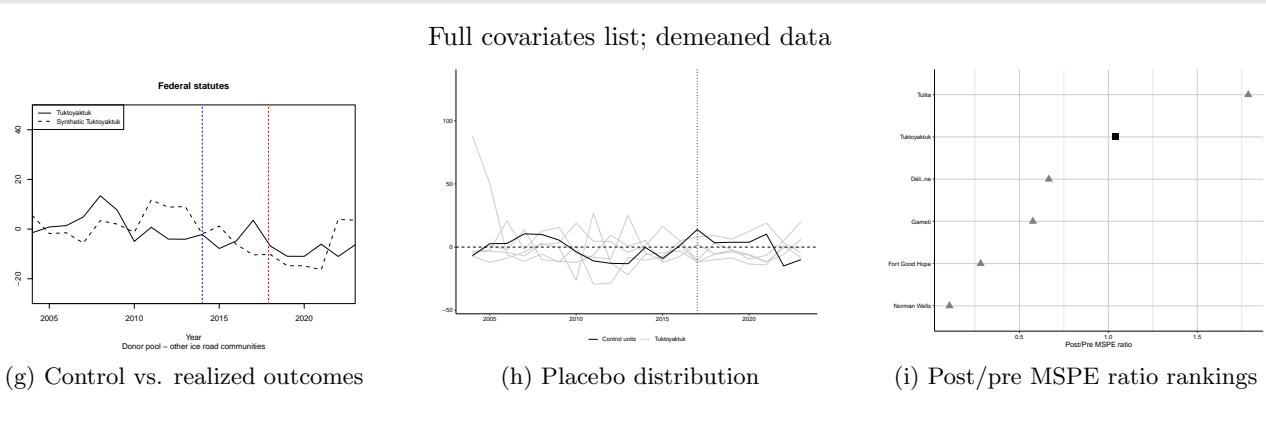
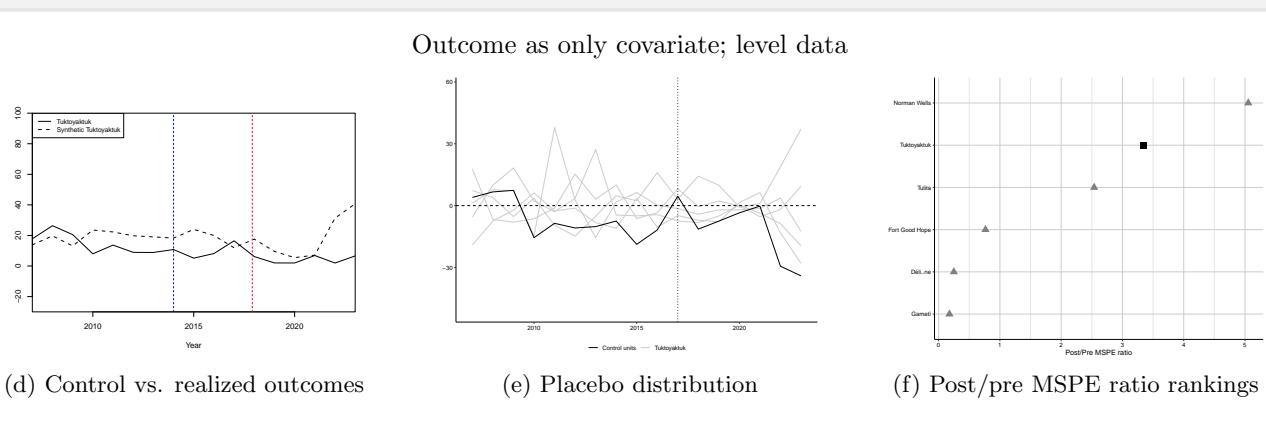
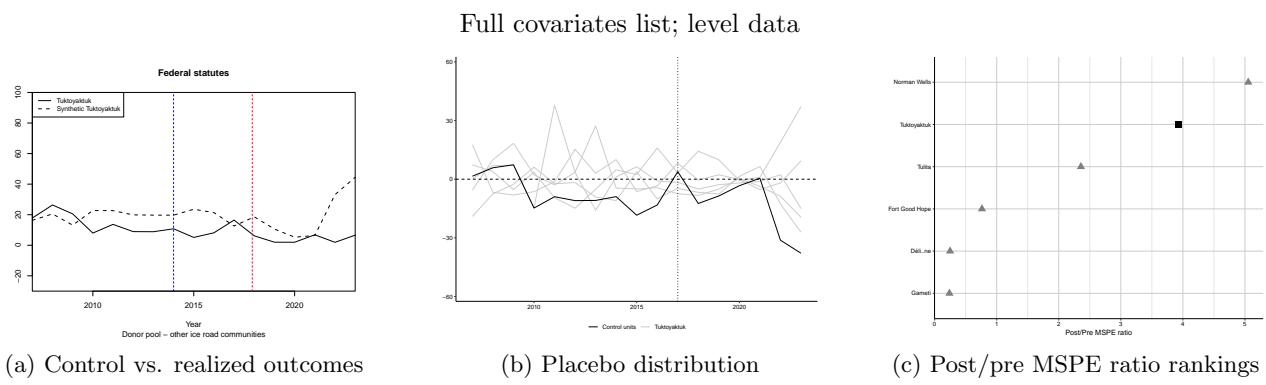
Figure 49: Other federal statutes crime synthetic control results for Tuktoyaktuk

2017 treatment; Other NWT communities as donor pool



NOTES: Crime rates are police reported incidents per 1000 population. The synthetic control vs. realized outcomes graph shows a blue dotted line at 2014, the year construction started and a red line in November 2017, when the road opened. The control pool includes every community in the Northwest Territories that has a consistent population above 100 people during the study period.

Figure 50: Other federal statutes crime results results for Tuktoyaktuk
2017 treatment; Mackenzie valley ice road communities as donor pool



NOTES: Crime rates are police reported incidents per 1000 population. The synthetic control vs. realized outcomes graph shows a blue dotted line at 2014, the year construction started and a red line in November 2017, when the road opened. The control pool includes communities on the proposed Mackenzie valley highway that currently only have seasonal ice road overland access.

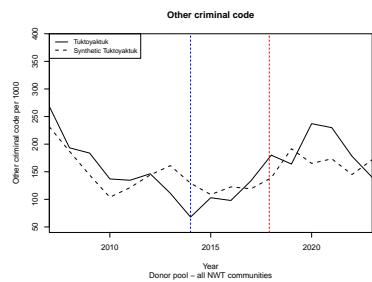
Other criminal code violations

Figure 51: Other criminal code violations results for Tuktoyaktuk

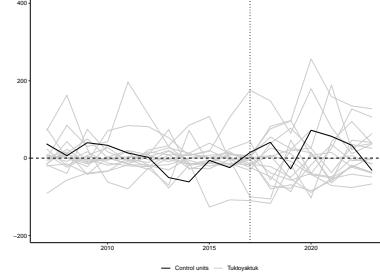
PREFERRED SPECIFICATION

2017 treatment; Other NWT communities as donor pool

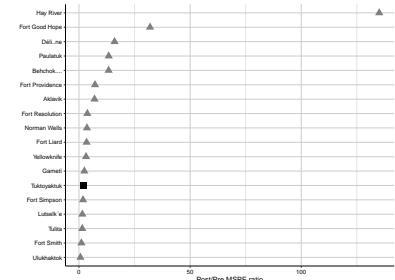
Full covariates list; level data



(a) Control vs. realized outcomes



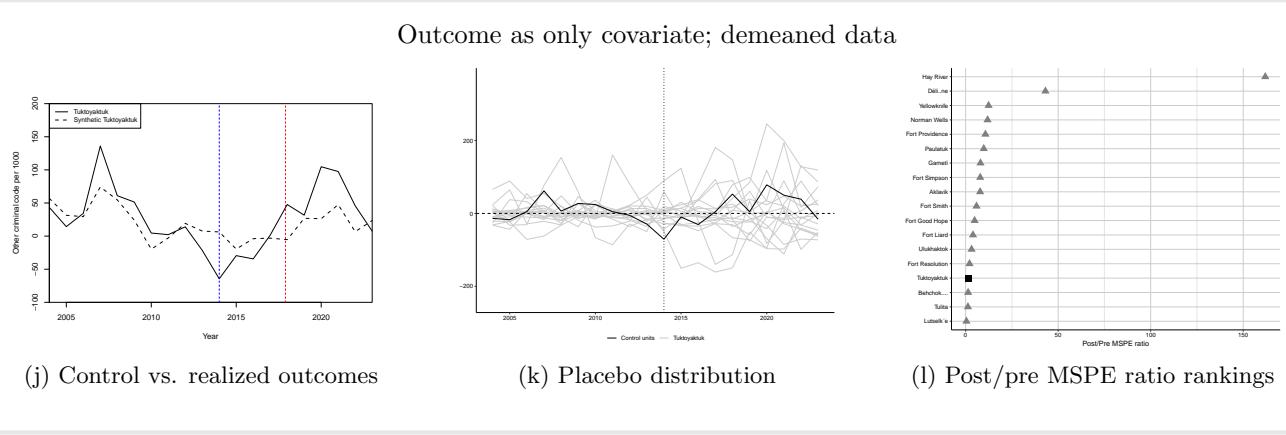
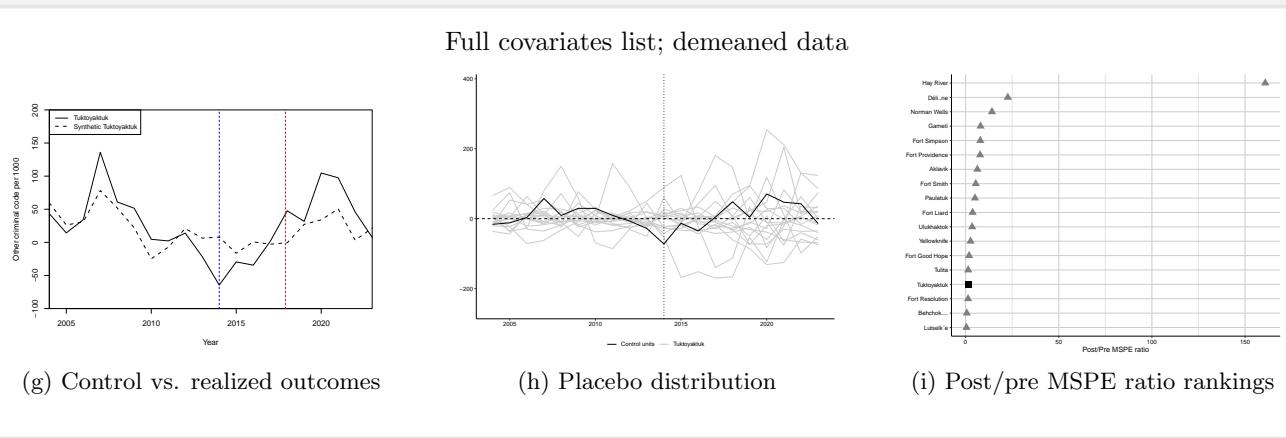
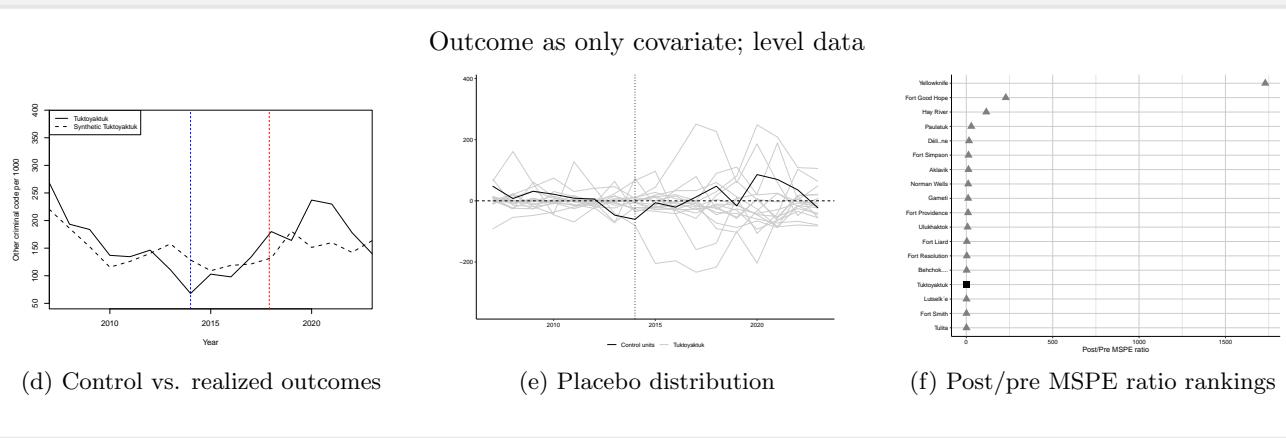
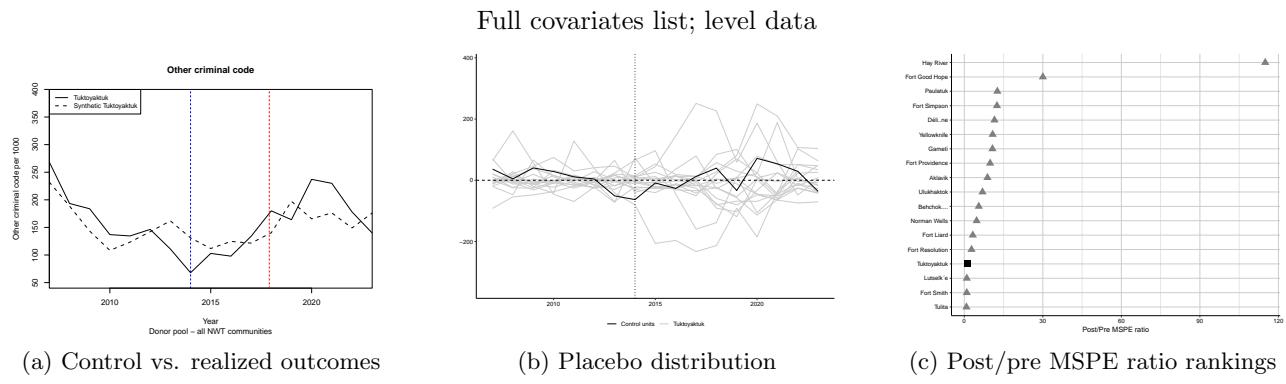
(b) Placebo distribution



(c) Post/pre MSPE ratio rankings

Figure 52: Other criminal code violations crime results for Tuktoyaktuk

2014 treatment; Other NWT communities as donor pool

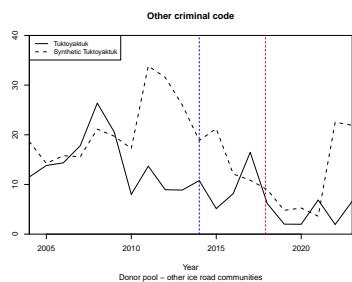


NOTES: Crime rates are police reported incidents per 1000 population. The synthetic control vs. realized outcomes graph shows a blue dotted line at 2014, the year construction started and a red line in November 2017, when the road opened. The control pool includes every community in the Northwest Territories that has a consistent population above 100 people during the study period.

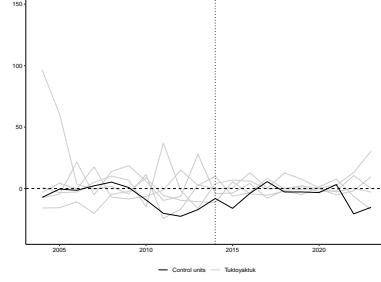
Figure 53: Other criminal code violations results results for Tuktoyaktuk

2014 treatment; Mackenzie valley ice road communities as donor pool

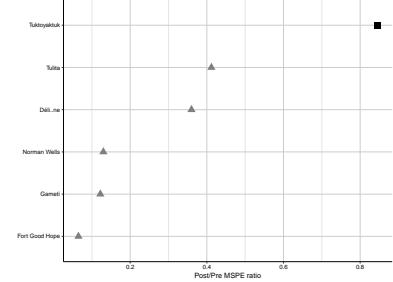
Full covariates list; level data



(a) Control vs. realized outcomes

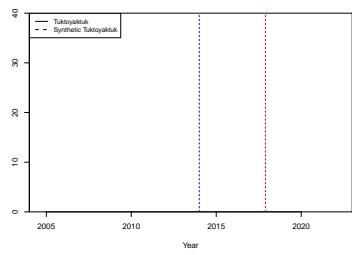


(b) Placebo distribution

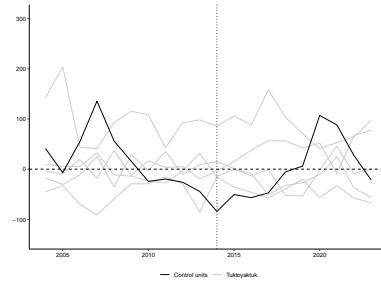


(c) Post/pre MSPE ratio rankings

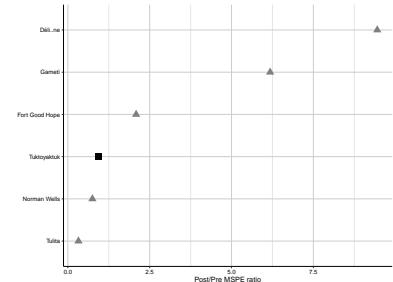
Outcome as only covariate; level data



(d) Control vs. realized outcomes

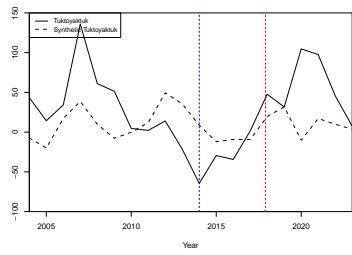


(e) Placebo distribution

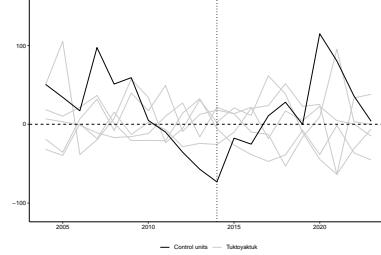


(f) Post/pre MSPE ratio rankings

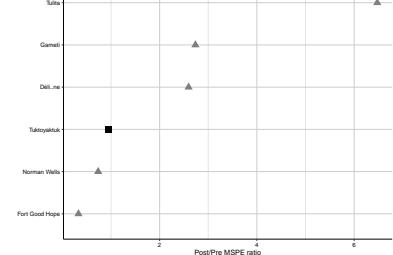
Full covariates list; demeaned data



(g) Control vs. realized outcomes

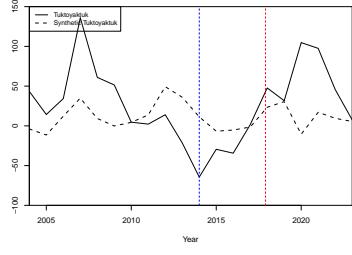


(h) Placebo distribution

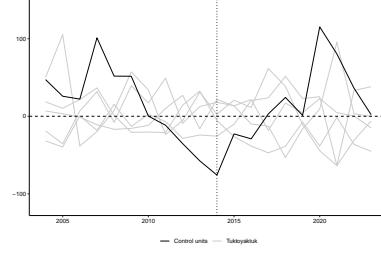


(i) Post/pre MSPE ratio rankings

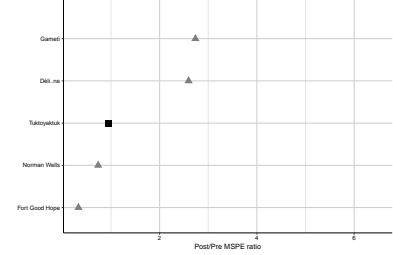
Outcome as only covariate; demeaned data



(j) Control vs. realized outcomes



(k) Placebo distribution

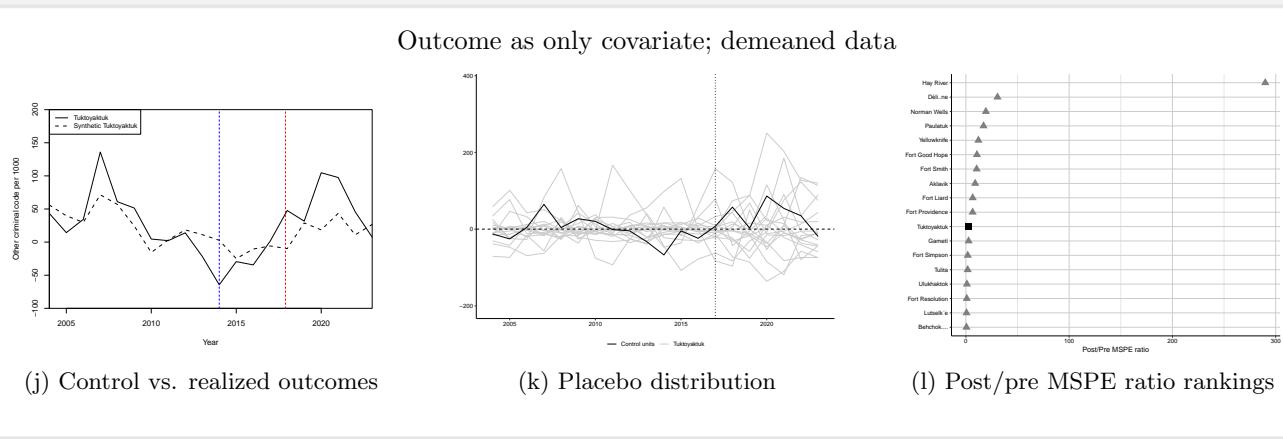
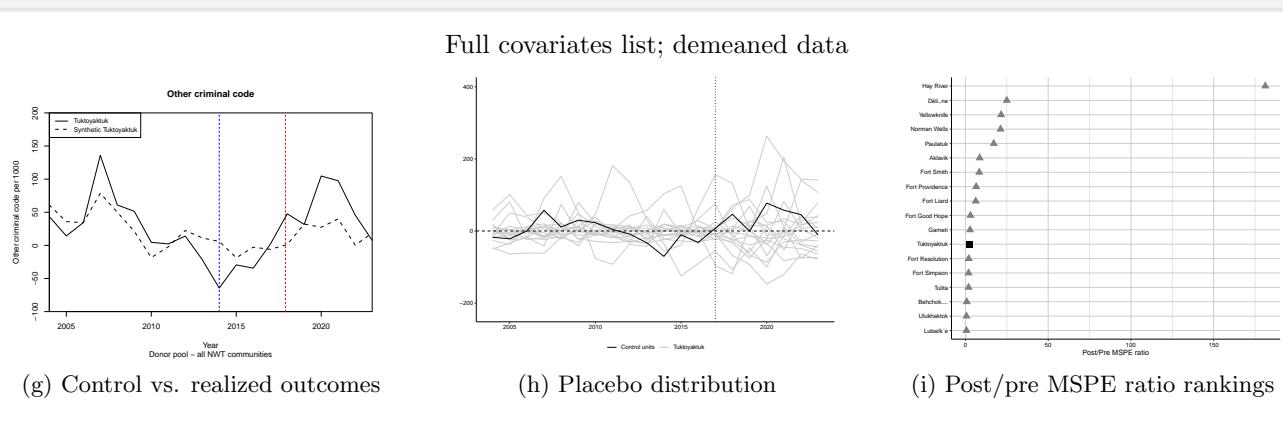
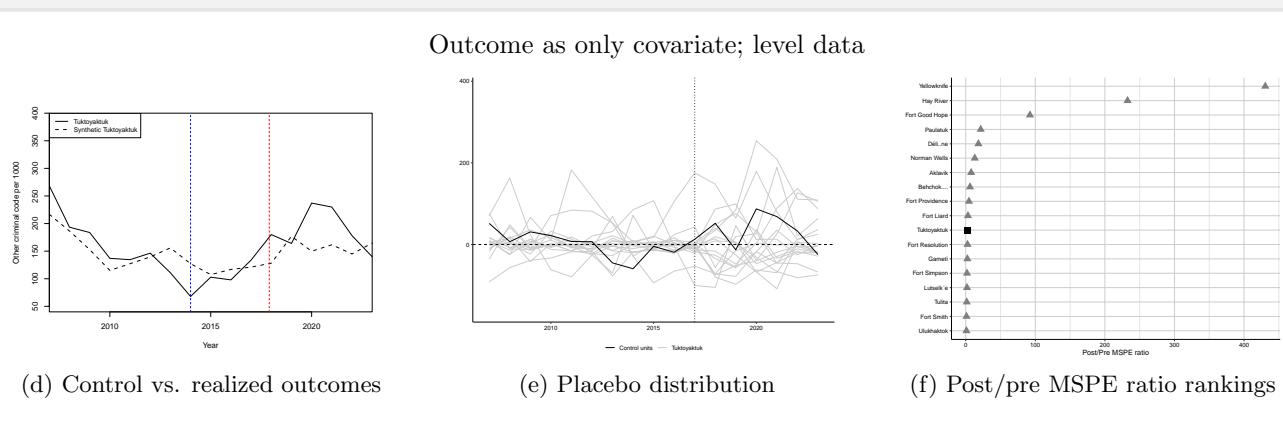
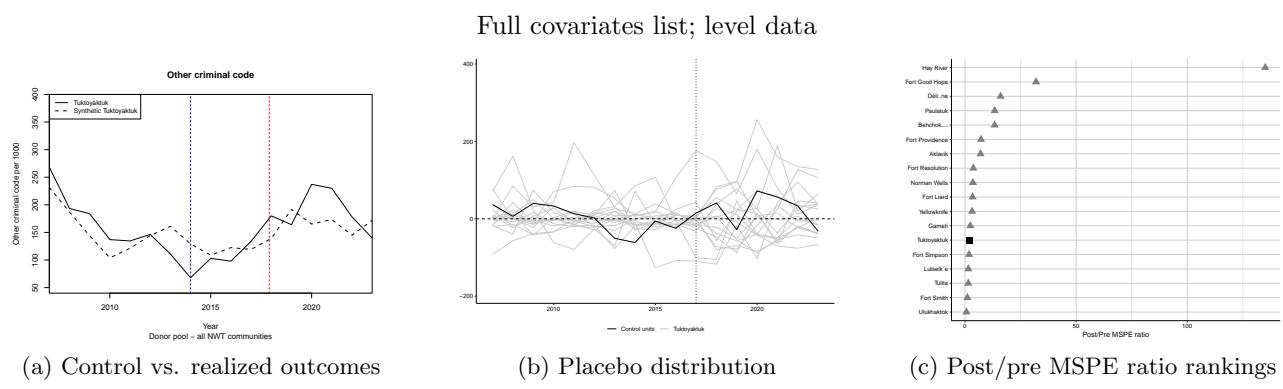


(l) Post/pre MSPE ratio rankings

NOTES: Crime rates are police reported incidents per 1000 population. The synthetic control vs. realized outcomes graph shows a blue dotted line at 2014, the year construction started and a red line in November 2017, when the road opened. The control pool includes communities on the proposed Mackenzie valley highway that currently only have seasonal ice road overland access.

Figure 54: Other criminal code violations synthetic control results for Tuktoyaktuk

2017 treatment; Other NWT communities as donor pool

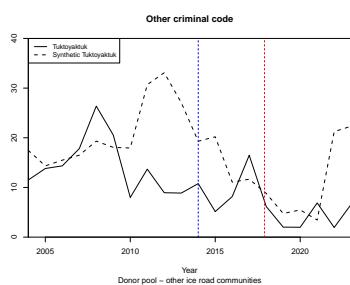


NOTES: Crime rates are police reported incidents per 1000 population. The synthetic control vs. realized outcomes graph shows a blue dotted line at 2014, the year construction started and a red line in November 2017, when the road opened. The control pool includes every community in the Northwest Territories that has a consistent population above 100 people during the study period.

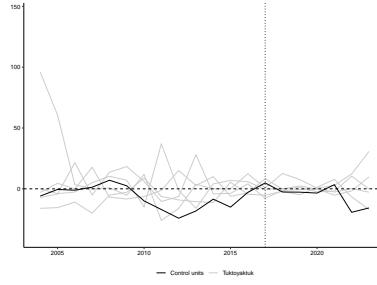
Figure 55: Other criminal code violations results results for Tuktoyaktuk

2017 treatment; Mackenzie valley ice road communities as donor pool

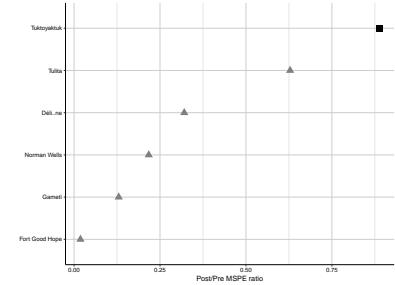
Full covariates list; level data



(a) Control vs. realized outcomes

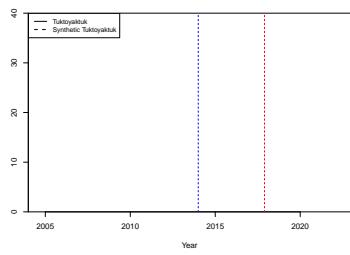


(b) Placebo distribution

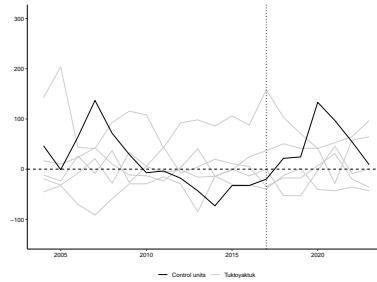


(c) Post/pre MSPE ratio rankings

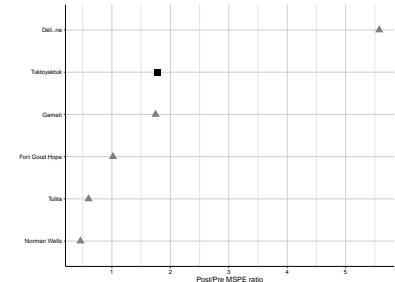
Outcome as only covariate; level data



(d) Control vs. realized outcomes

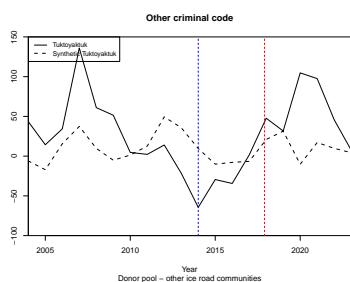


(e) Placebo distribution

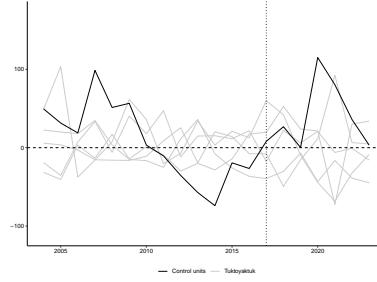


(f) Post/pre MSPE ratio rankings

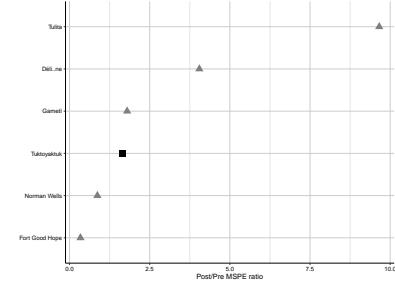
Full covariates list; demeaned data



(g) Control vs. realized outcomes

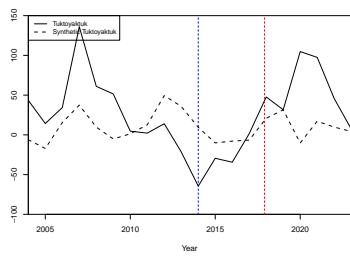


(h) Placebo distribution

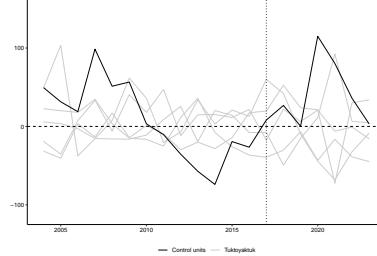


(i) Post/pre MSPE ratio rankings

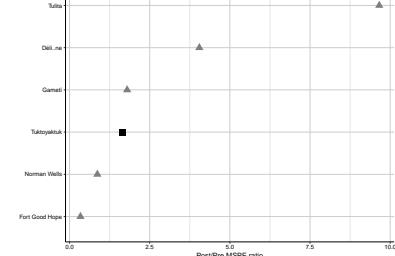
Outcome as only covariate; demeaned data



(j) Control vs. realized outcomes



(k) Placebo distribution



(l) Post/pre MSPE ratio rankings

NOTES: Crime rates are police reported incidents per 1000 population. The synthetic control vs. realized outcomes graph shows a blue dotted line at 2014, the year construction started and a red line in November 2017, when the road opened. The control pool includes communities on the proposed Mackenzie valley highway that currently only have seasonal ice road overland access.