MODEL-BASED ESTIMATES AND PROJECTIONS OF FAMILY PLANNING INDICATORS 2017

REGIONS

The dataset contains a systematic and comprehensive set of annual, model-based estimates and projections for a collection of family planning indicators, including contraceptive prevalence, the unmet need for family planning and the demand for family planning satisfied by use of contraception (any method or modern methods alone). All results pertain to married or in-union women and cover the period from 1970 to 2030. Estimates based on medians, as well as 80 per cent uncertainty intervals (represented by lines) and 95 per cent uncertainty intervals (represented by shaded areas), are provided for the world, for regions and for development groups. The results are based on data available as of March 2017.

A Bayesian hierarchical model combined with country-specific time trends was used to generate the estimates, projections and uncertainty assessments. The model accounts for differences by data source in the characteristics of the sample population and in the contraceptive methods included in survey-based estimates of prevalence. Details of the methodology are described in:

Alkema L., V. Kantorova, C. Menozzi and A. Biddlecom (2013). National, regional and global rates and trends in contraceptive prevalence and unmet need for family planning between 1990 and 2015: a systematic and comprehensive analysis. *The Lancet*. Vol. 381, Issue 9878, pp. 1642– 1652.

Starting in 2017, the estimates and projections include adjusted median values based on posterior distributions of the indicators derived using the Bayesian hierarchical model. Details on the rationale and methods of adjustment are given below and in the metadata for Sustainable Development Goals indicator 3.7.1, available at: https://unstats.un.org/sdgs/metadata/.

The model-based estimates and projections were derived from survey-based estimates by country, as compiled in:
United Nations, Department of Economic and Social Affairs, Population Division (2017). *World Contraceptive Use 2017.* New York: United Nations.

Regional and global estimates are weighted averages of model-based country estimates, using the number of married or in-union women aged 15-49 for the reference year in each country, as reported in:

United Nations, Department of Economic and Social Affairs, Population Division (2016). *Estimates and Projections of the Number of Women Aged 15-49 Who Are Married or in a Union: 2016 Revision*. New York: United Nations.

Note: The designations employed and the material presented in this publication do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations concerning the legal status of any country, territory or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. The term “country” as used in this publication also refers, as appropriate, to territories or areas.

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Suggested citation: United Nations, Department of Economic and Social Affairs, Population Division (2017). *Model-based Estimates and Projections of Family Planning Indicators 2017.* New York: United Nations.

Rationale and specification of adjustments

Starting in 2017, the estimates and projections include adjusted median values derived from the posterior distributions of the Bayesian hierarchical model mentioned above. To perform the adjustments, the medians of the Bayesian posterior distributions for total contraceptive prevalence (*CPany*), for the ratio of modern contraceptive prevalence to total contraceptive prevalence (*CPmod* / *CPany*), and for the ratio of the unmet need for family planning to the proportion of non-users of contraception (*UnmetNeed* / (*1-CPany*)), were retained as estimated using the model. These values were used to compute adjusted median values for the other indicators, namely, modern contraceptive prevalence (*CPmod*), traditional contraceptive prevalence (*CPtrad*), the unmet need for family planning (*UnmetNeed*), total demand for family planning (*TotalDemand*), and the ratio of modern contraceptive prevalence to total demand for family planning (*DemandSatbyMod*). The last of these measures (*DemandSatbyMod*) serves as SDG indicator 3.7.1.

The mathematical operations performed to obtain the adjusted indicators were as follows:

$$\mathrm{CPmod}^{*} = \mathrm{CPany} \times \left(\frac{\mathrm{CPmod}}{\mathrm{CPany}}\right)$$

$$\mathrm{UnmetNeed}^{*} = (1 - \mathrm{CPany}) \times \left(\frac{\mathrm{UnmetNeed}}{1 - \mathrm{CPany}}\right)$$

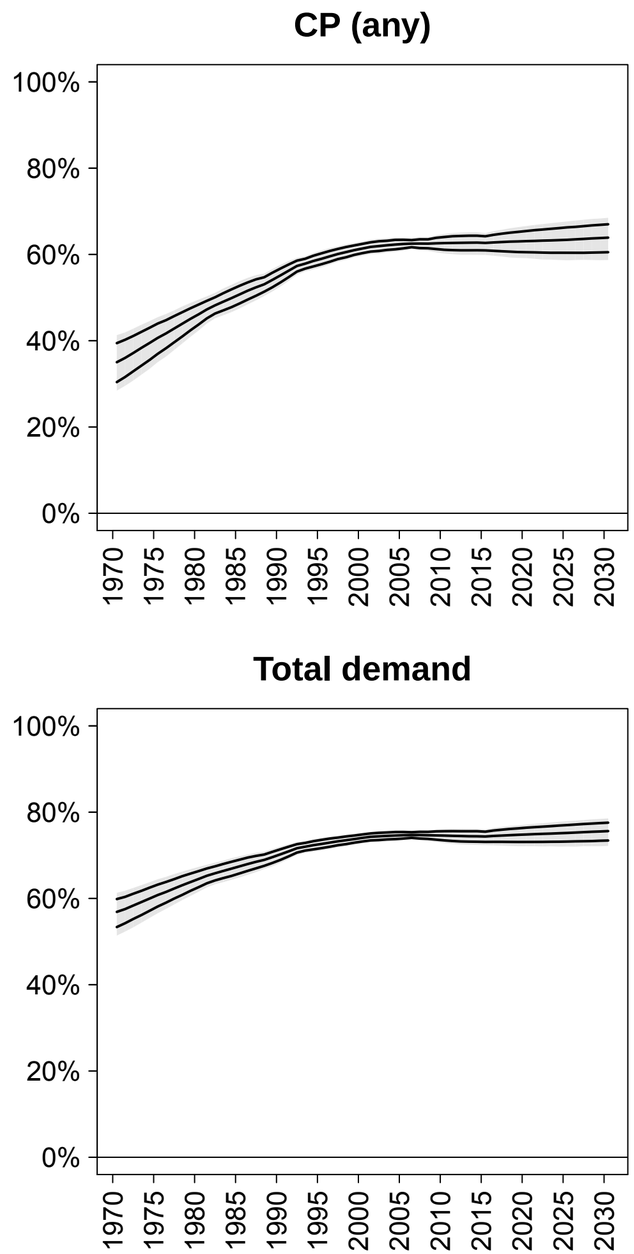
$$\mathrm{TotalDemand}^{*} = \mathrm{CPany} + \mathrm{UnmetNeed}^{*}$$

$$\mathrm{DemandSatbyMod}^{*} = \left(\frac{\mathrm{CPmod}^{*}}{\mathrm{TotalDemand}^{*}}\right)$$

where the notation x* signifies the adjusted value of variable x. These adjustments ensure that the reported values conform to the identities required by their definitions, namely: *CPmod* + *CPtrad* = *CPany*; *CPany* + *UnmetNeed* = *TotalDemand*; and *DemandSatbyMod* = *CPmod* / *TotalDemand*.

The adjustments described here were used to derive adjusted median values only. A similar adjustment was not applied to other percentiles of the posterior distributions, and therefore the identities mentioned above do not hold, in general, for the endpoints of the uncertainty ranges.

World


CP (any)
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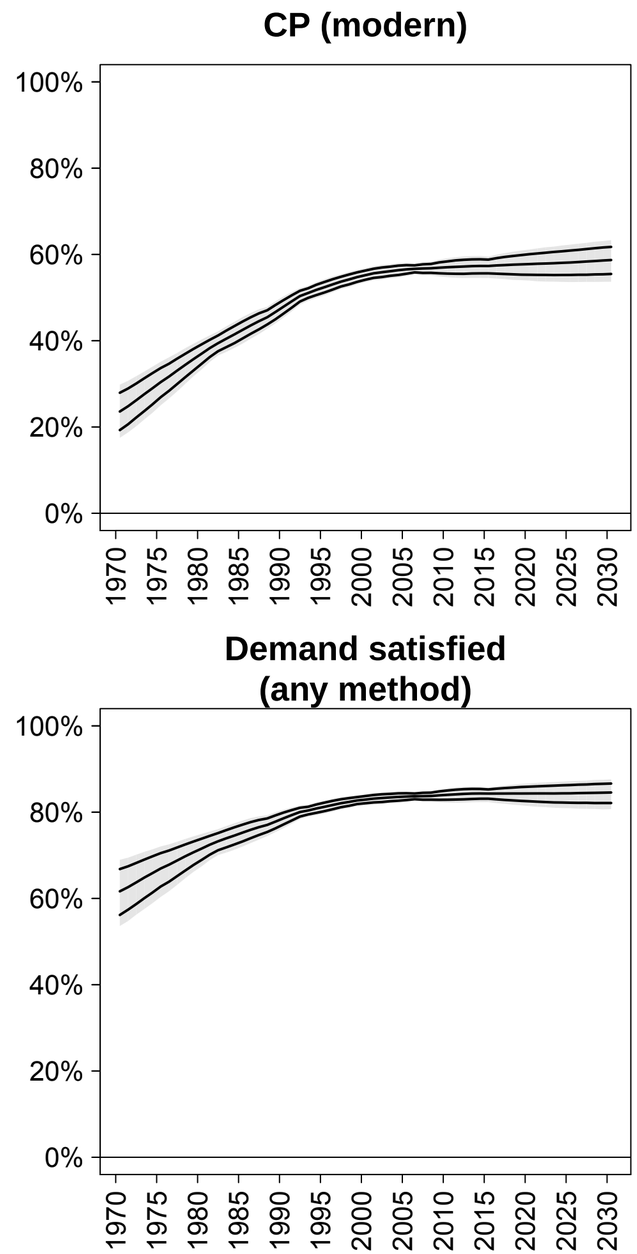
CP (modern)
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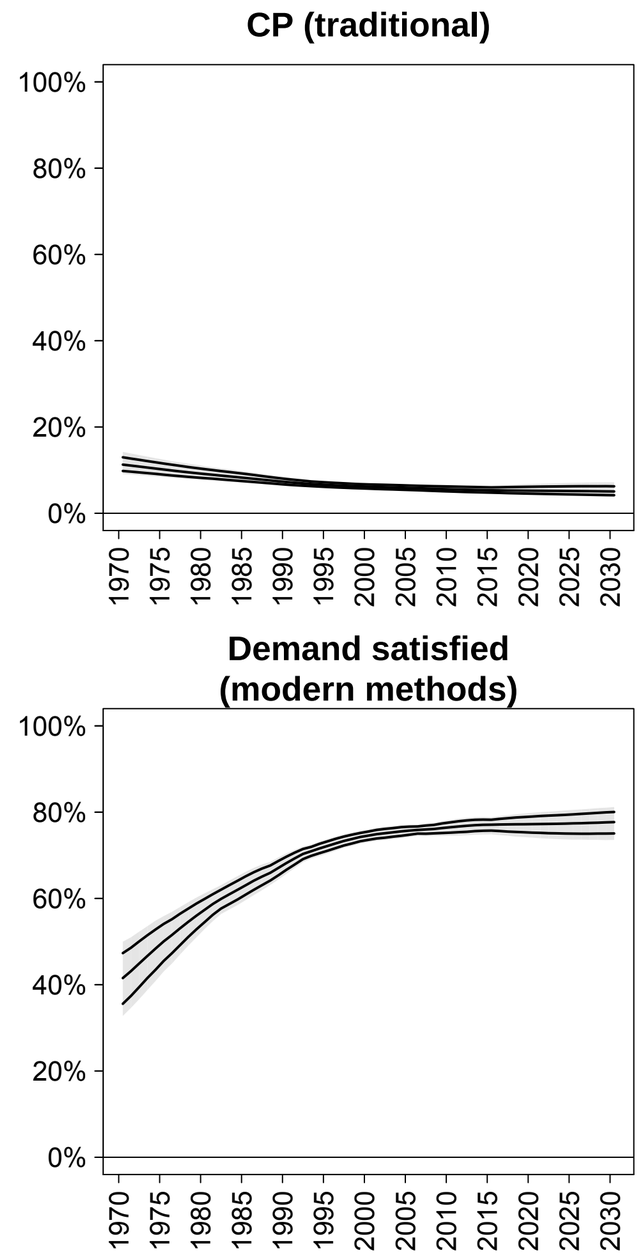
CP (traditional)
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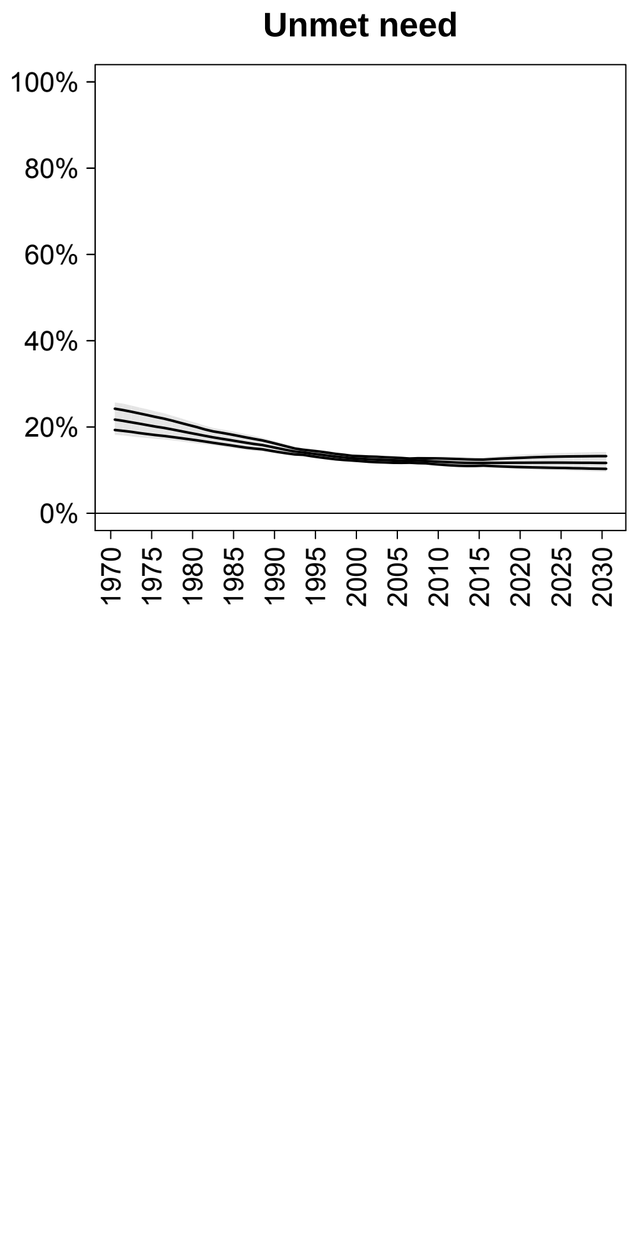
Unmet need
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Total demand
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Demand satisfied
(any method)
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80%
60%
40%
20%
0%
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Demand satisfied
(modern methods)
100%
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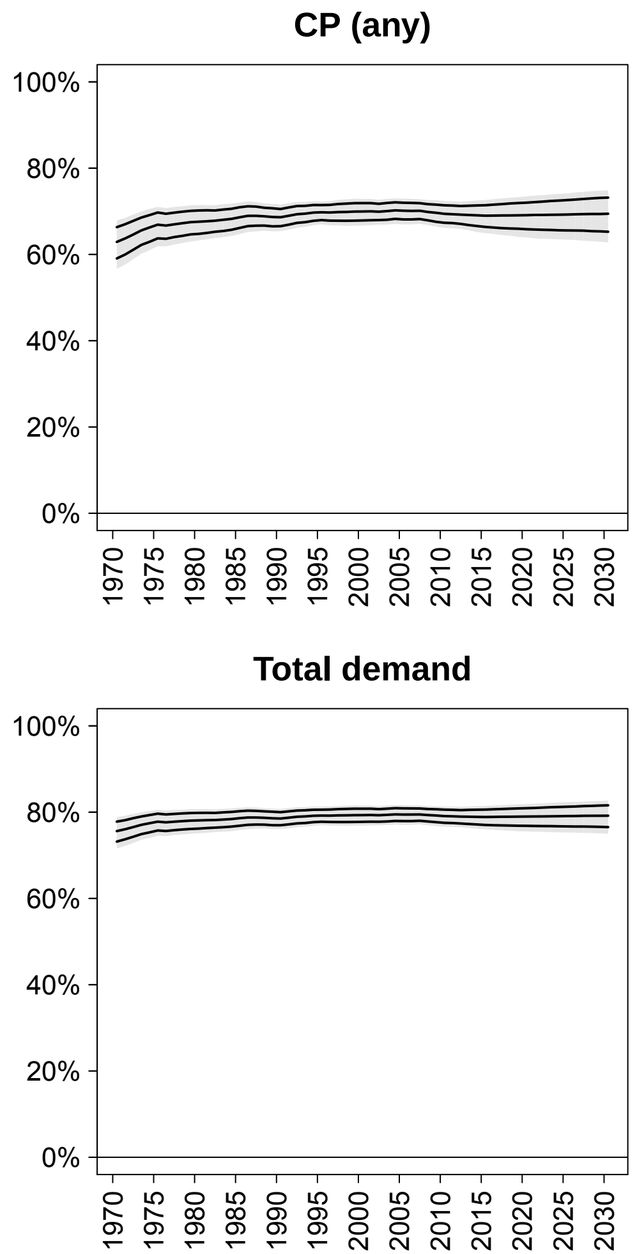
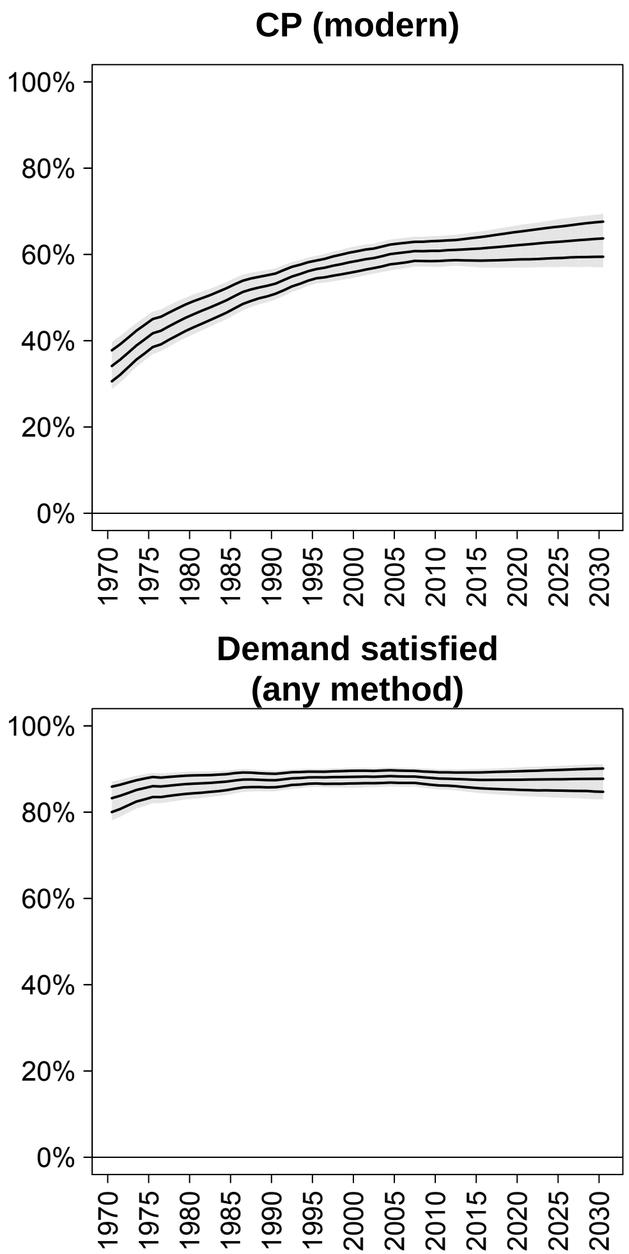
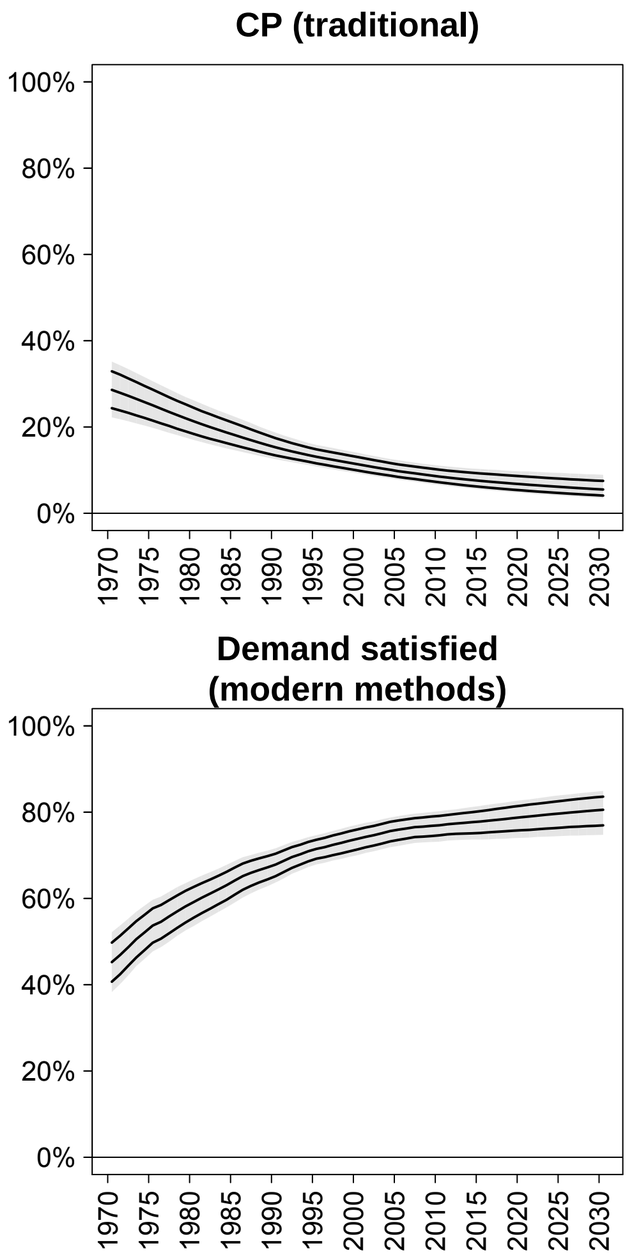
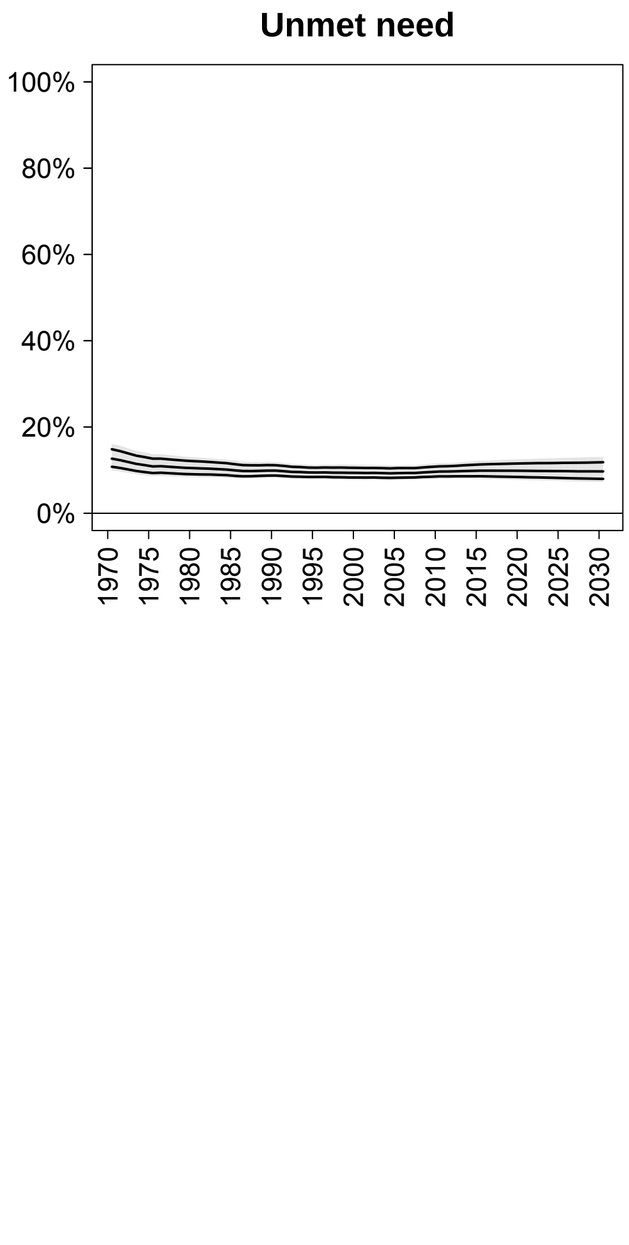
Developed regions



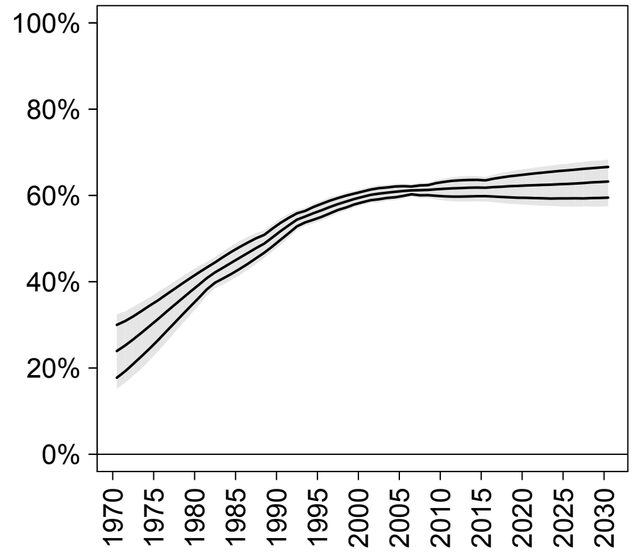




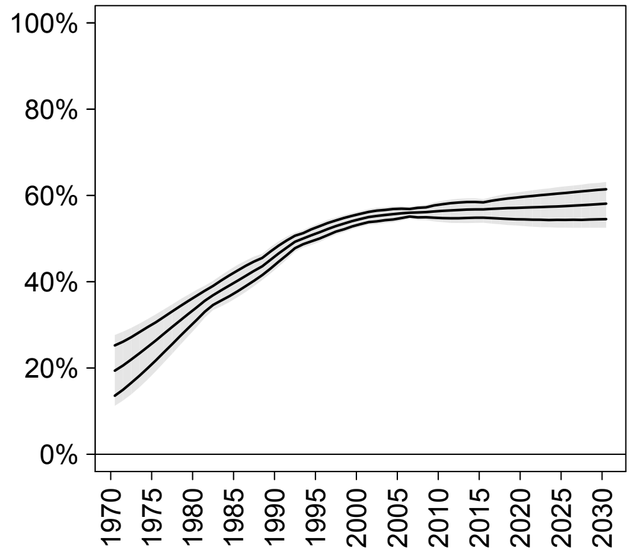


Developing regions

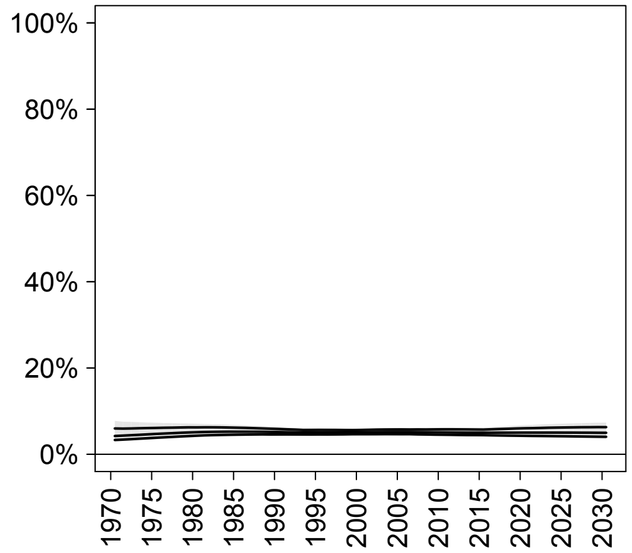
CP (any)



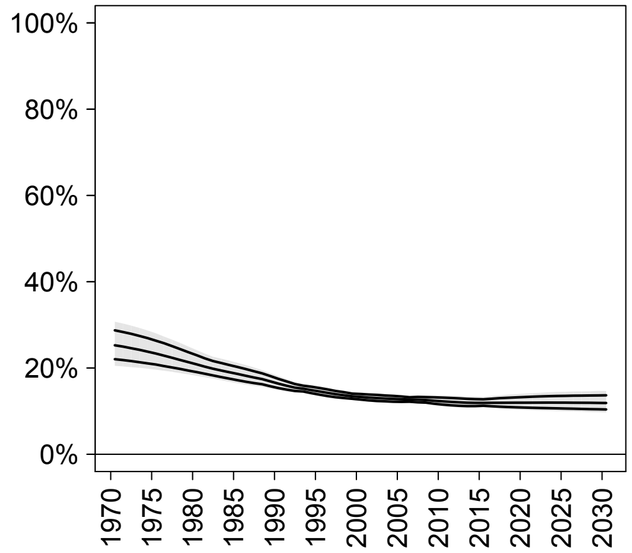
CP (modern)



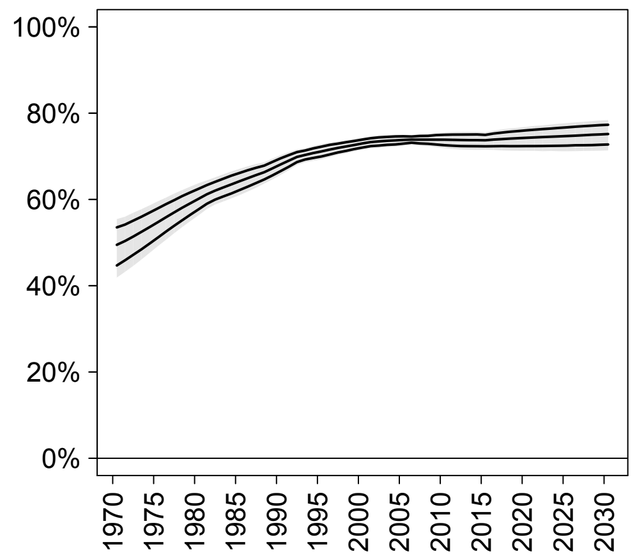
CP (traditional)



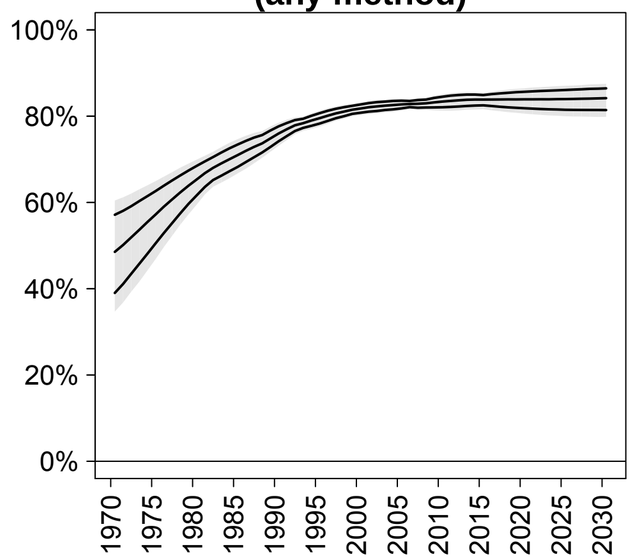
Unmet need



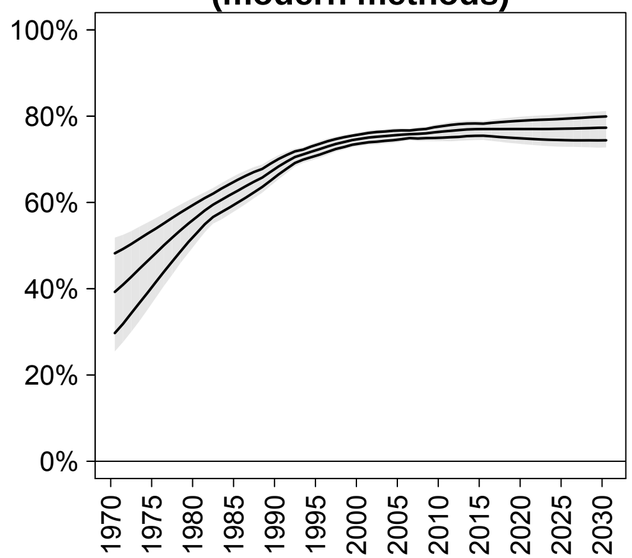
Total demand



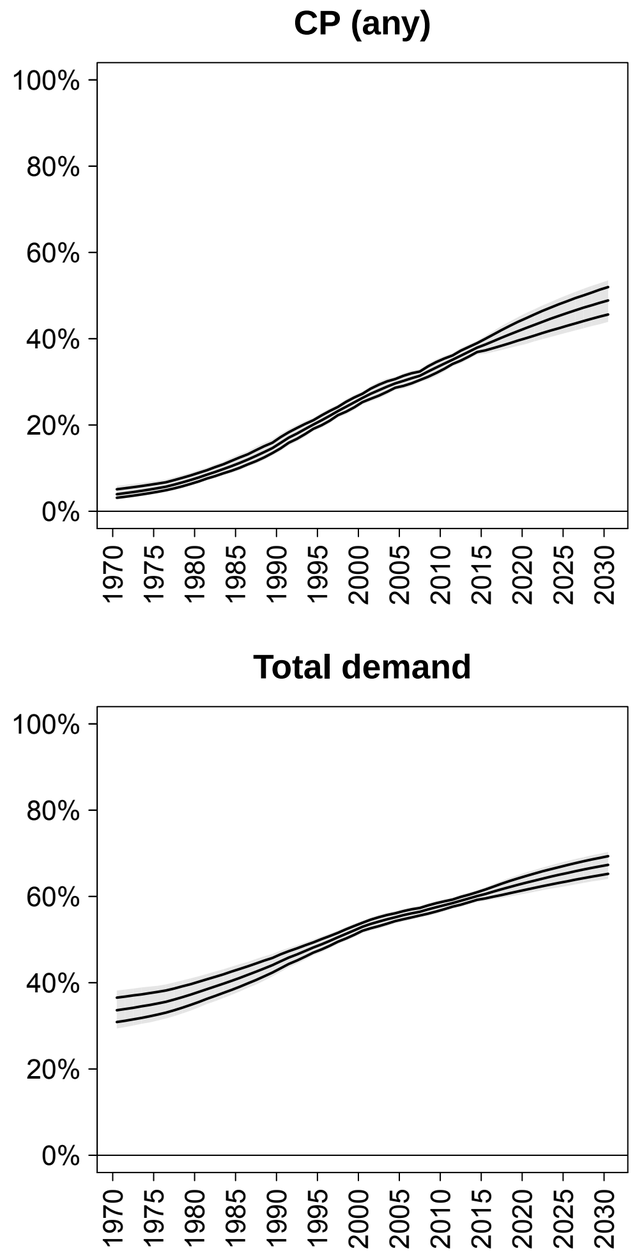
Demand satisfied (any method)

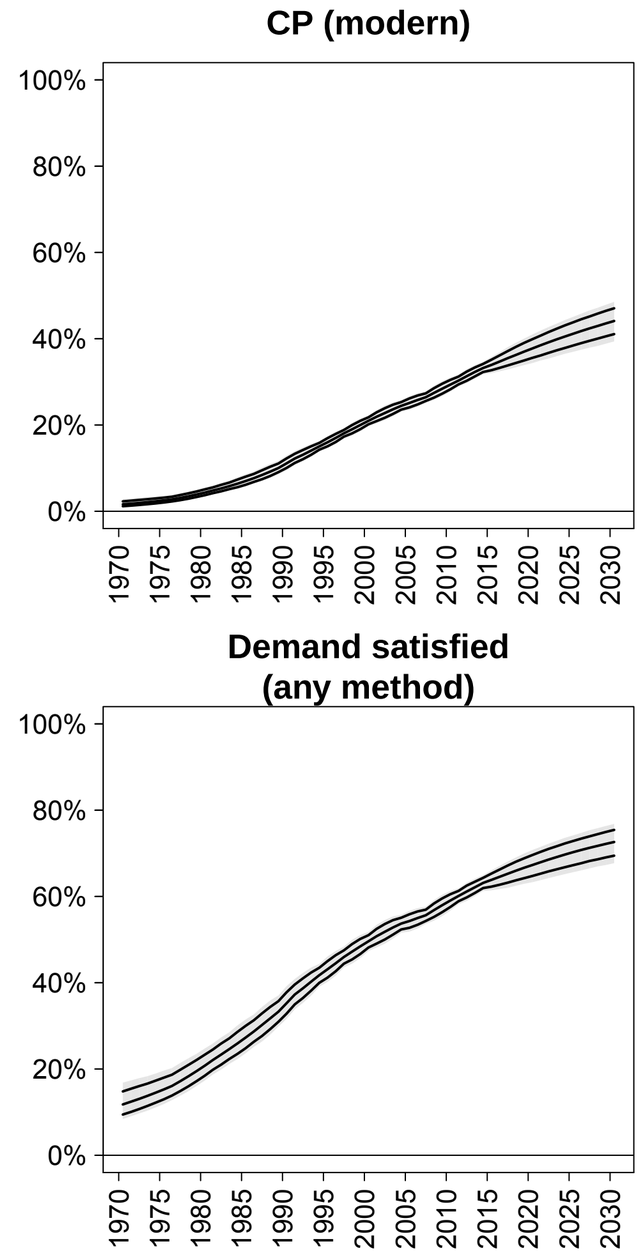


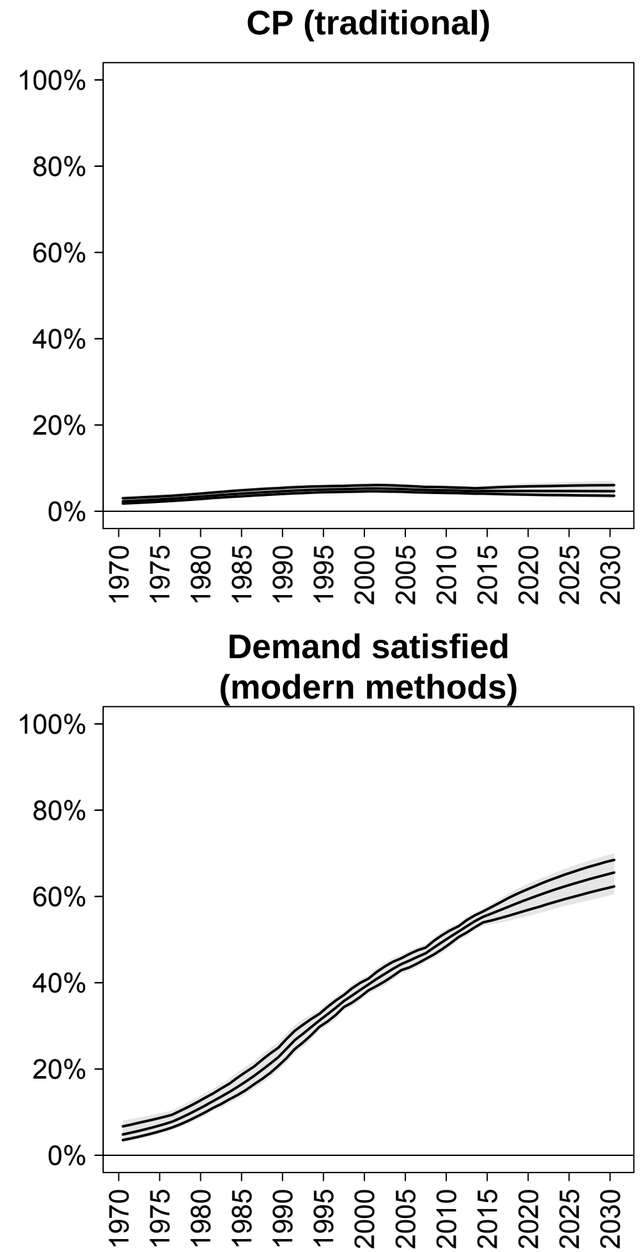
Demand satisfied (modern methods)

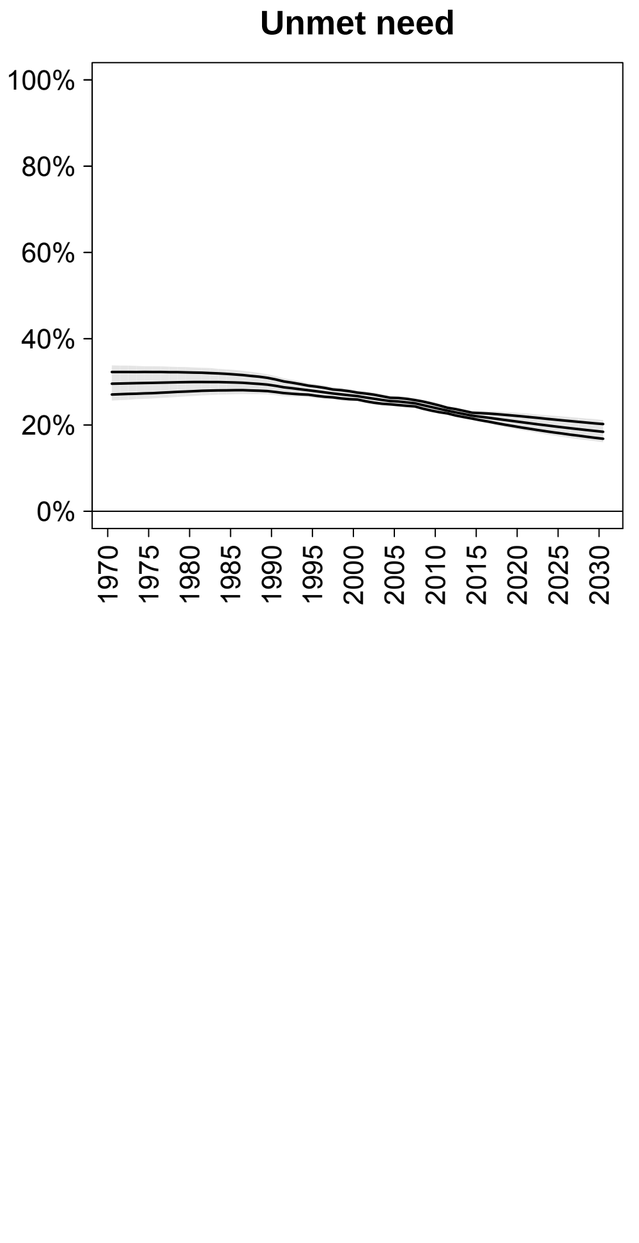


Least developed countries

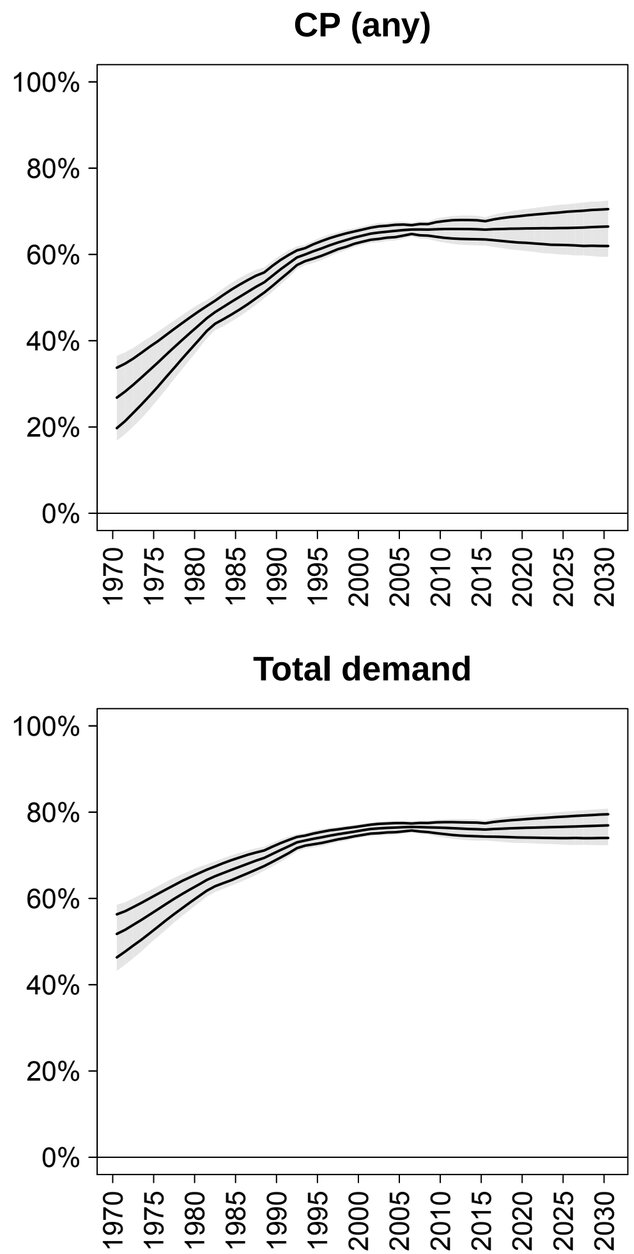


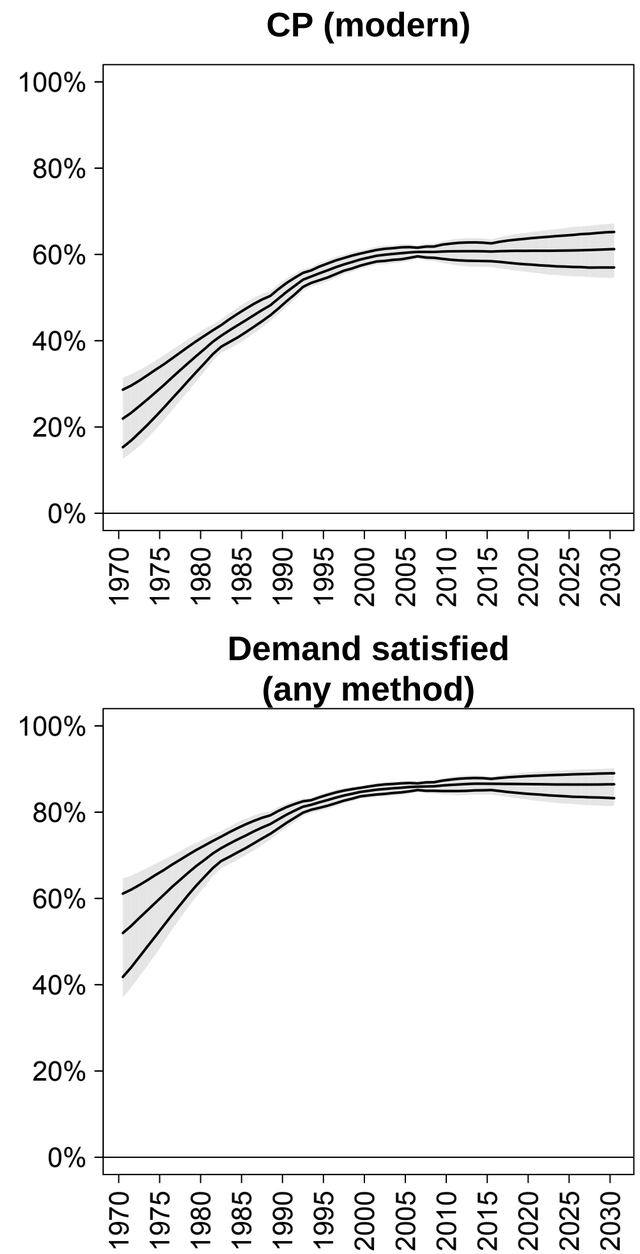


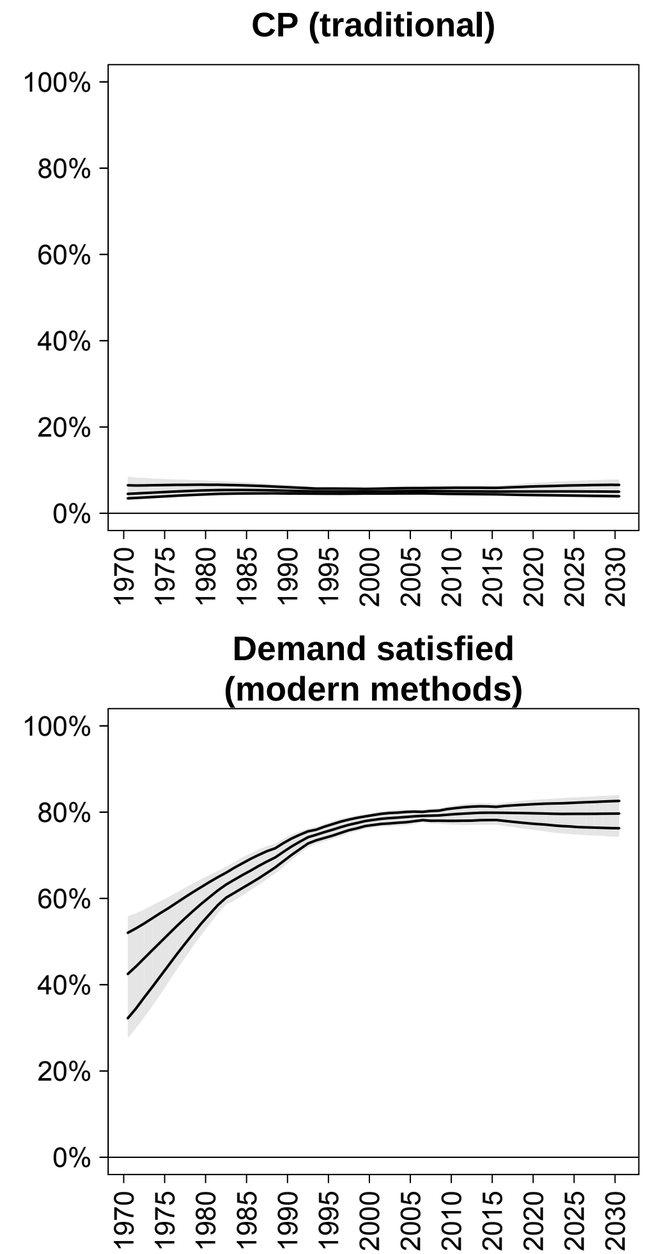


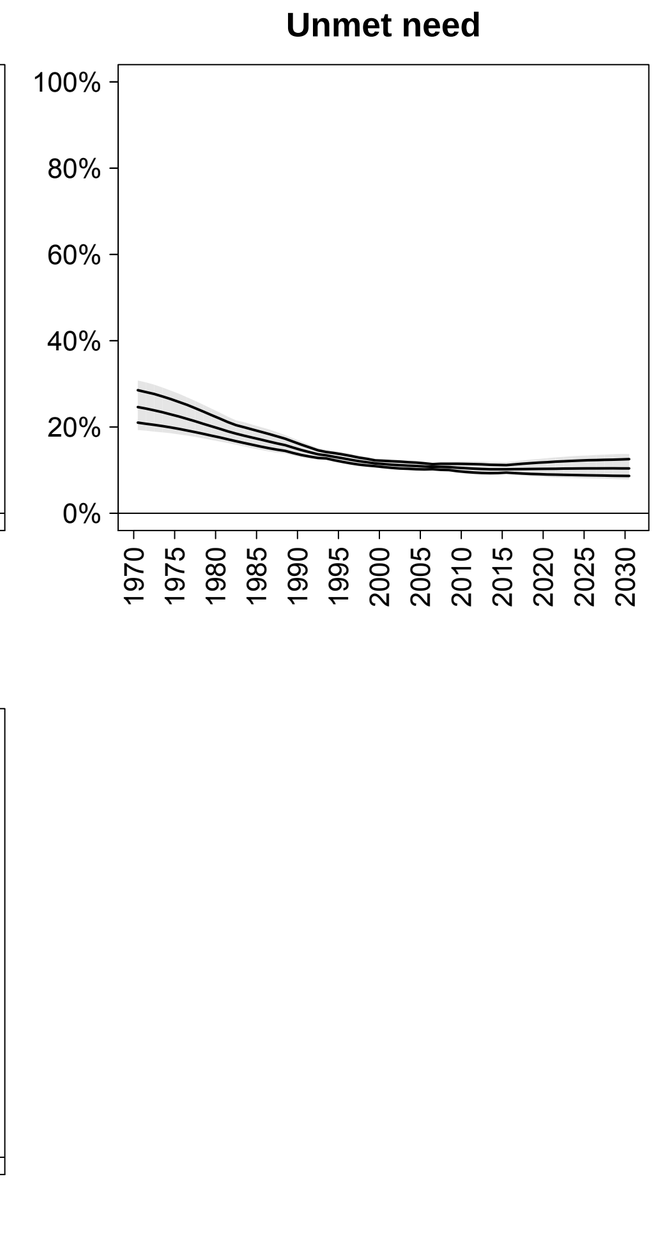


Other developing regions

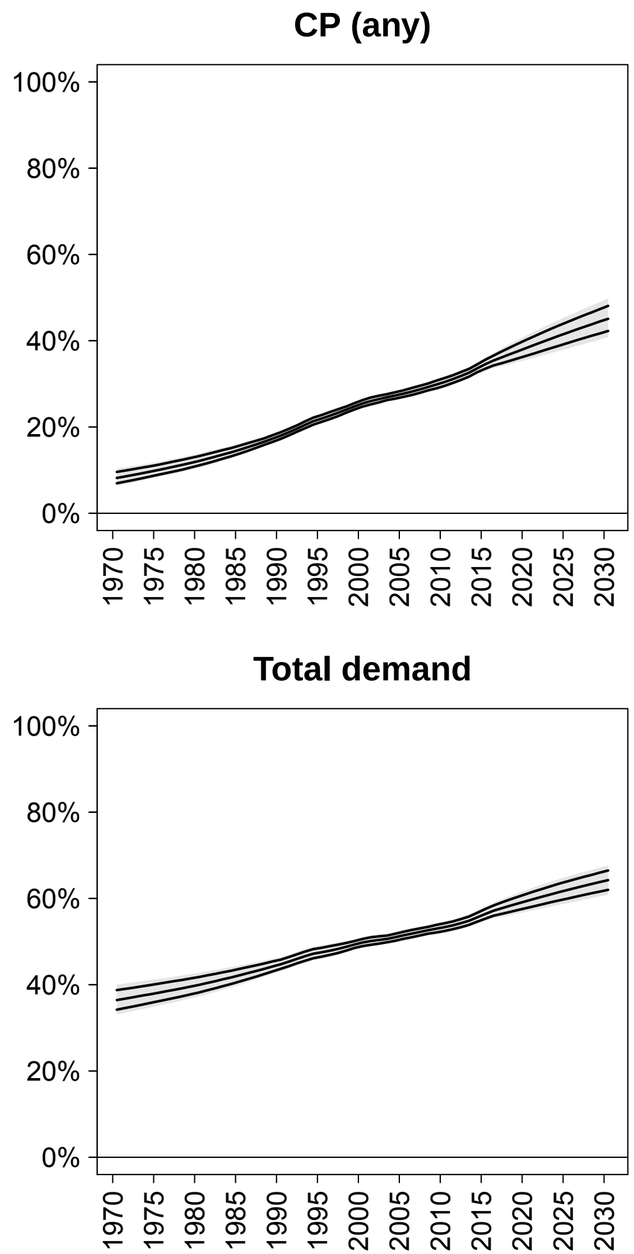








Africa


CP (any)
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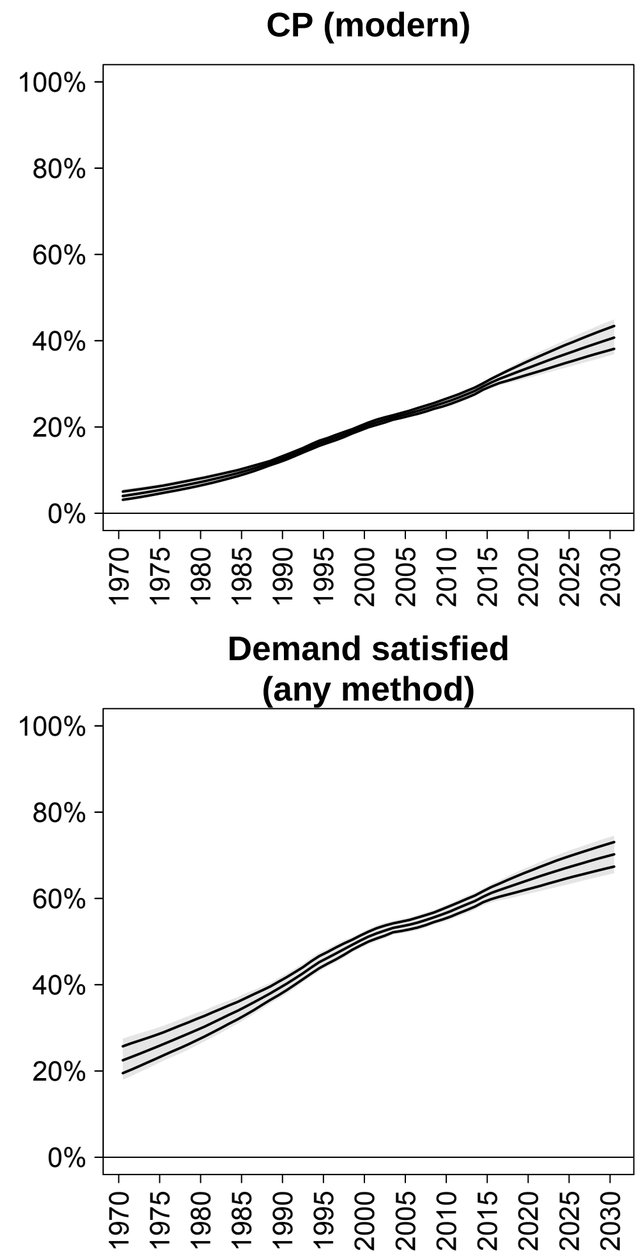
CP (modern)
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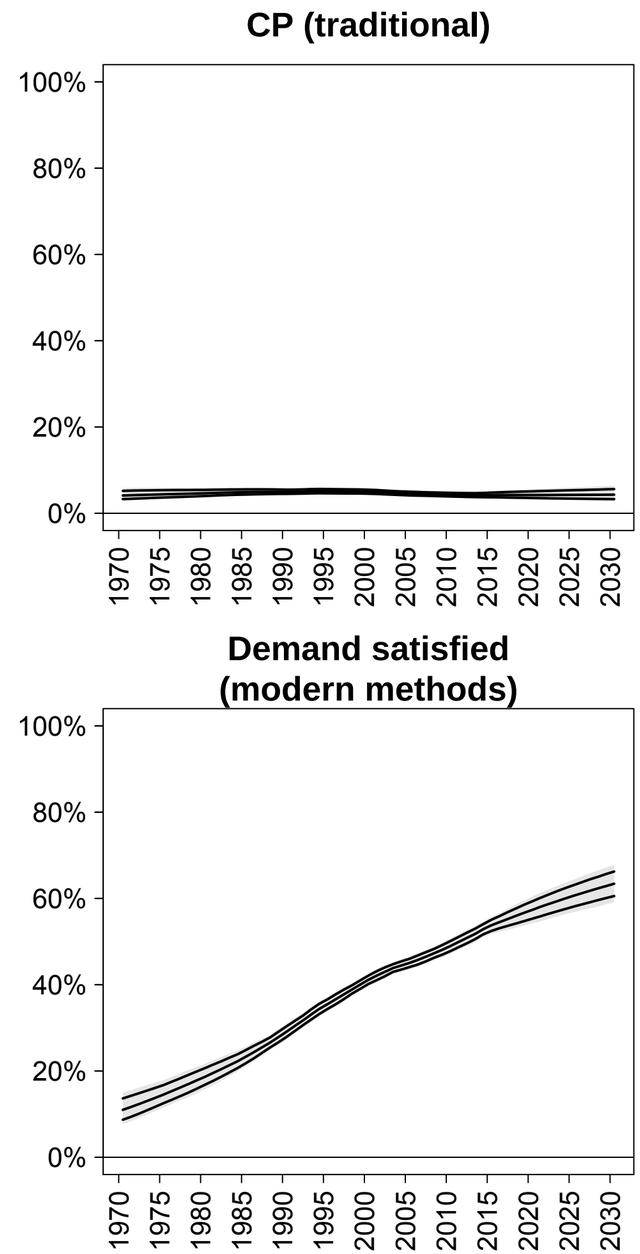
CP (traditional)
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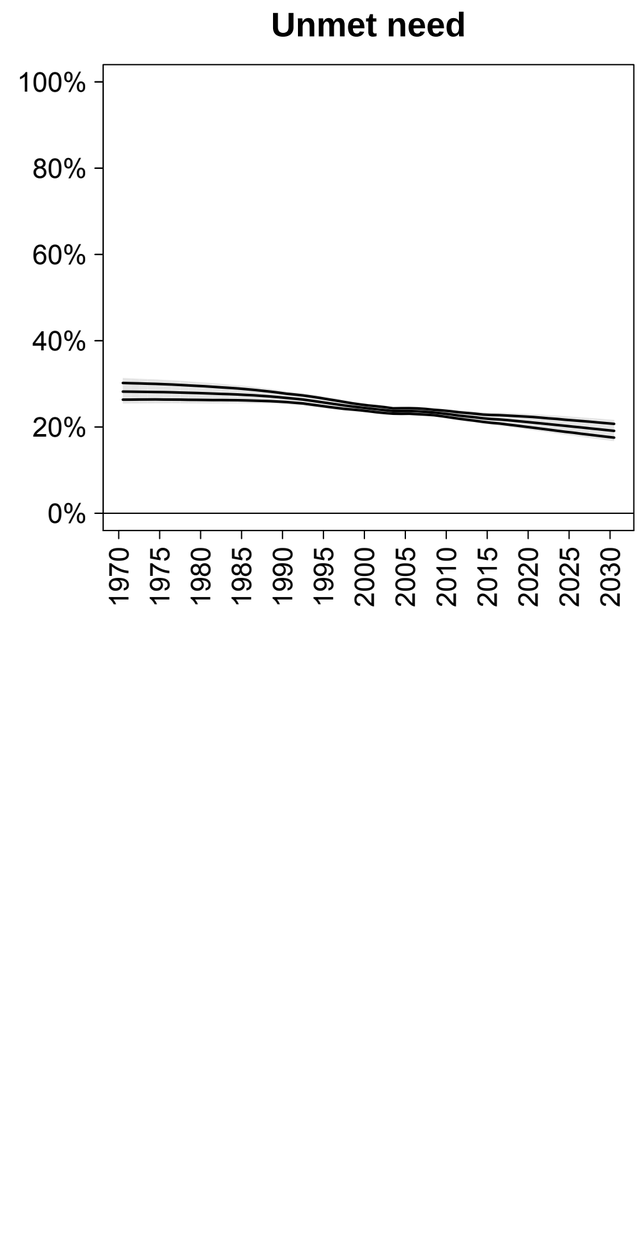
Unmet need
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Total demand
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Demand satisfied
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Demand satisfied
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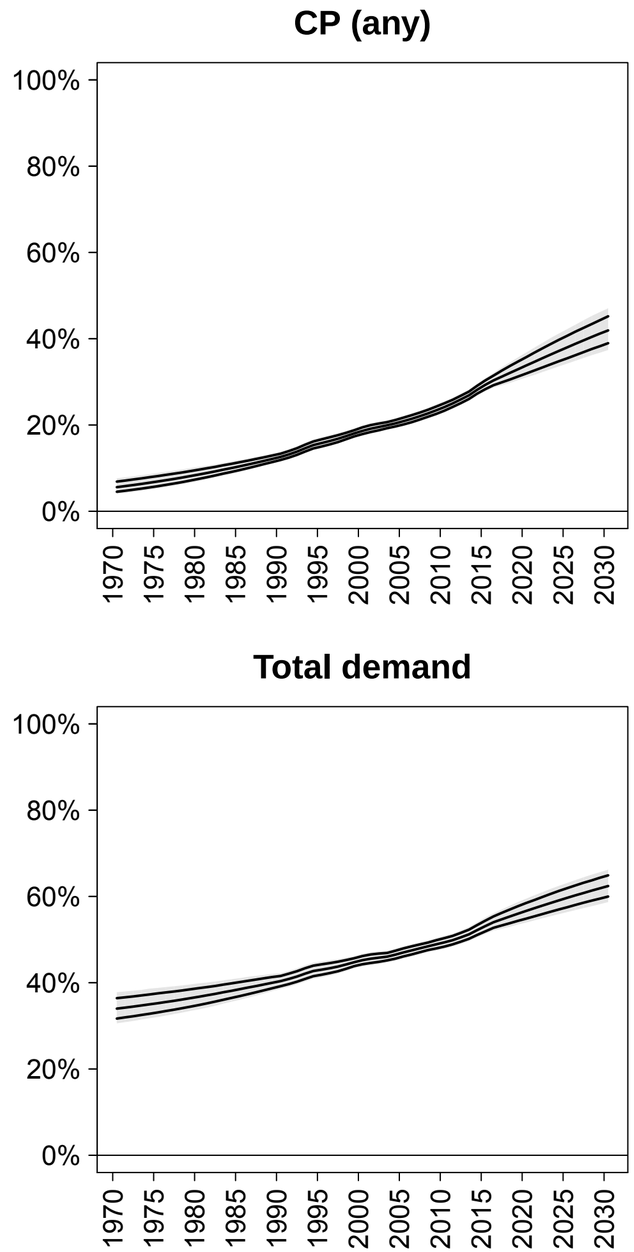
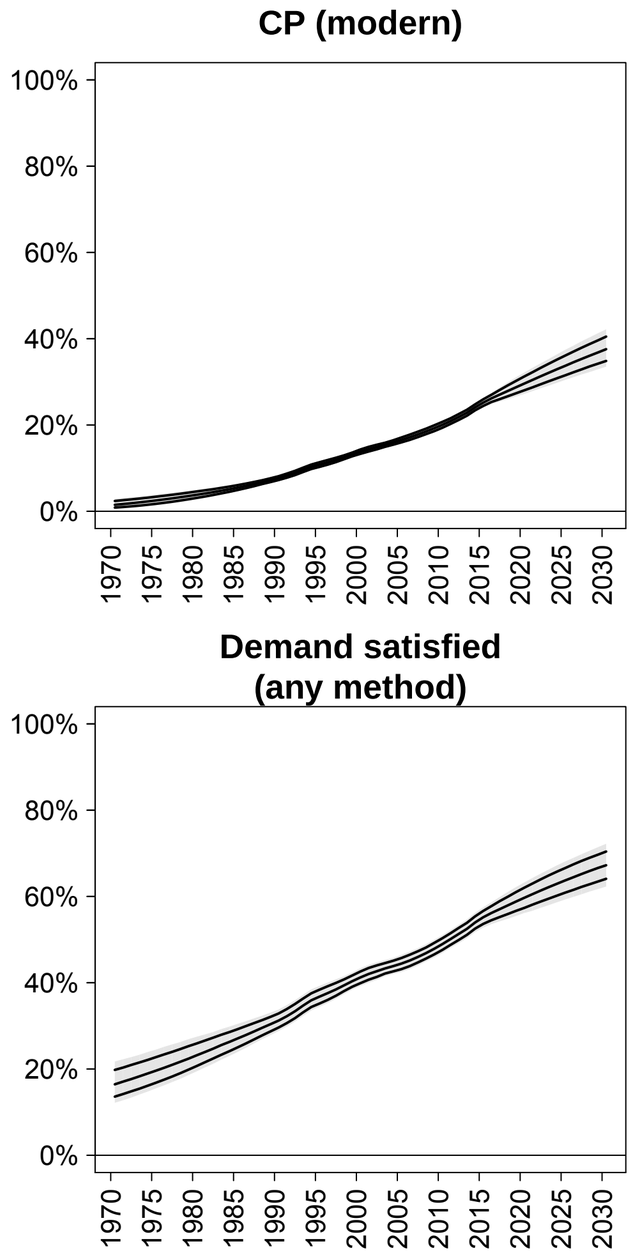
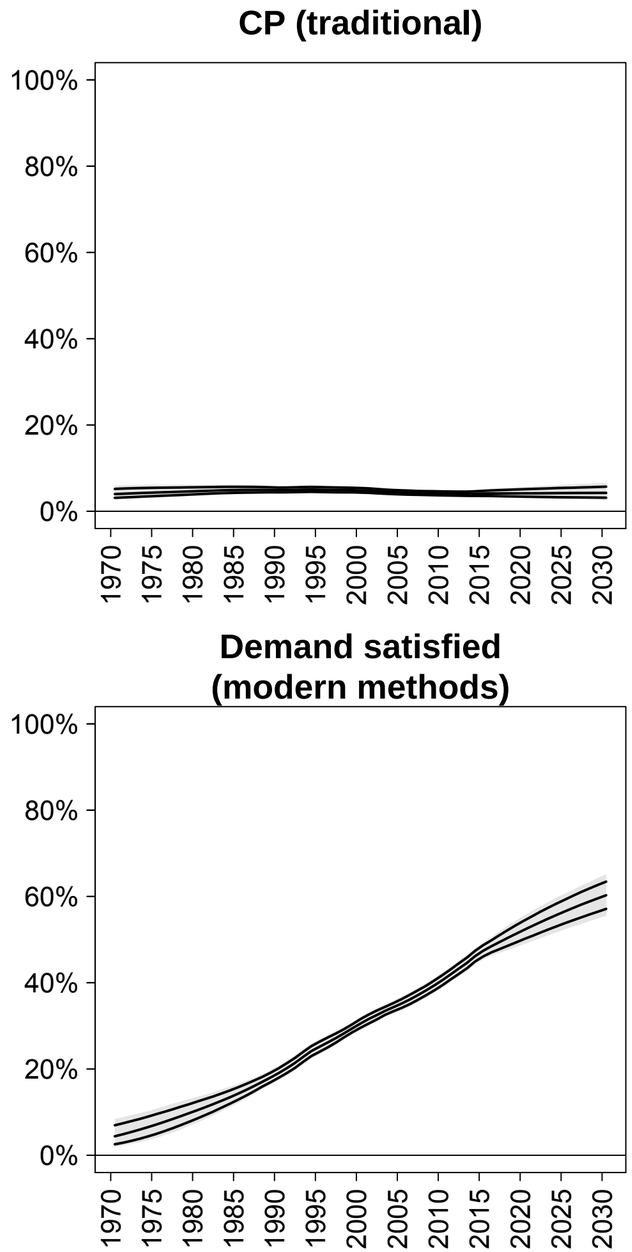
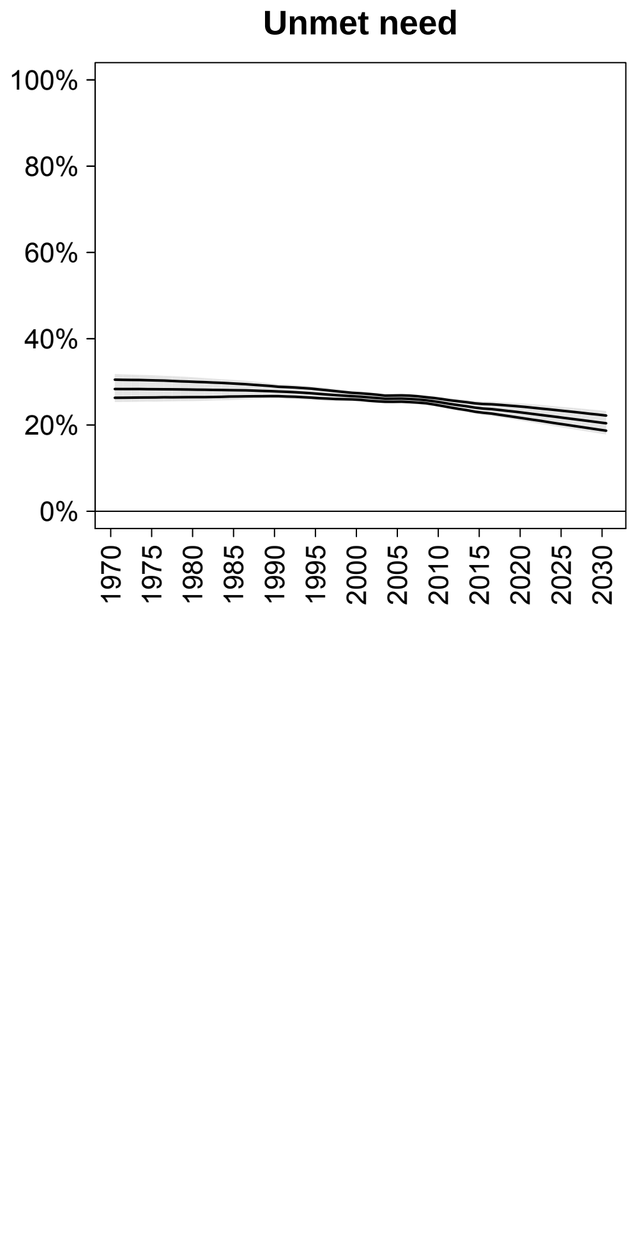
Sub−Saharan Africa



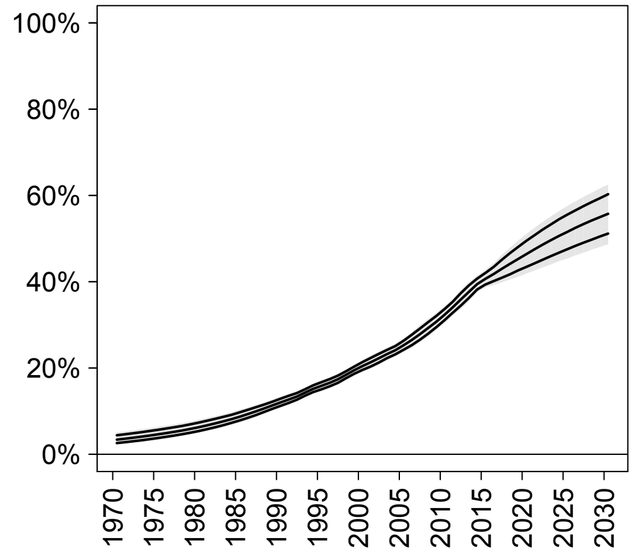




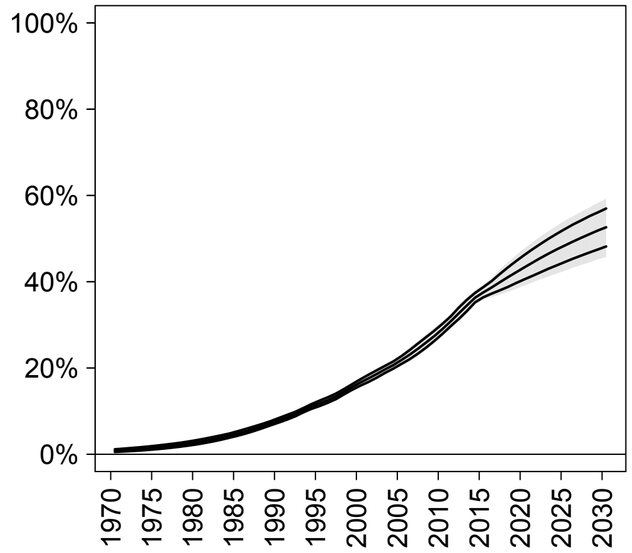


Eastern Africa

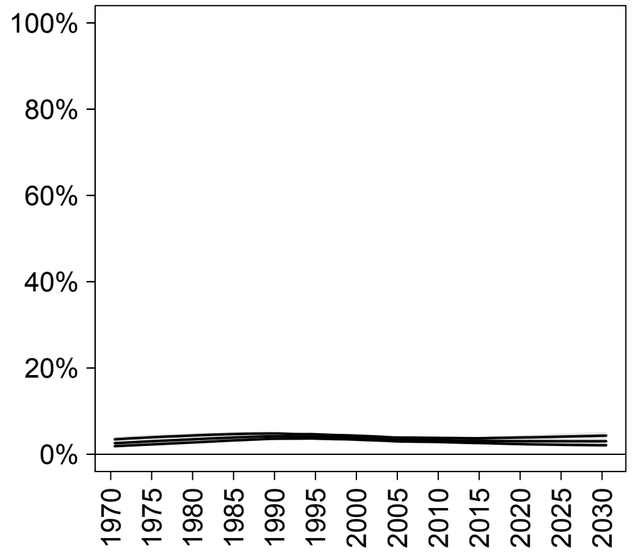
CP (any)



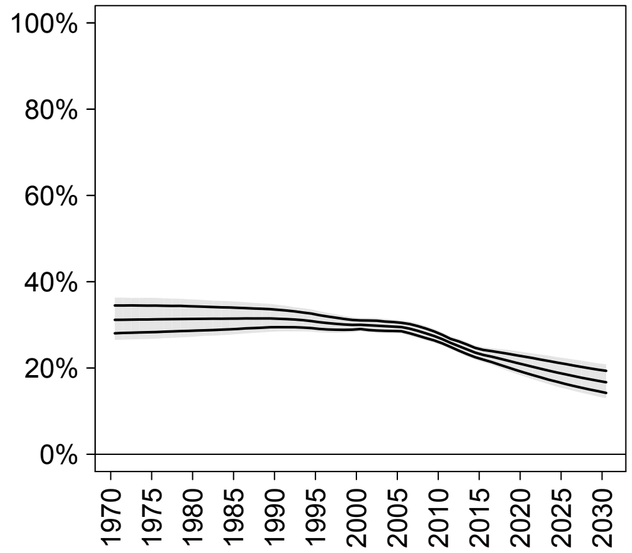
CP (modern)



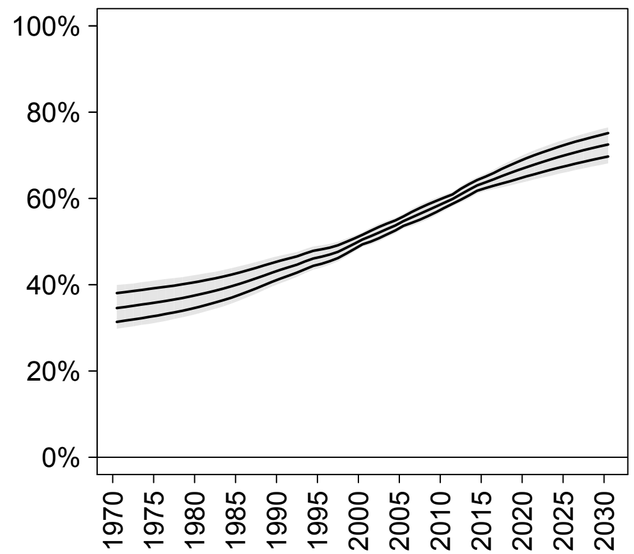
CP (traditional)



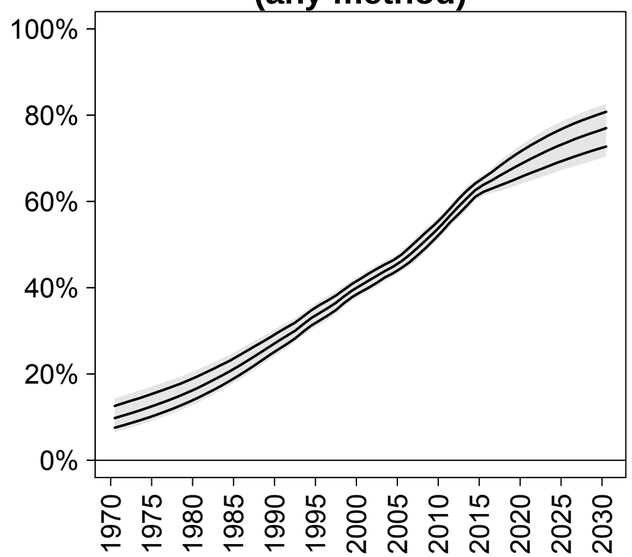
Unmet need



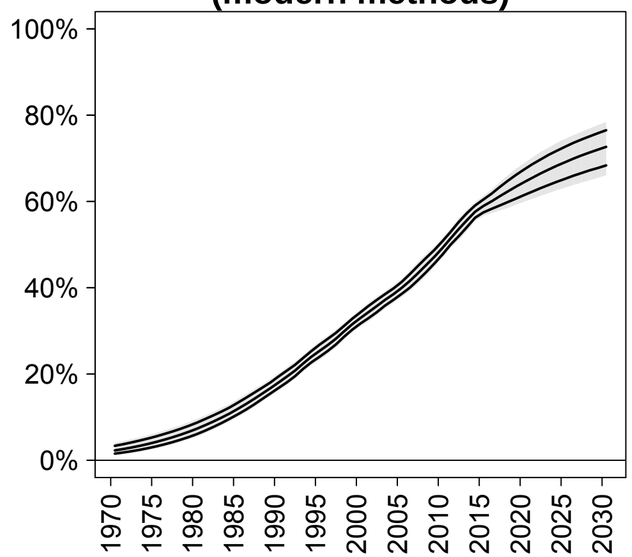
Total demand



Demand satisfied (any method)

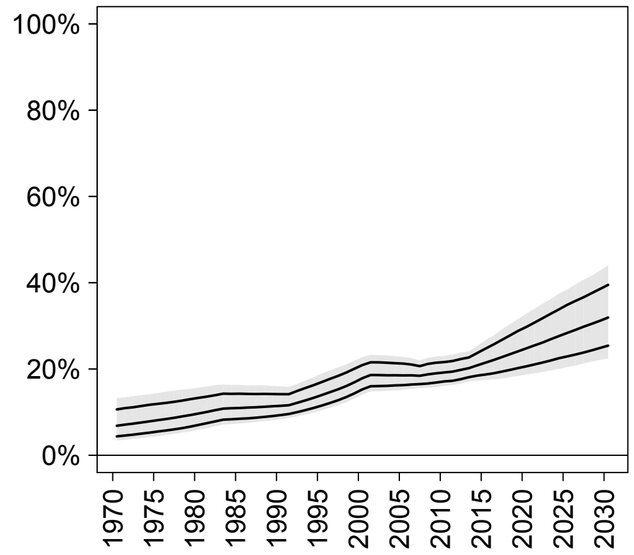


Demand satisfied (modern methods)

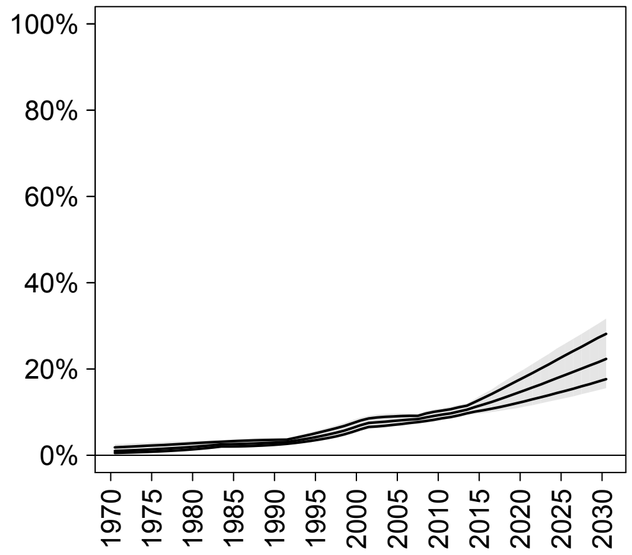


Middle Africa

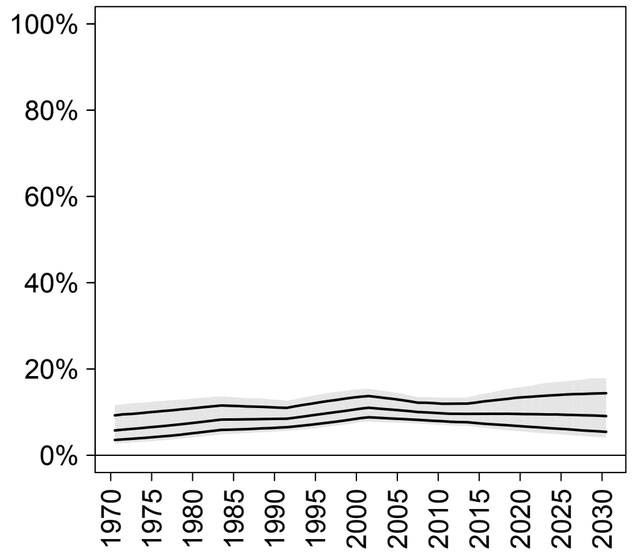
CP (any)



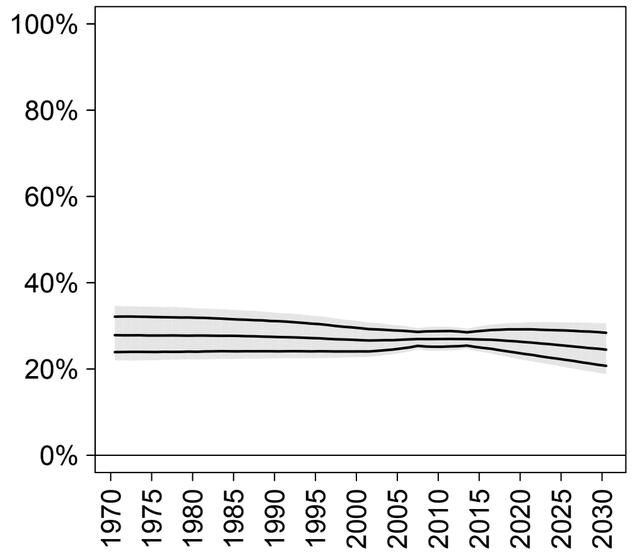
CP (modern)



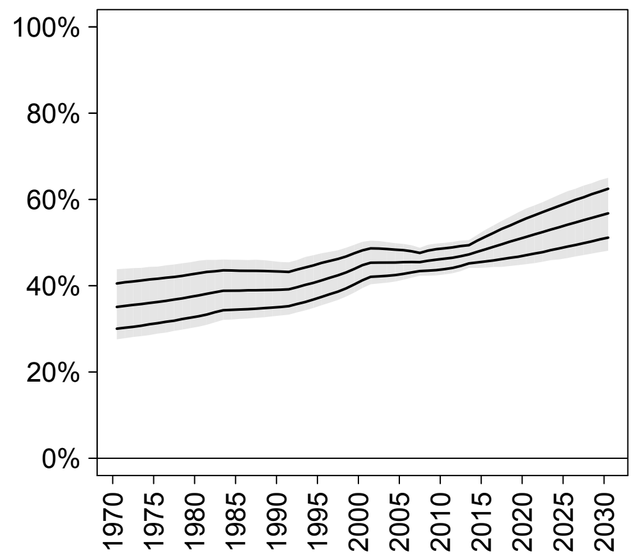
CP (traditional)



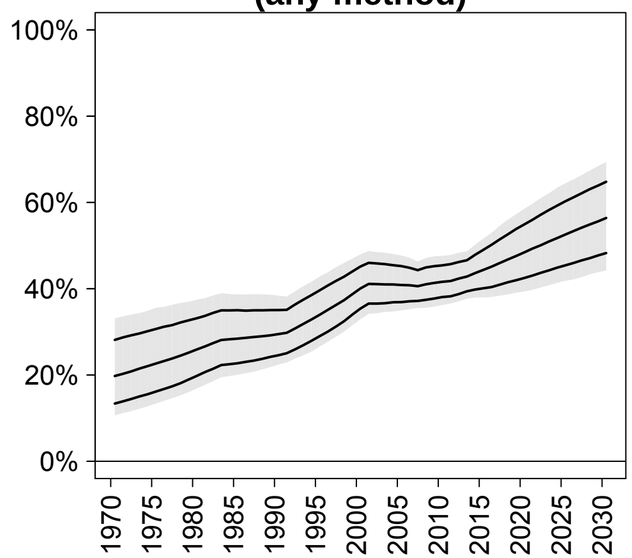
Unmet need



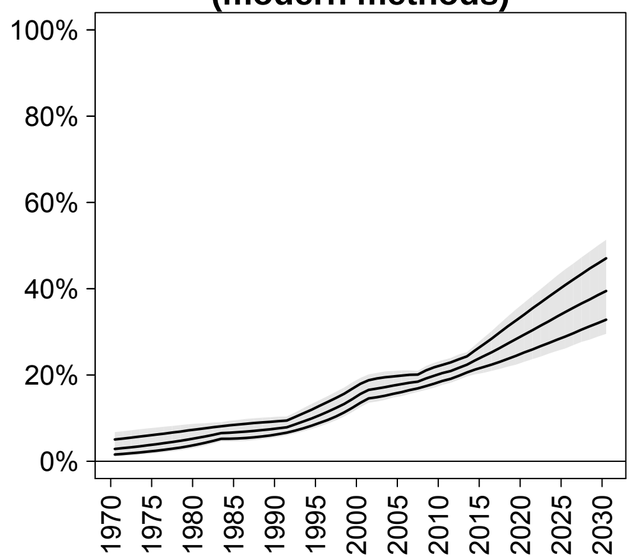
Total demand



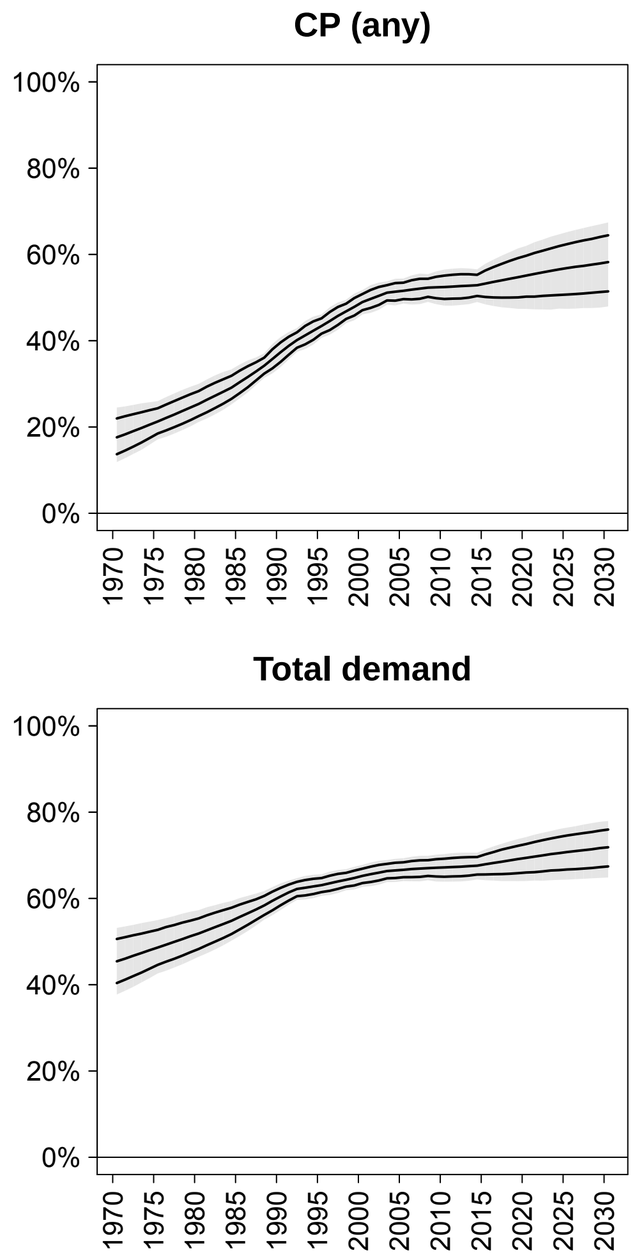
Demand satisfied (any method)

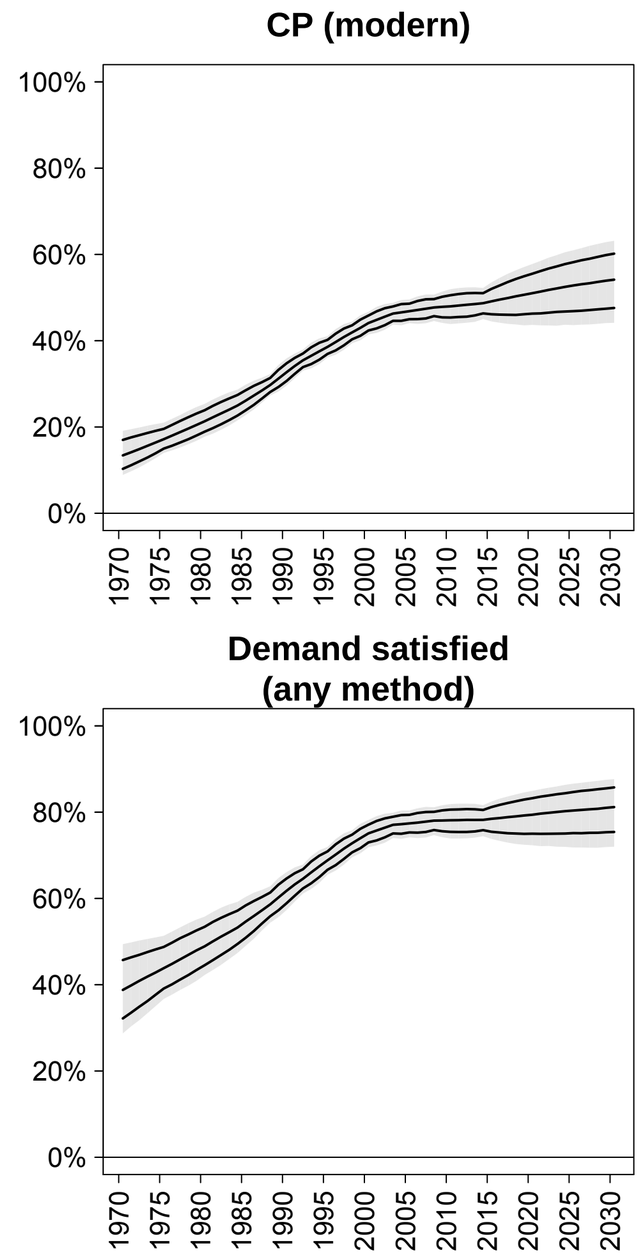


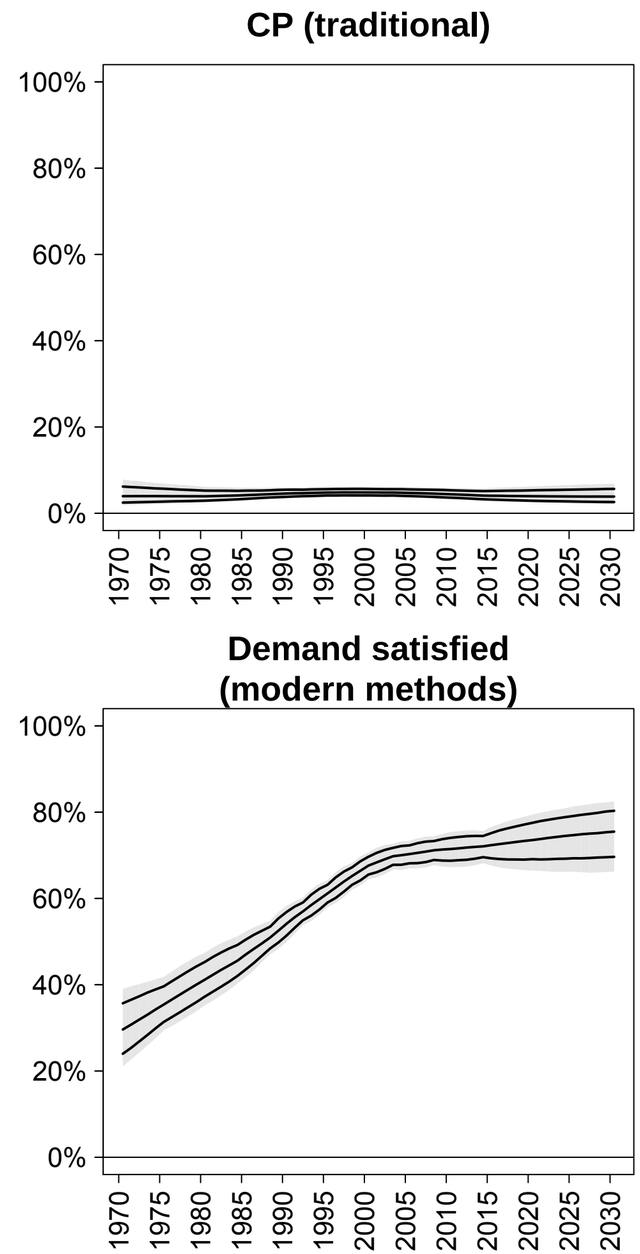
Demand satisfied (modern methods)

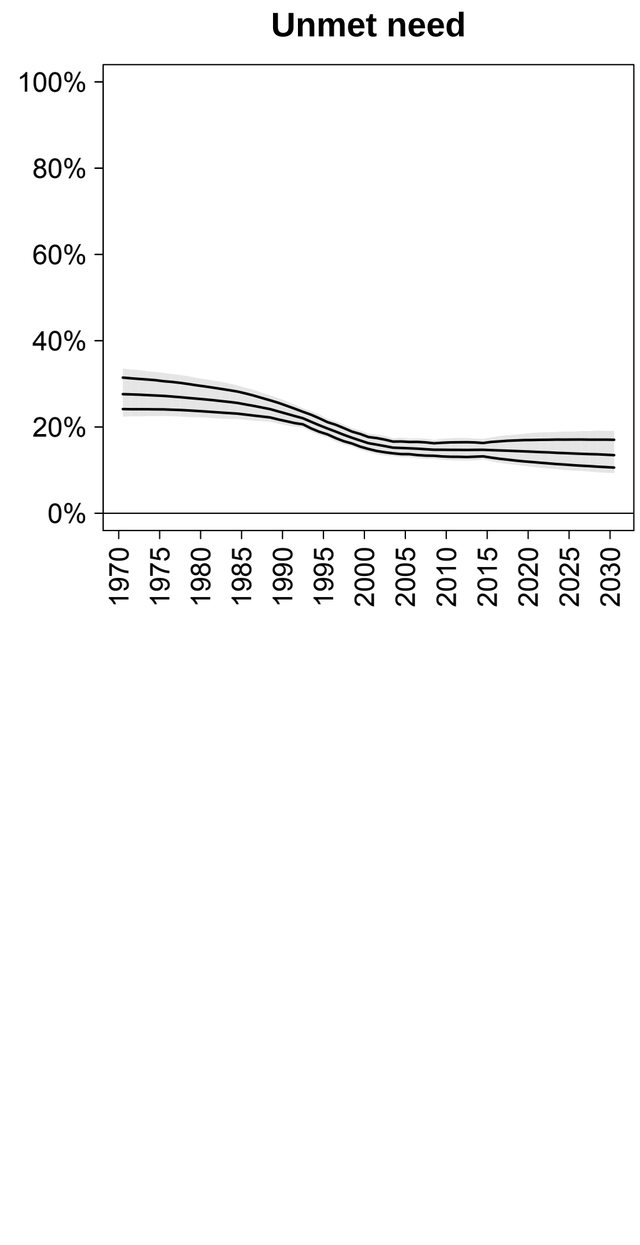


Northern Africa



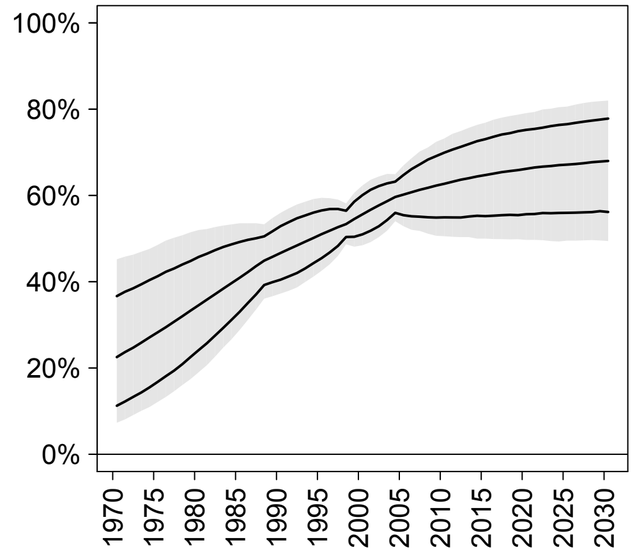




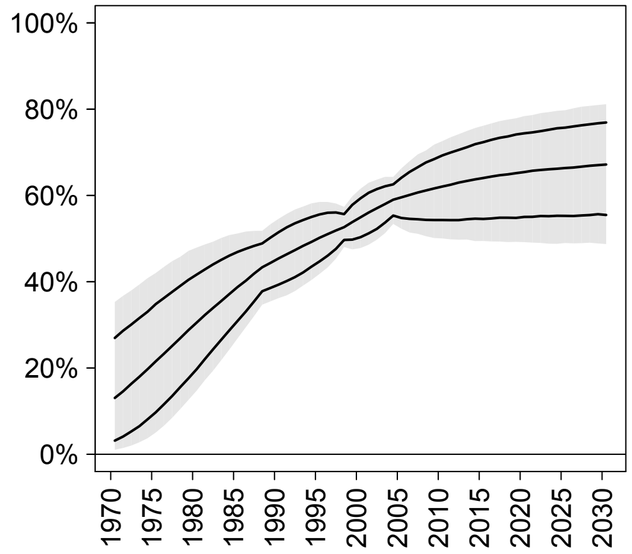


Southern Africa

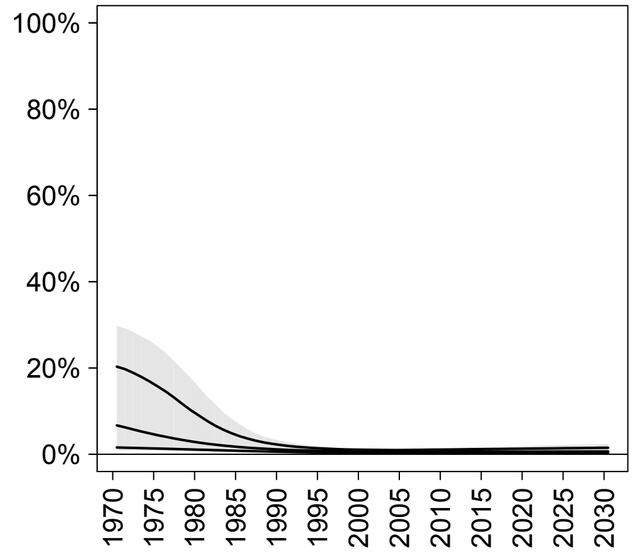
CP (any)



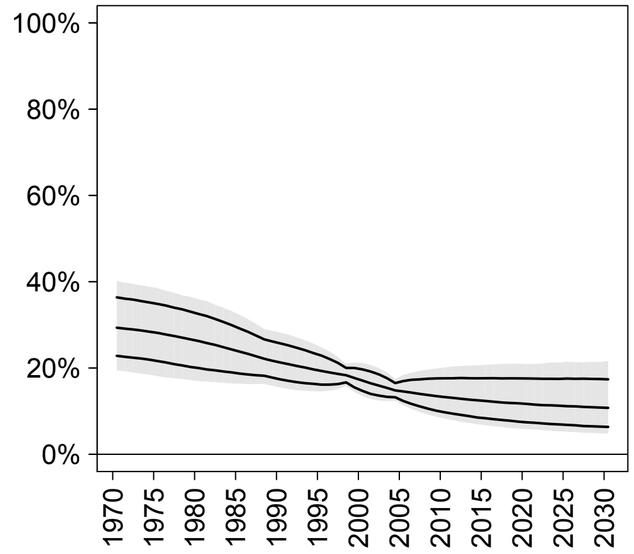
CP (modern)



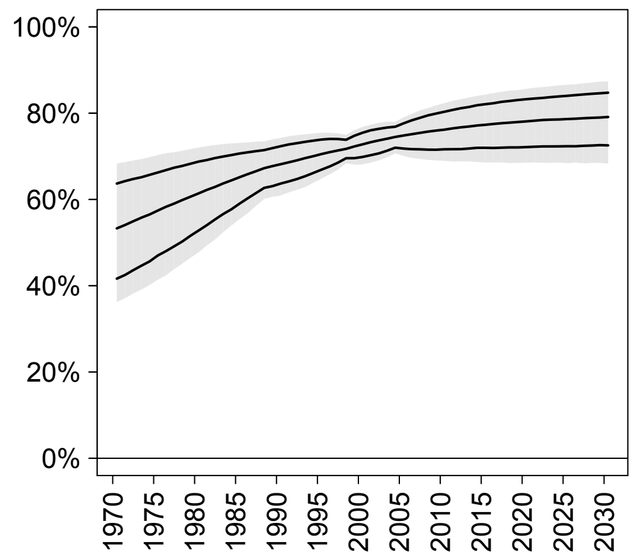
CP (traditional)



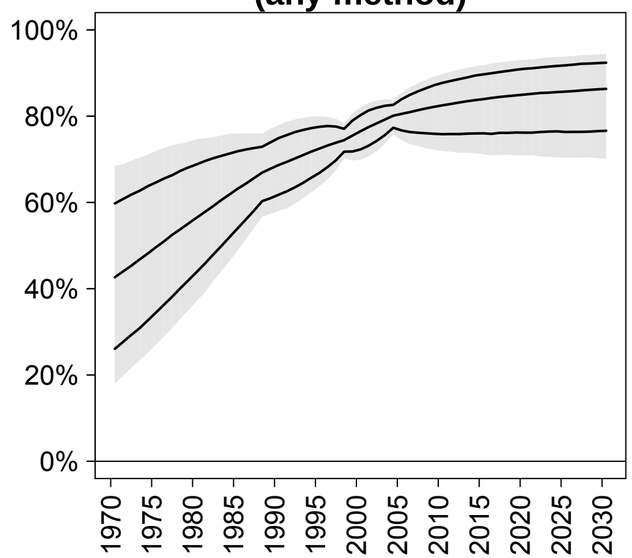
Unmet need



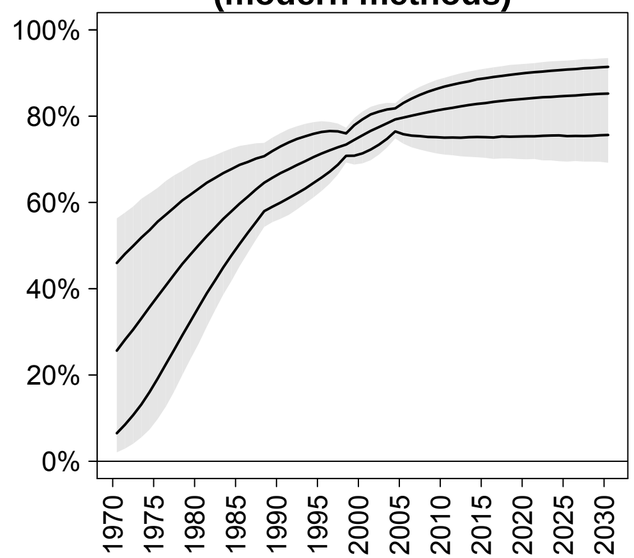
Total demand



Demand satisfied (any method)

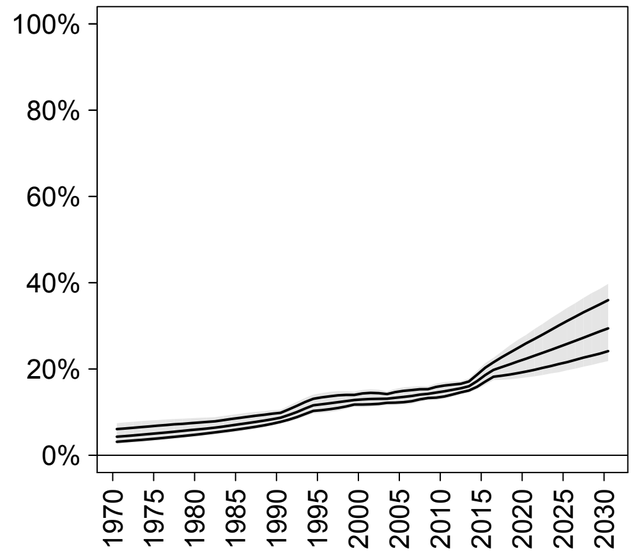


Demand satisfied (modern methods)

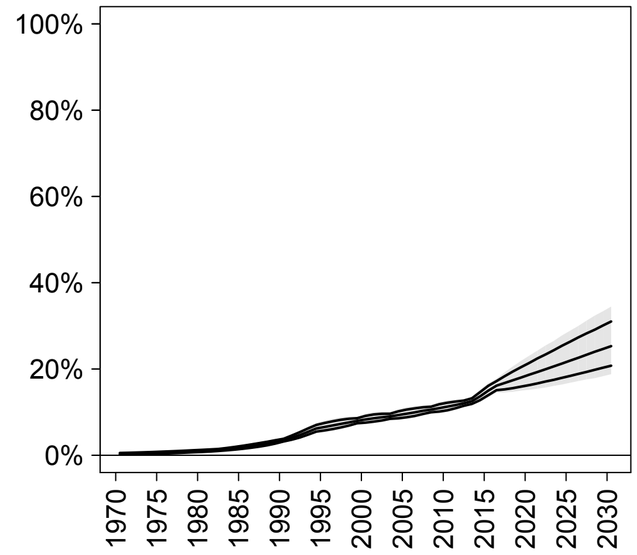


Western Africa

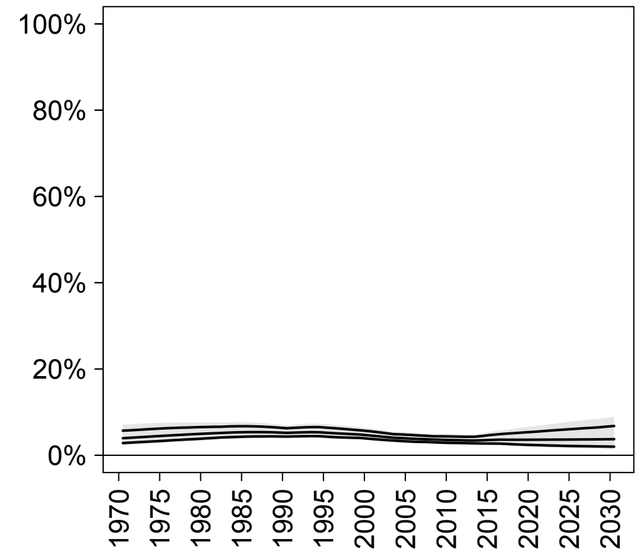
CP (any)



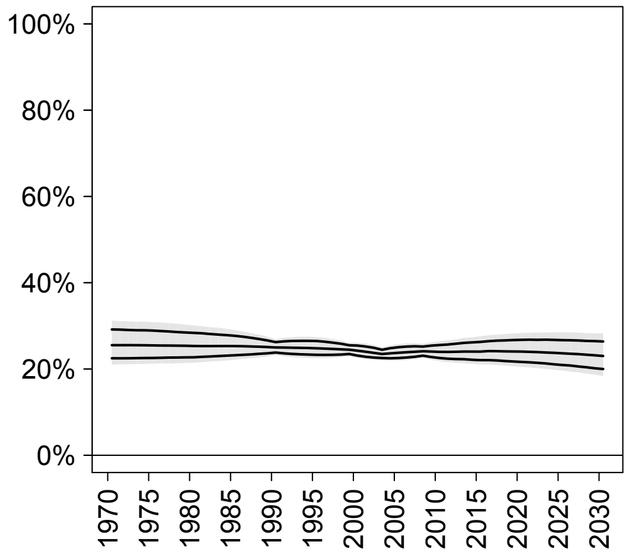
CP (modern)



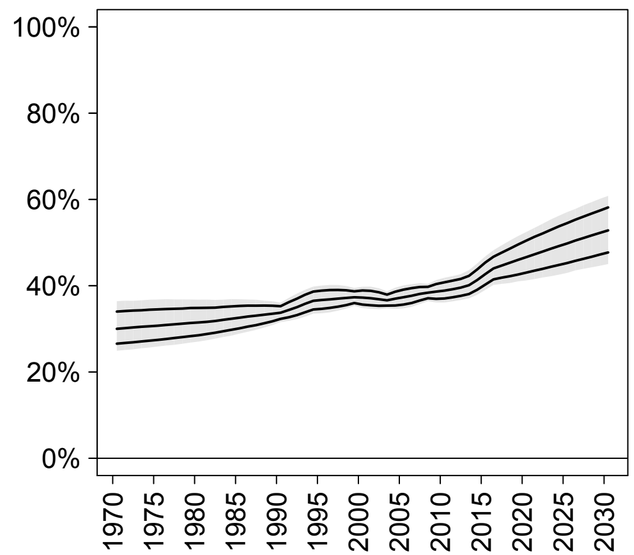
CP (traditional)



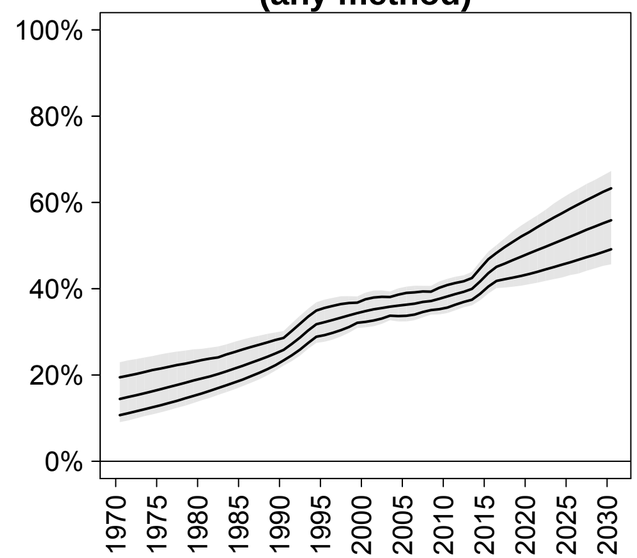
Unmet need



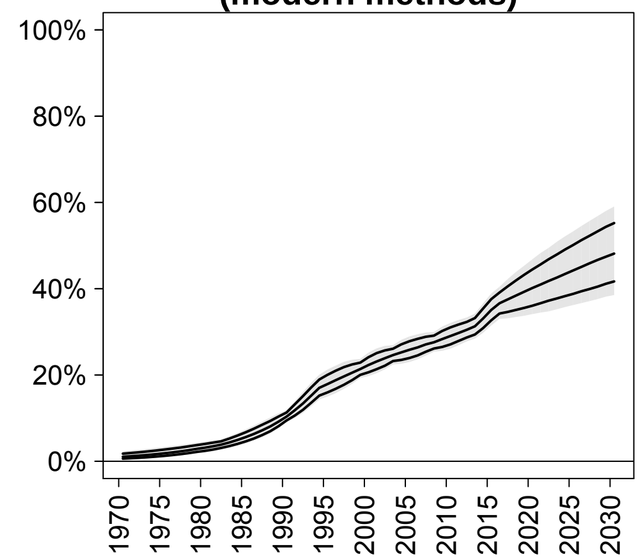
Total demand



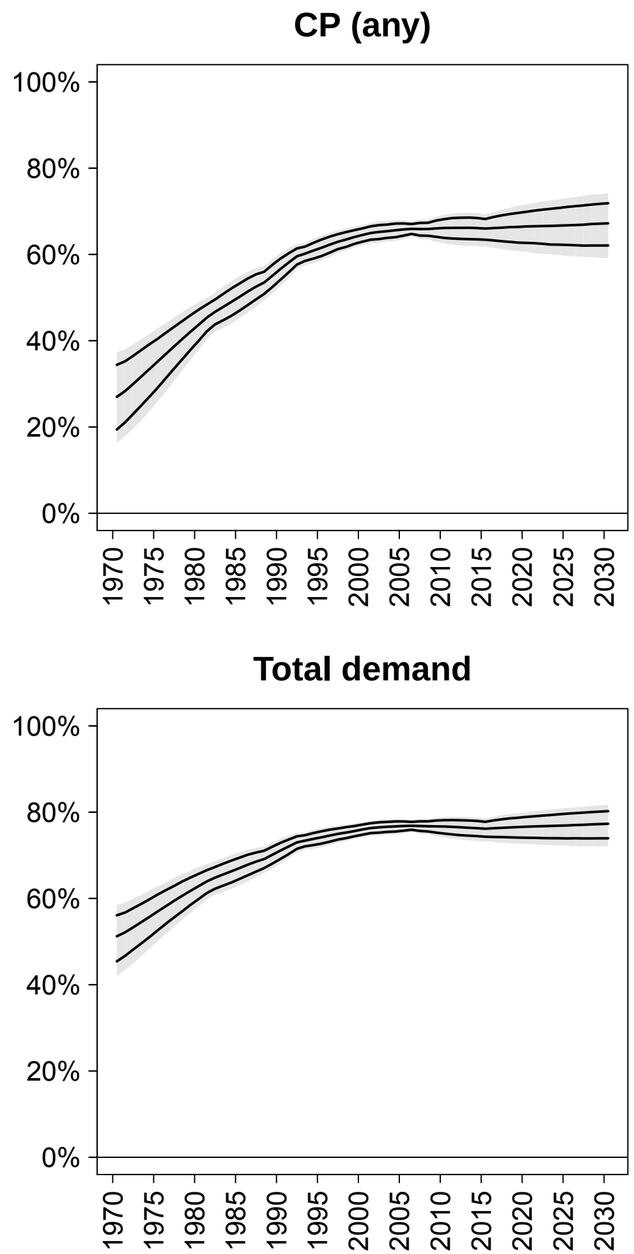
Demand satisfied (any method)



Demand satisfied (modern methods)



Asia


CP (any)
100%
80%
60%
40%
20%
0%
1970
1975
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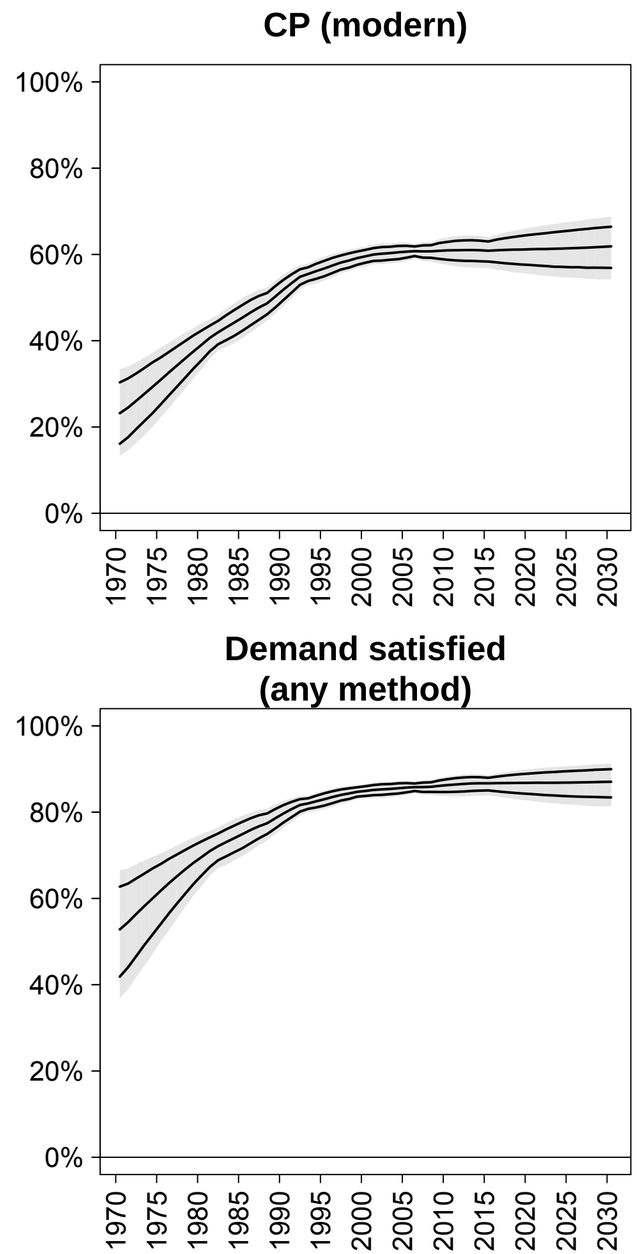
2020
2025
2030


CP (modern)
100%
80%
60%
40%
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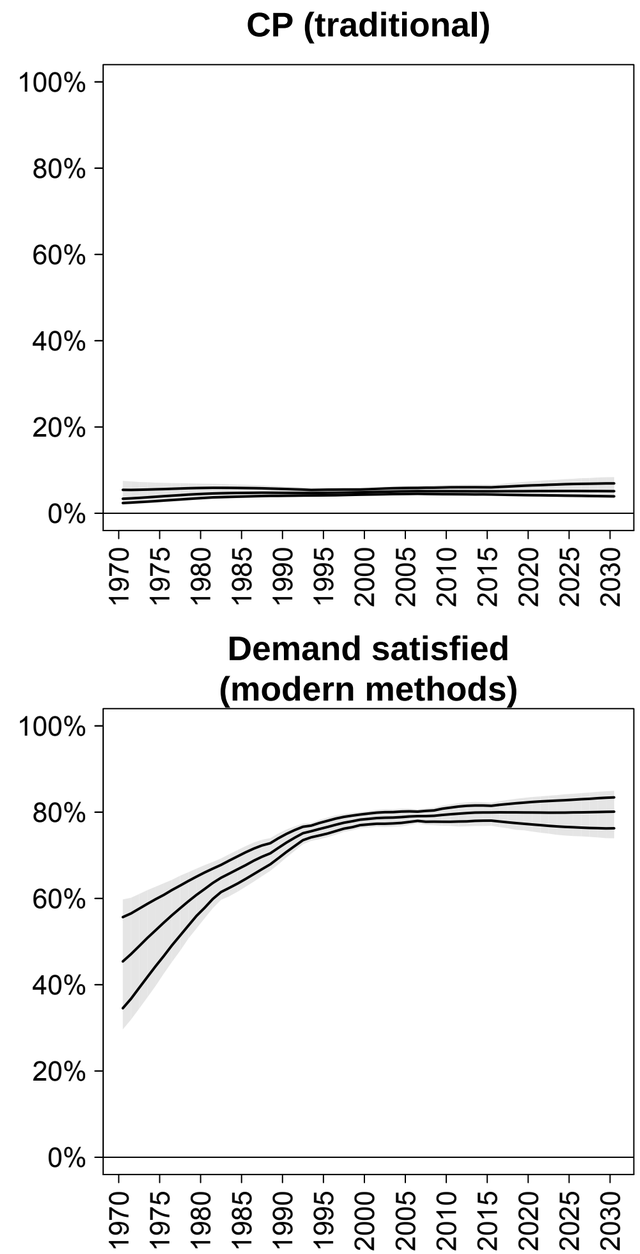
CP (traditional)
100%
80%
60%
40%
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0%
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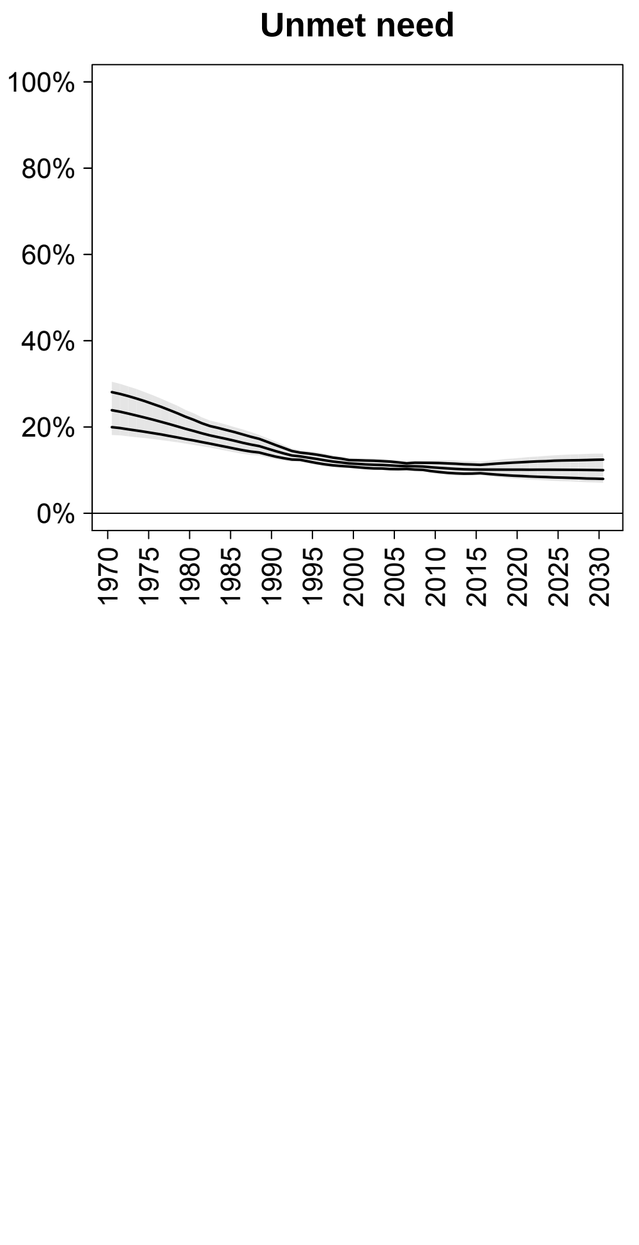
2030


Unmet need
100%
80%
60%
40%
20%
0%
1970
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2015
2020
2025
2030

Total demand
100%
80%
60%
40%
20%
0%
1970
1975
1980
1985
1990
1995
2000
2005
2010
2015
2020
2025
2030

Demand satisfied
(any method)
100%
80%
60%
40%
20%
0%
1970
1975
1980
1985
1990
1995
2000
2005
2010
2015
2020
2025
2030

Demand satisfied
(modern methods)
100%
80%
60%
40%
20%
0%
1970
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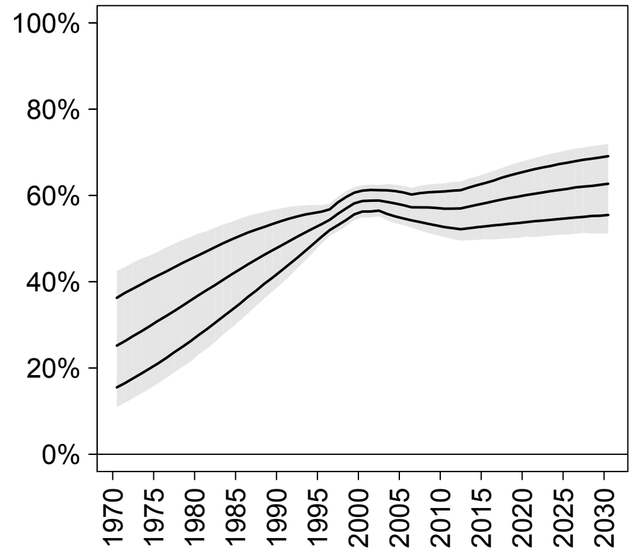
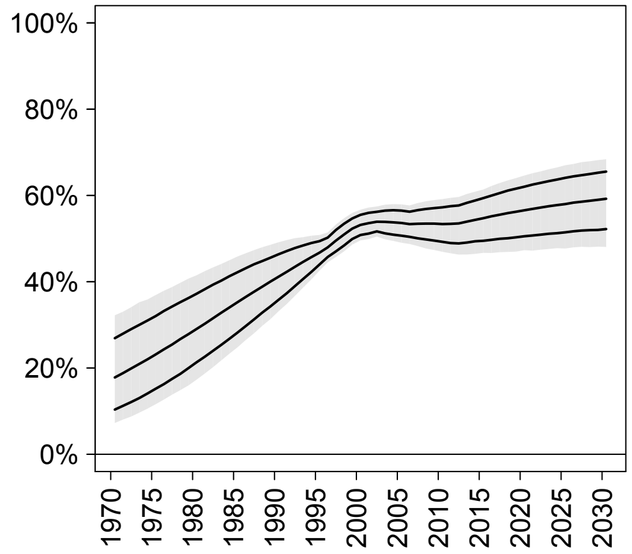
2010
2015
2020
2025
2030

Central Asia

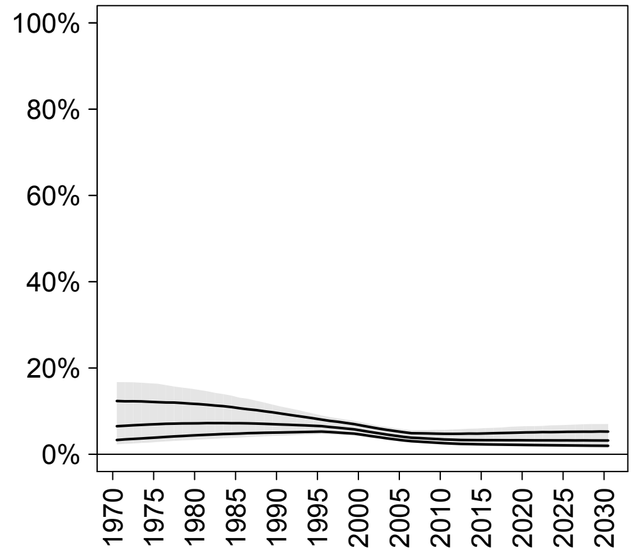
CP (any)



CP (modern)



CP (traditional)



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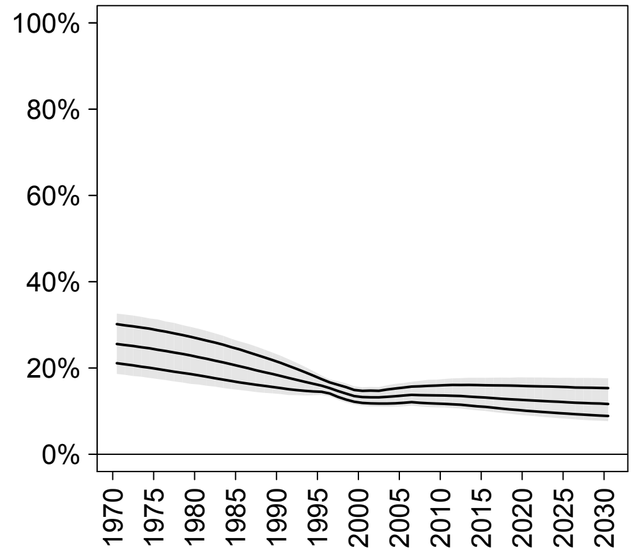
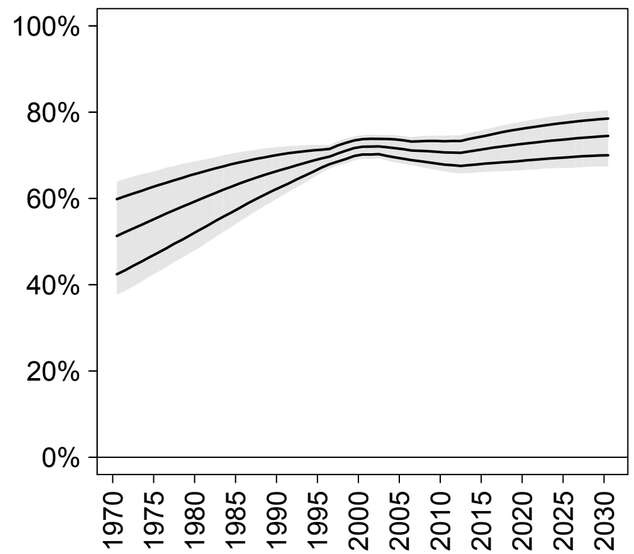
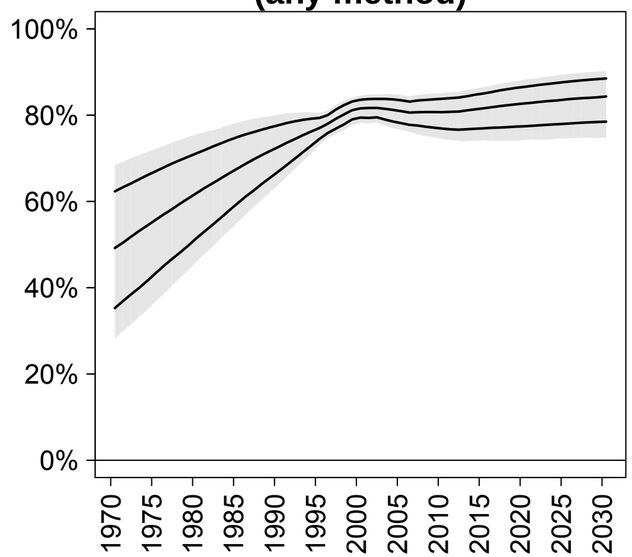


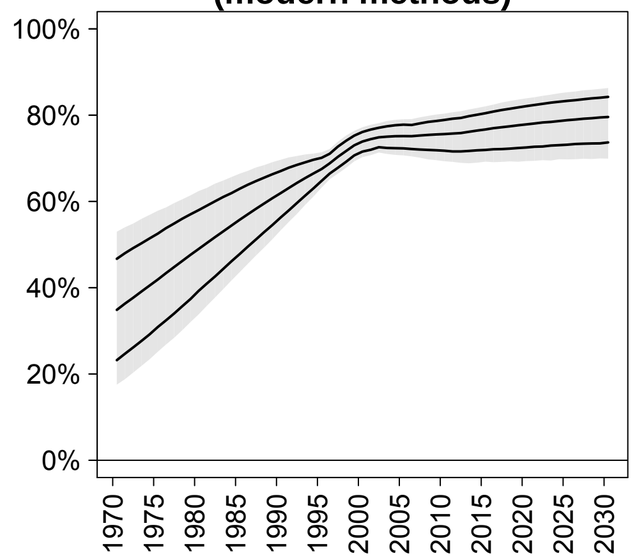
Total demand



Demand satisfied (any method)

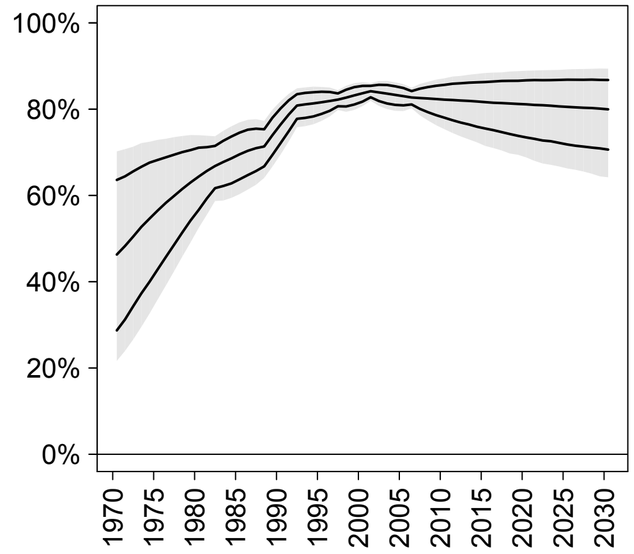


Demand satisfied (modern methods)

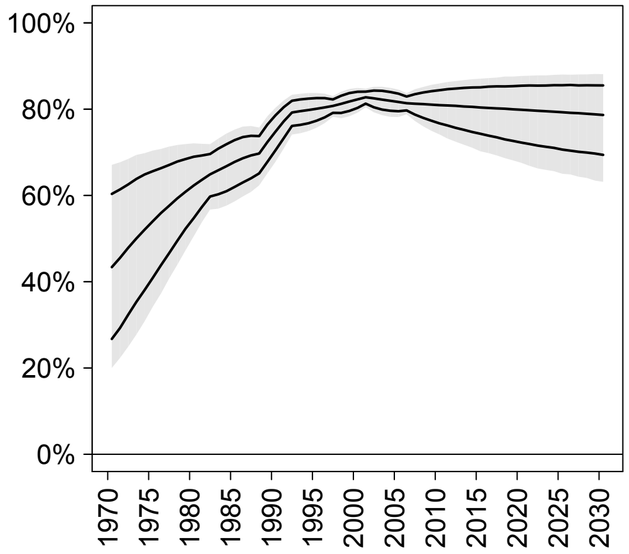


Eastern Asia

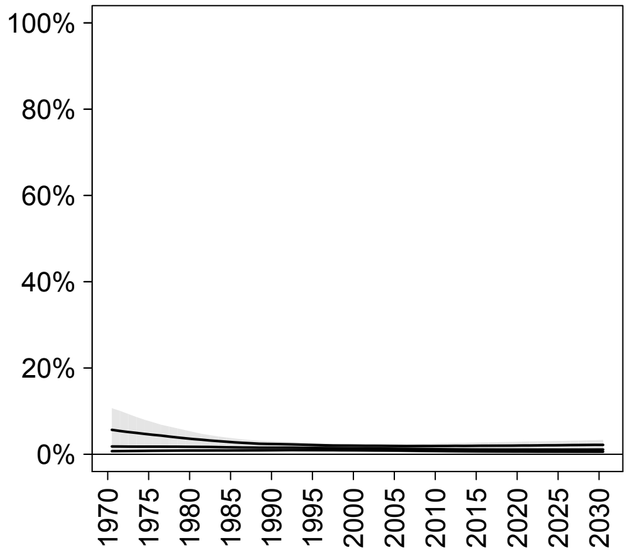
CP (any)



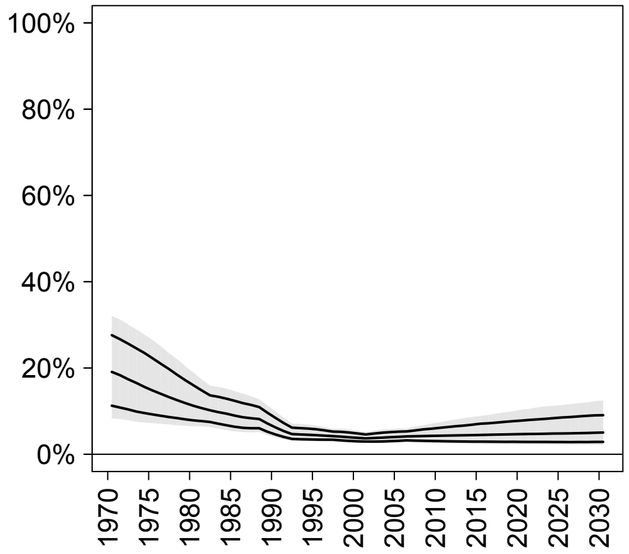
CP (modern)



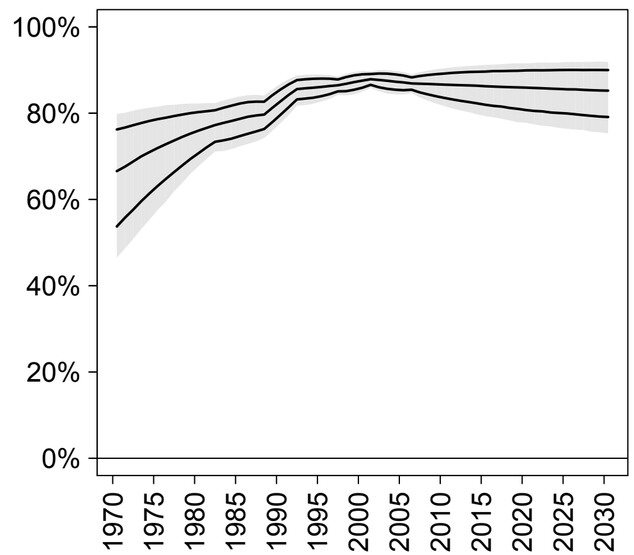
CP (traditional)



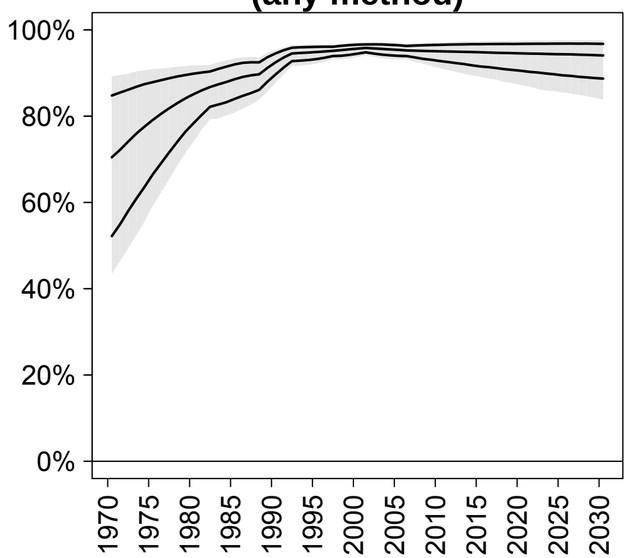
Unmet need



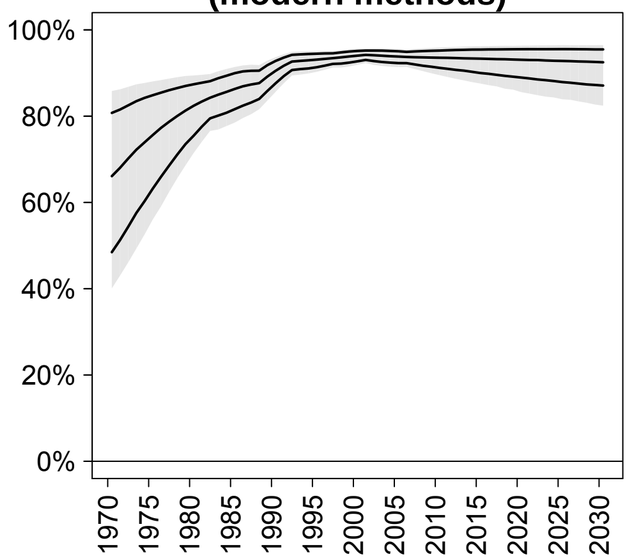
Total demand



Demand satisfied (any method)

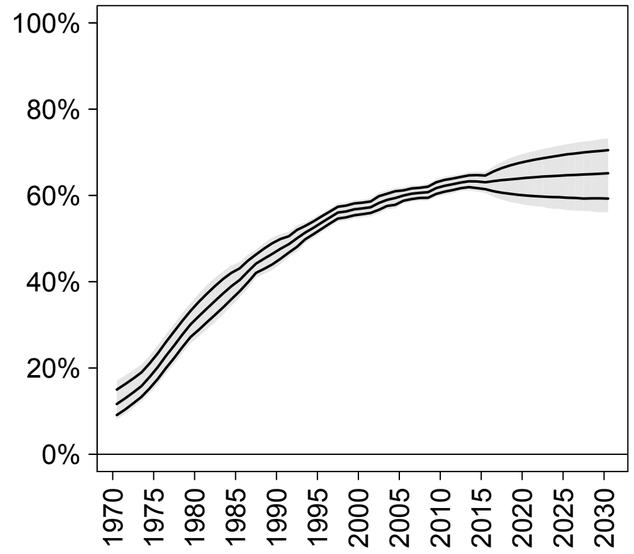


Demand satisfied (modern methods)

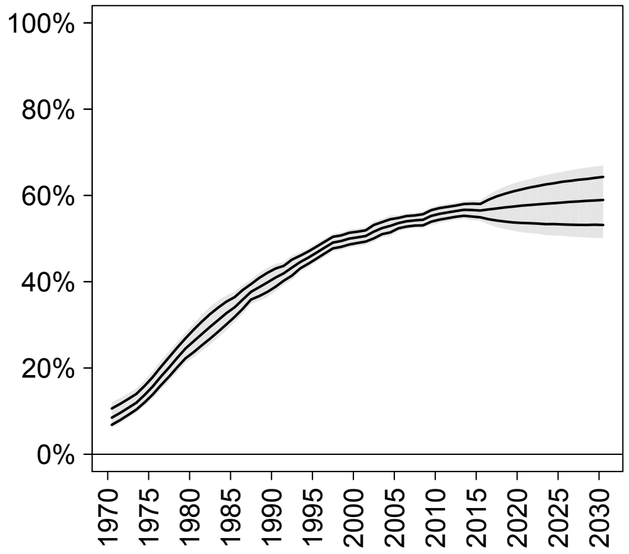


South−Eastern Asia

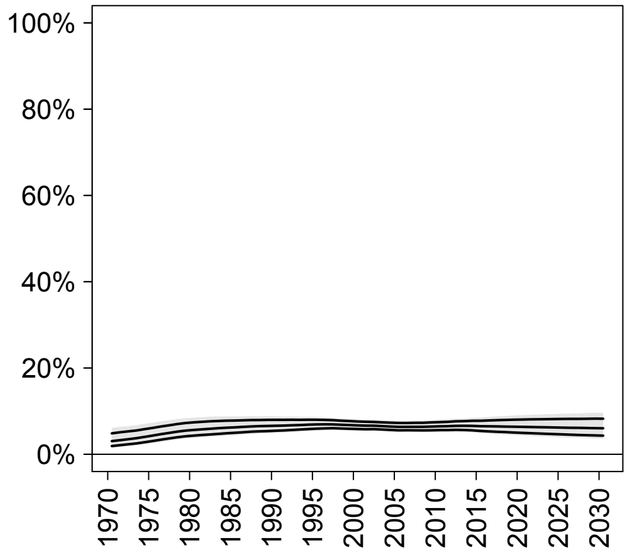
CP (any)



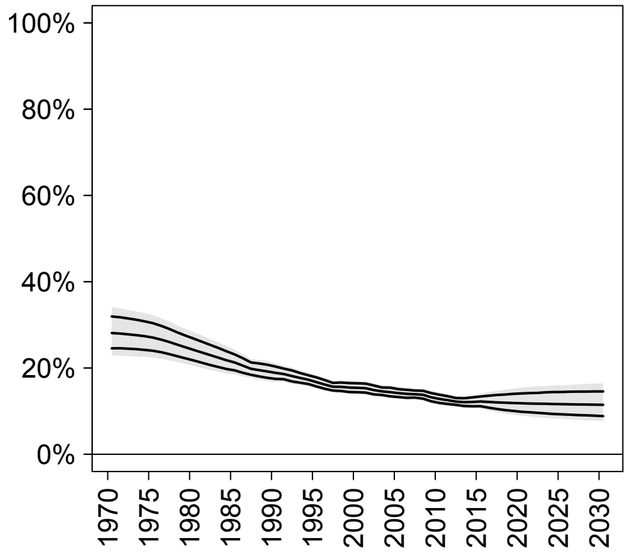
CP (modern)



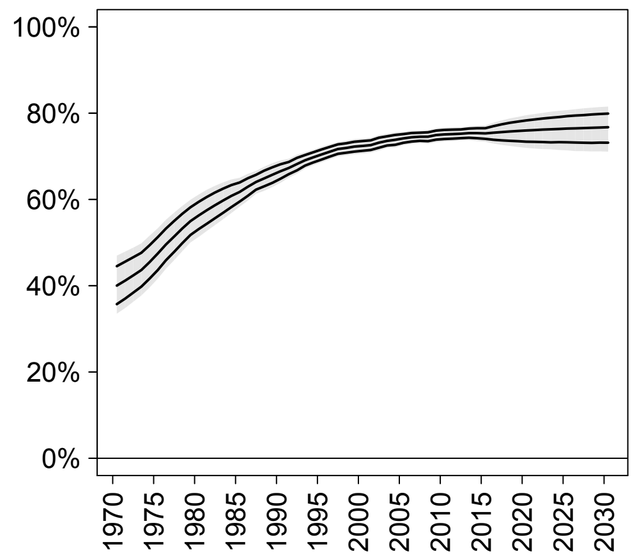
CP (traditional)



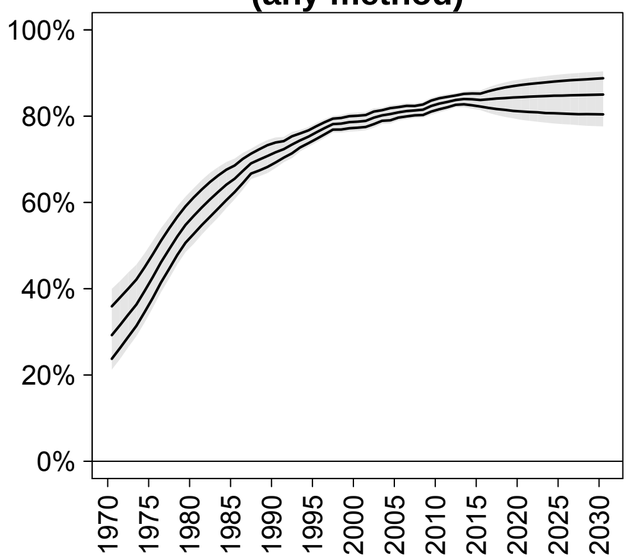
Unmet need



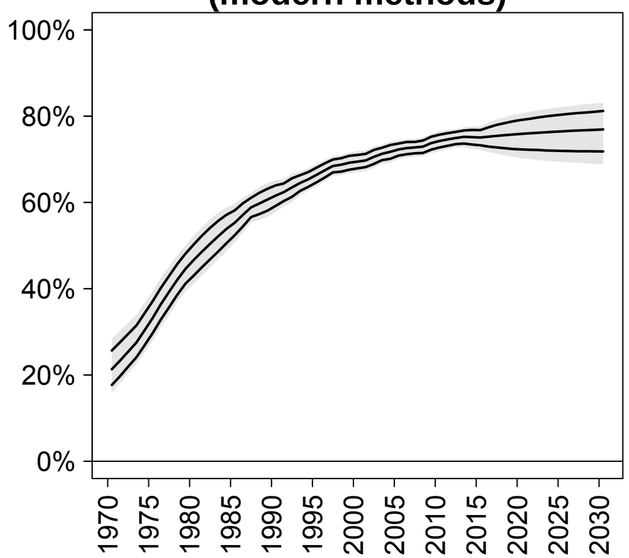
Total demand



Demand satisfied (any method)

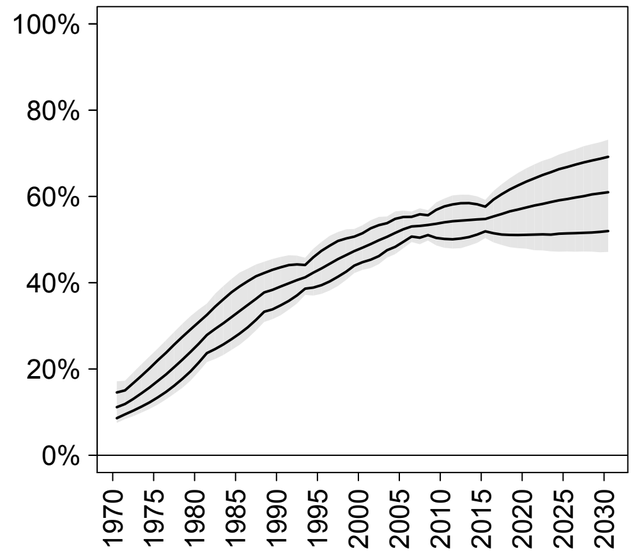


Demand satisfied (modern methods)

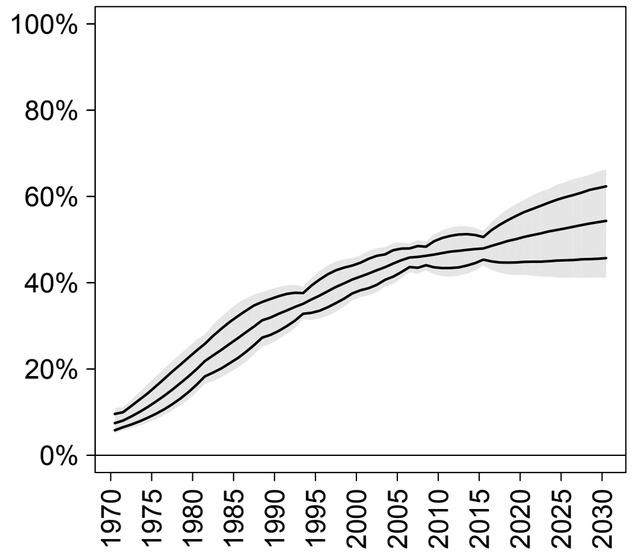


Southern Asia

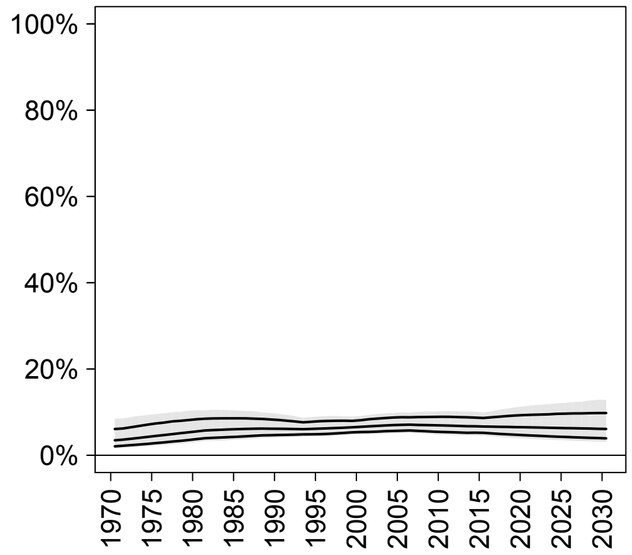
CP (any)



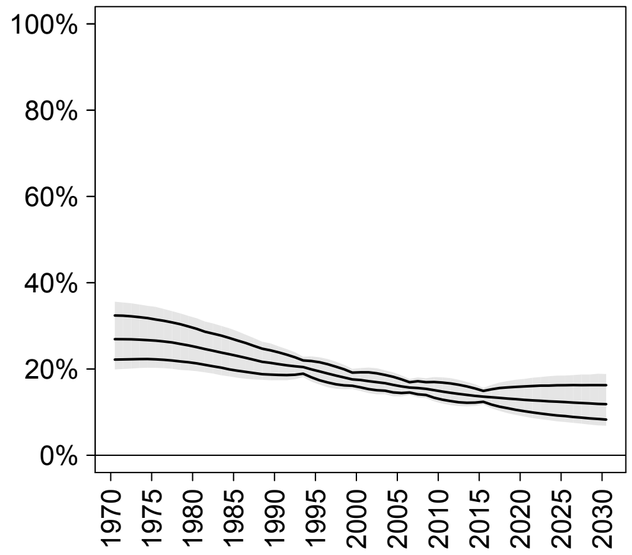
CP (modern)



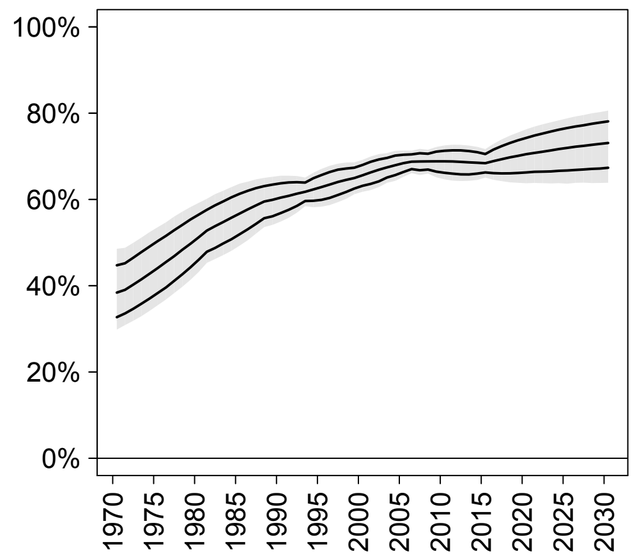
CP (traditional)



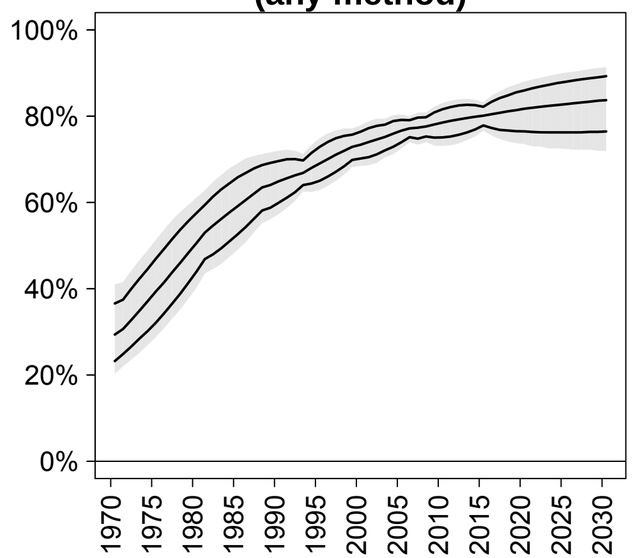
Unmet need



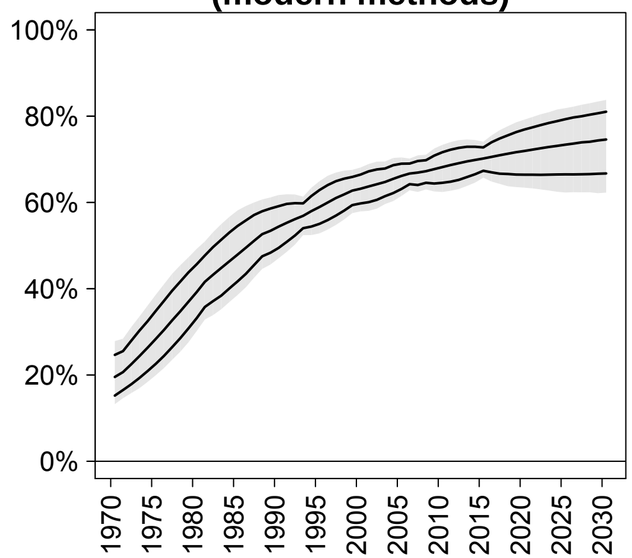
Total demand



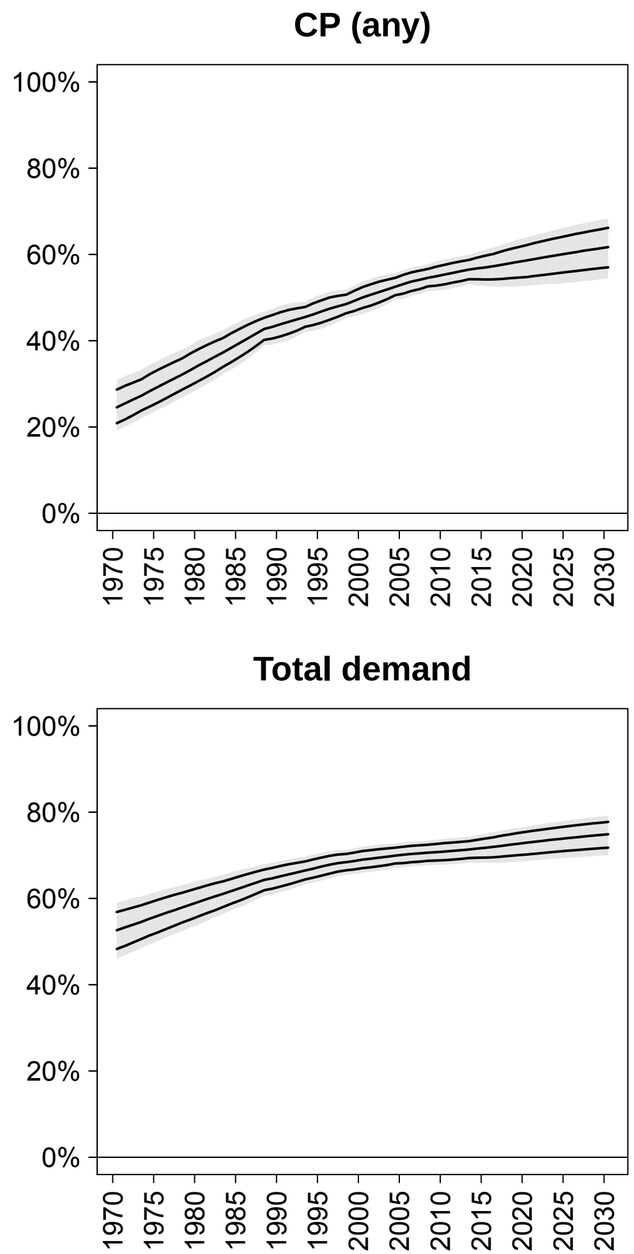
Demand satisfied (any method)

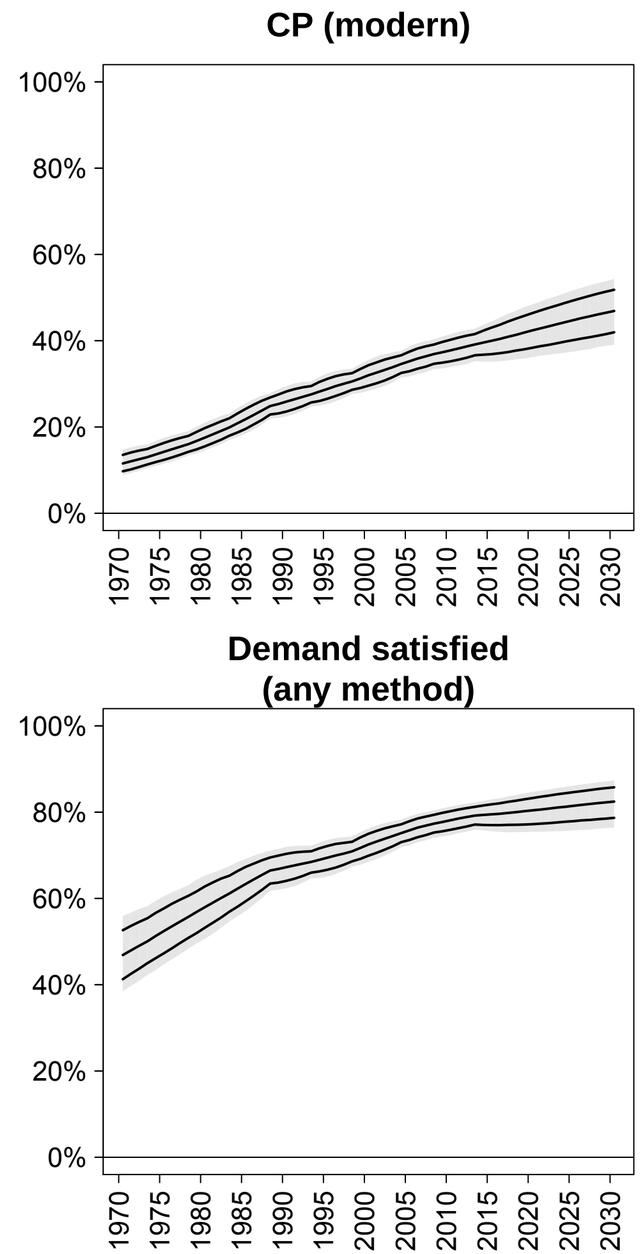


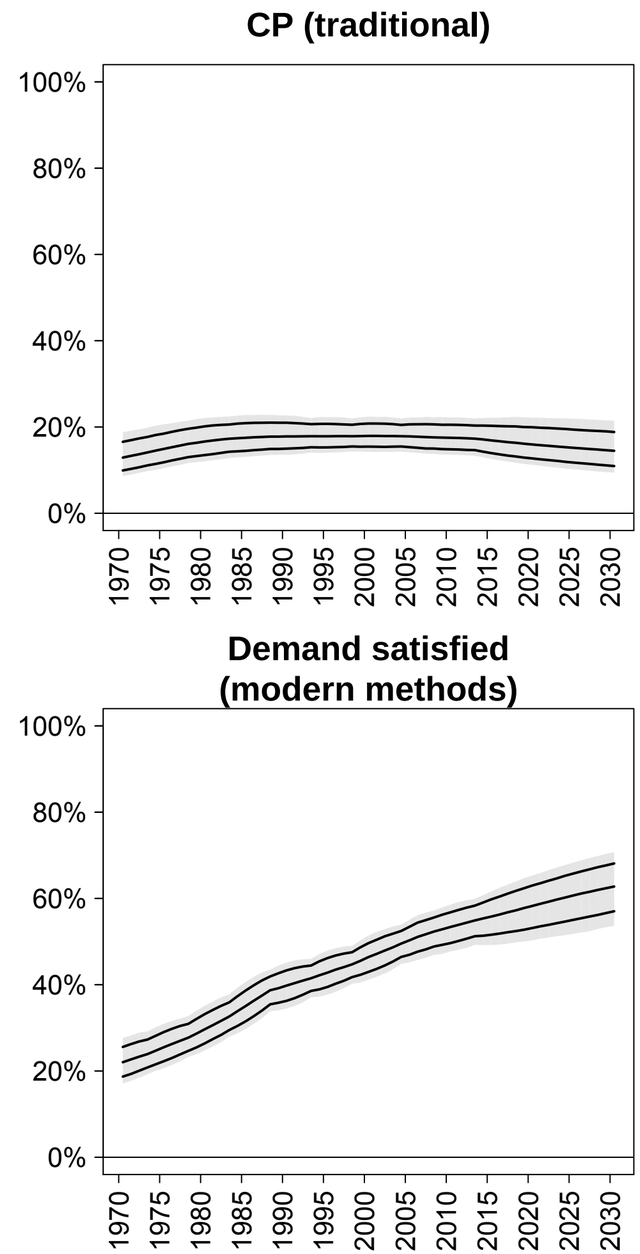
Demand satisfied (modern methods)

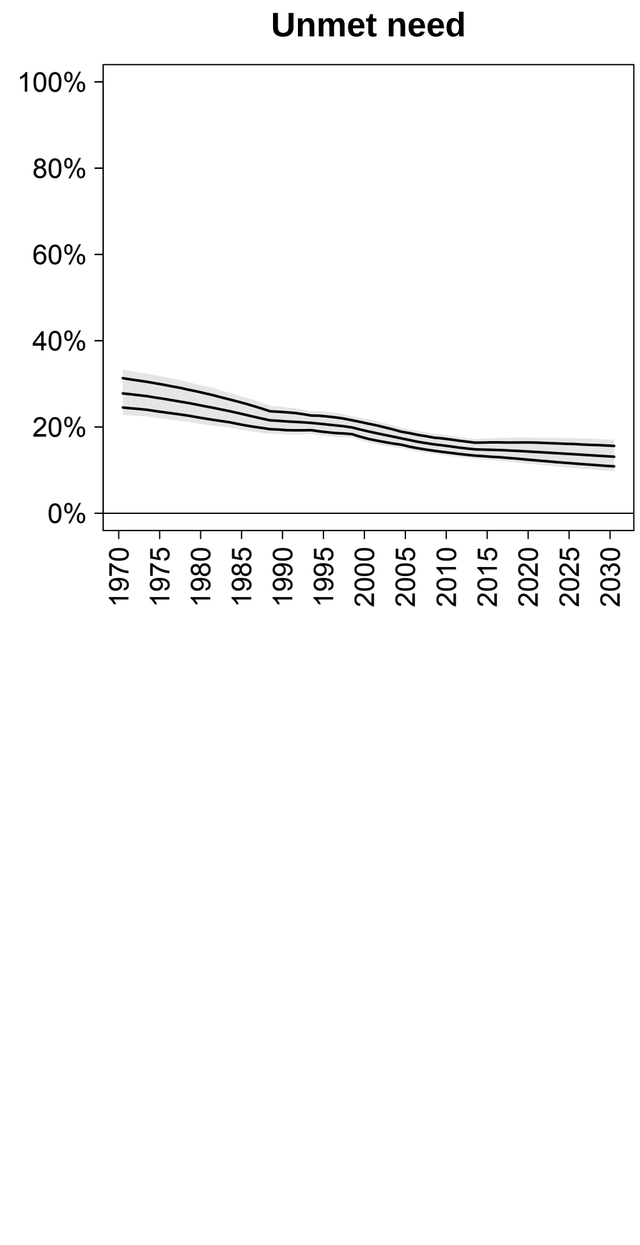


Western Asia

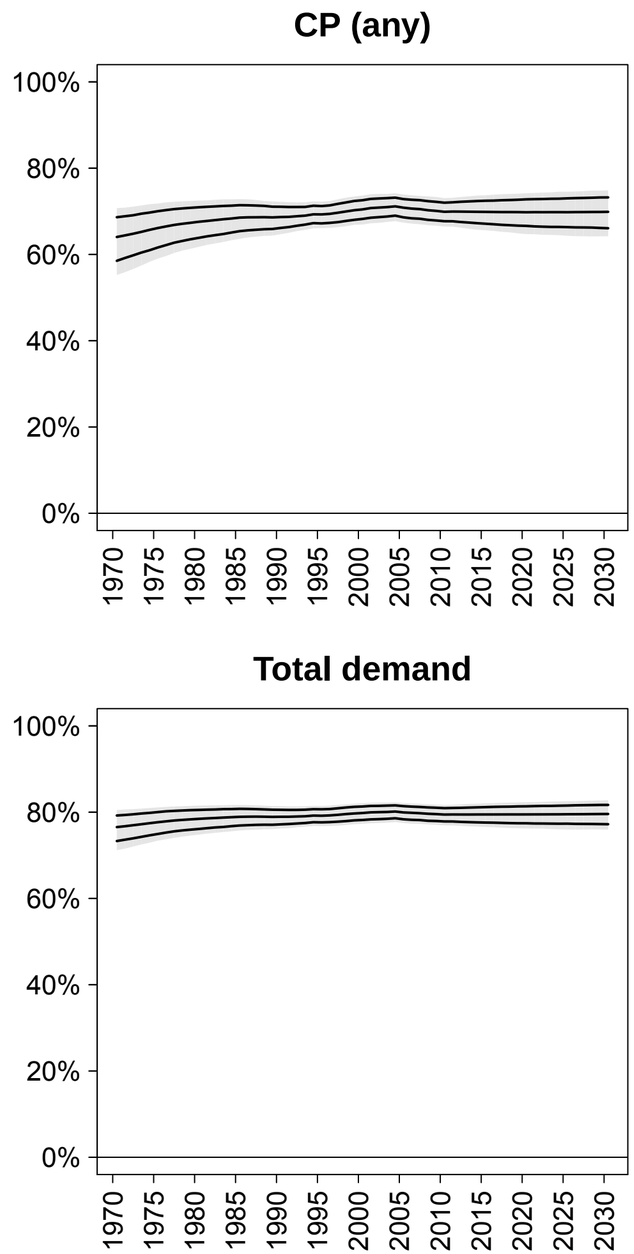








Europe


CP (any)
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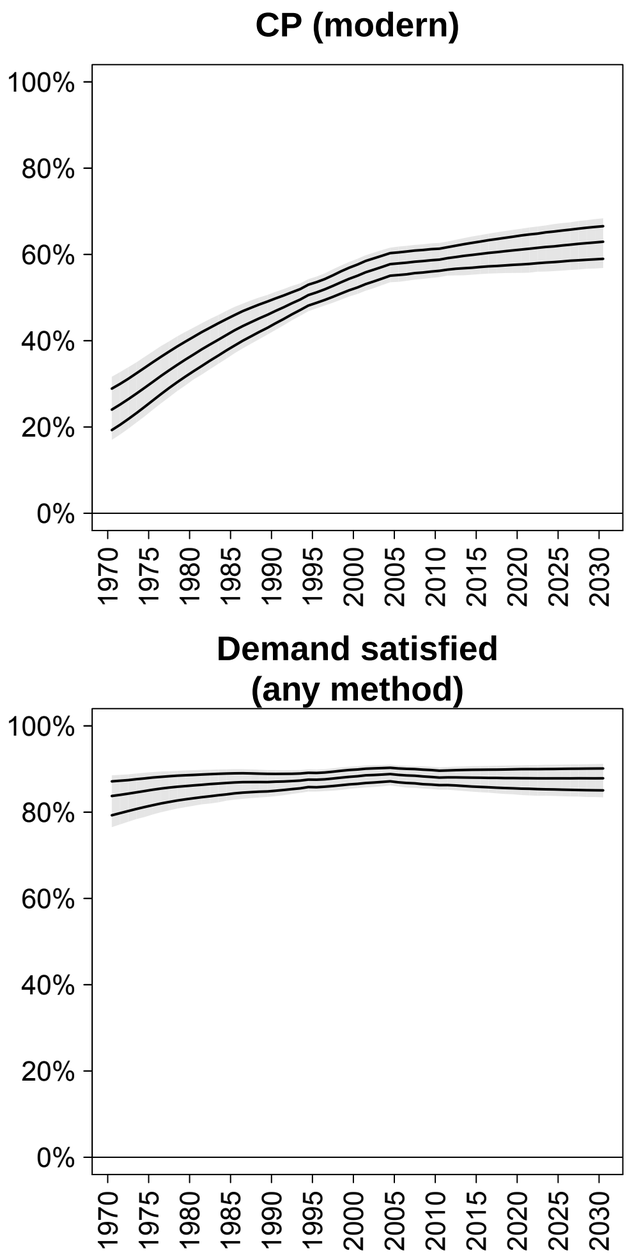
CP (modern)
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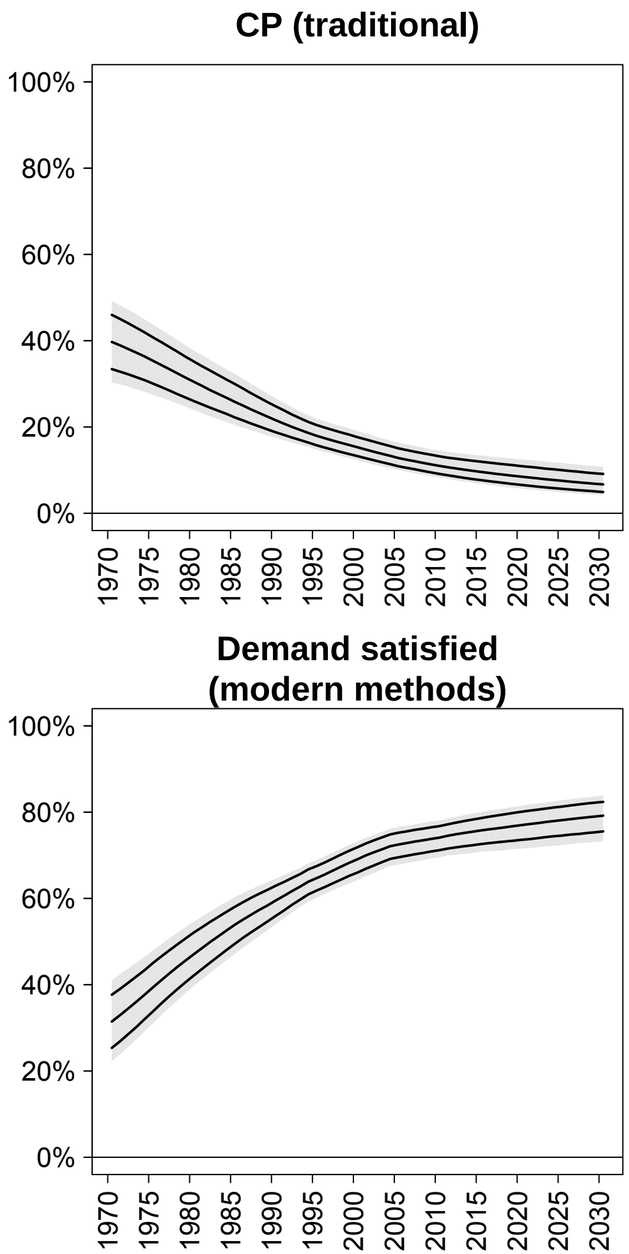
CP (traditional)
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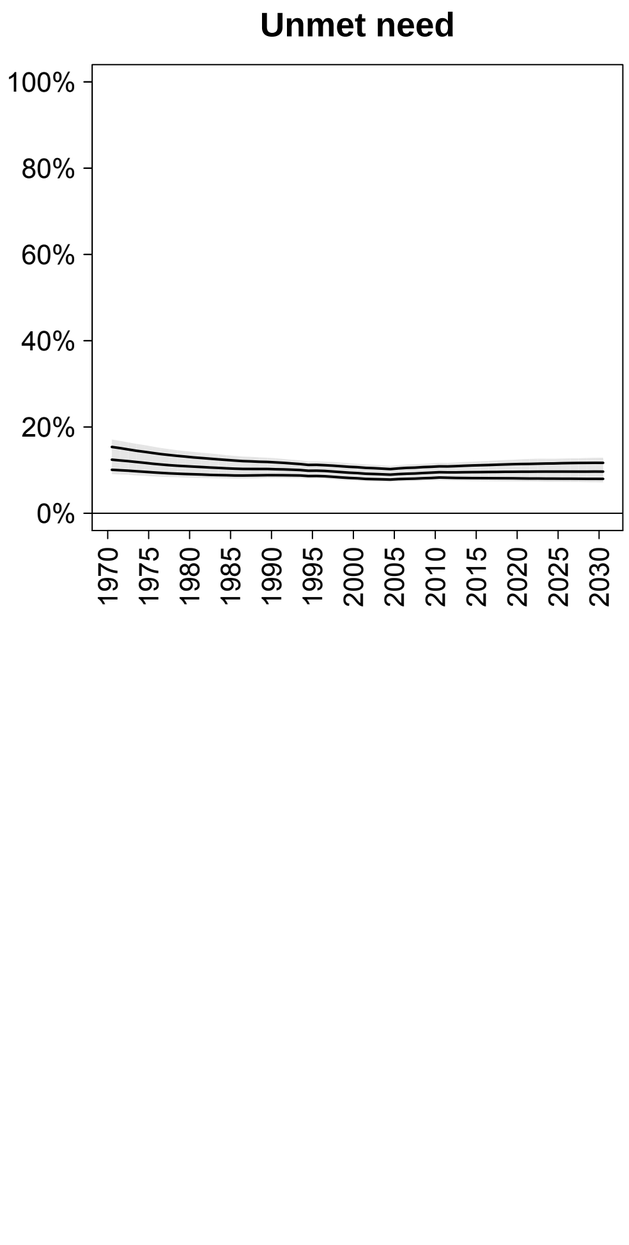
Unmet need
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Total demand
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Demand satisfied
(any method)
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Demand satisfied
(modern methods)
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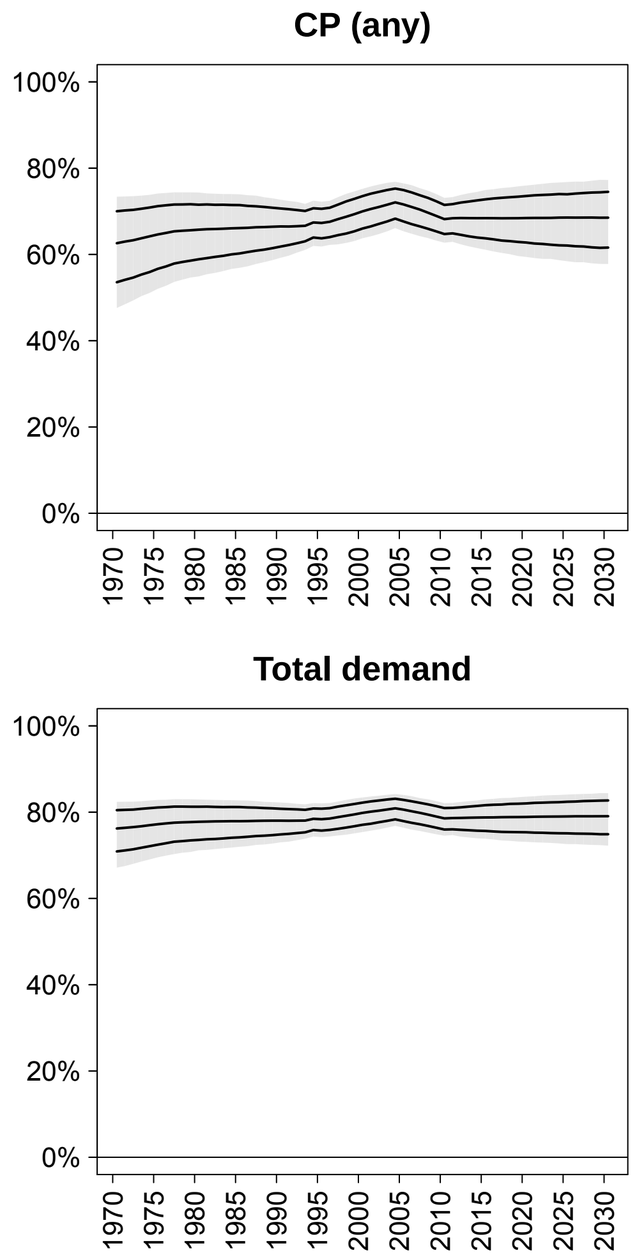
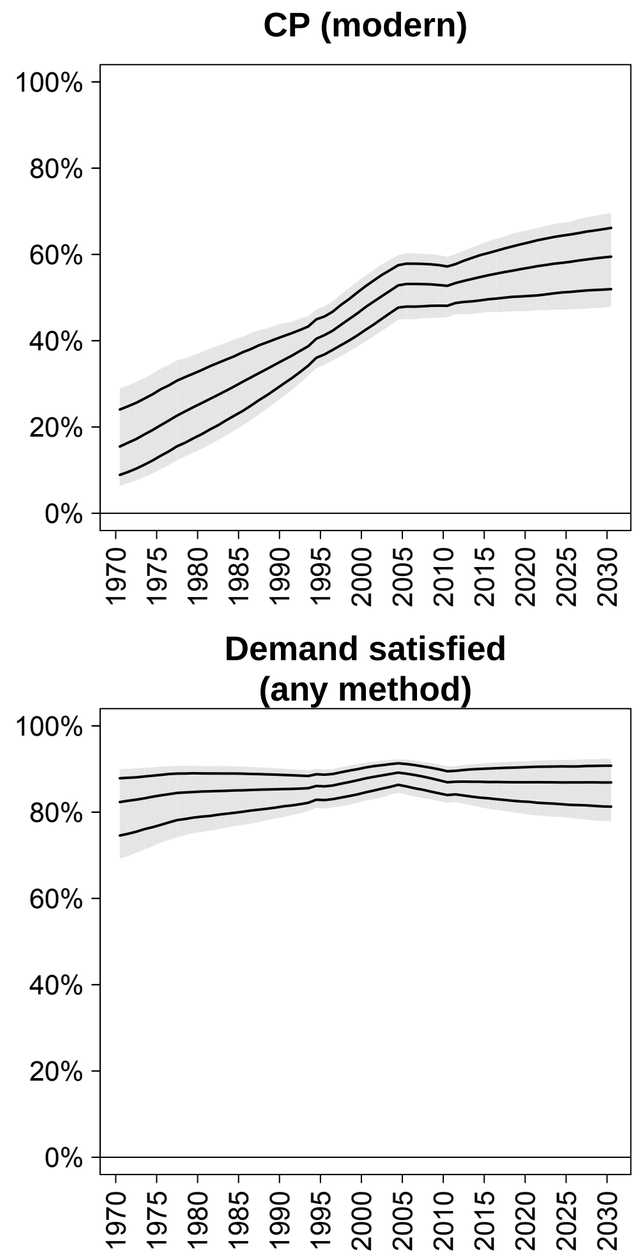
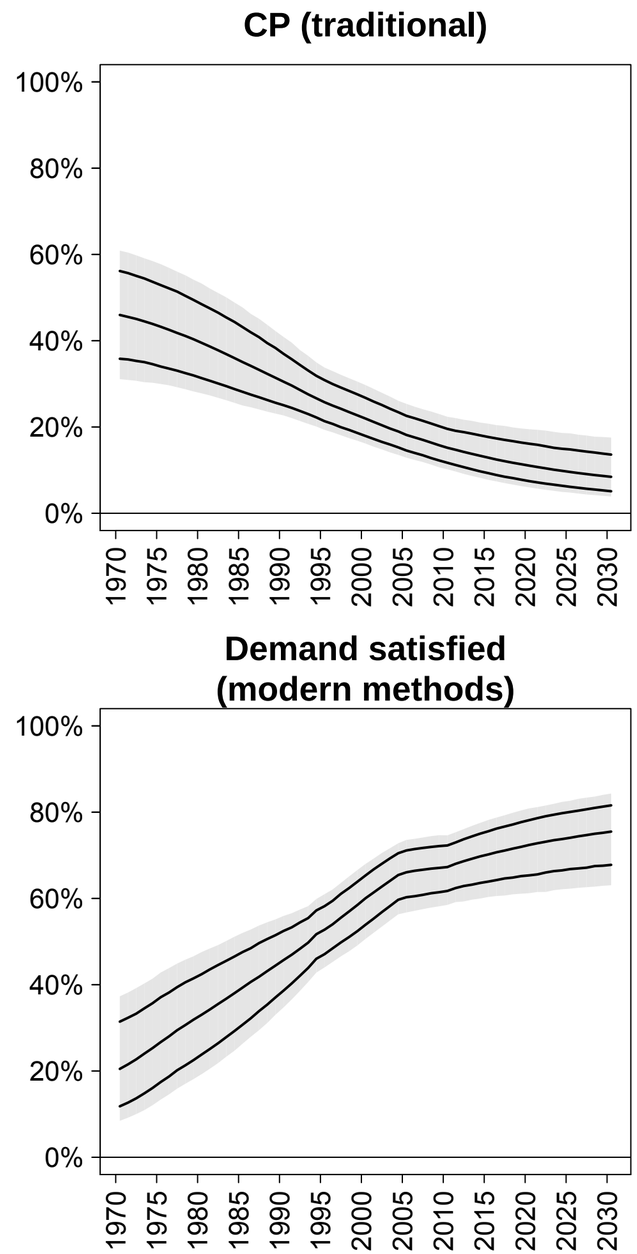
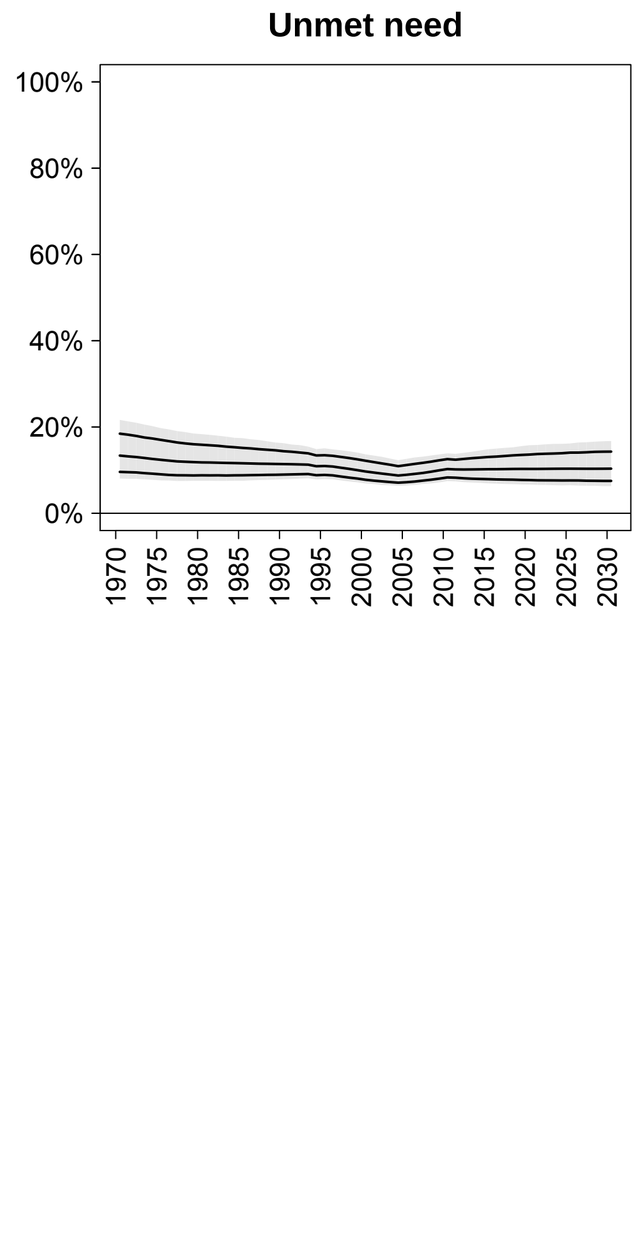
Eastern Europe



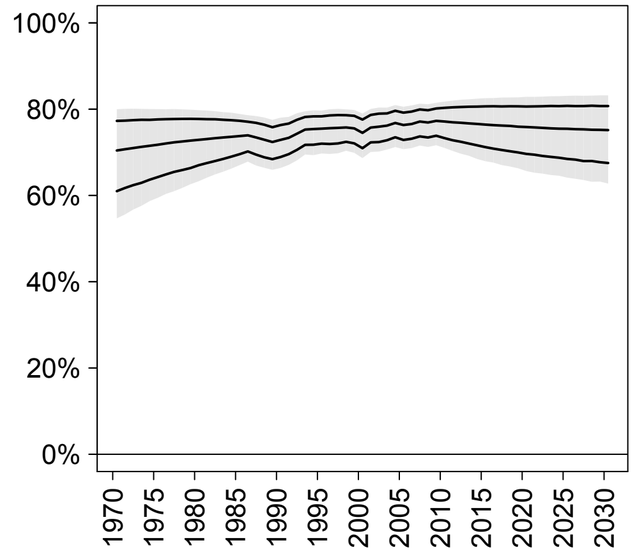




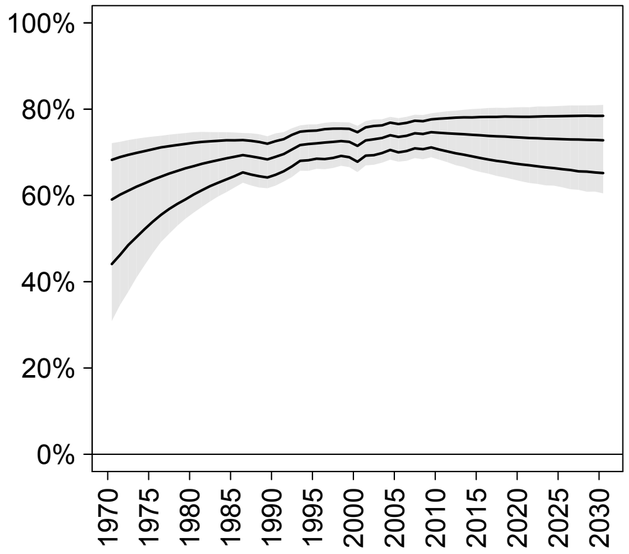


Northern Europe

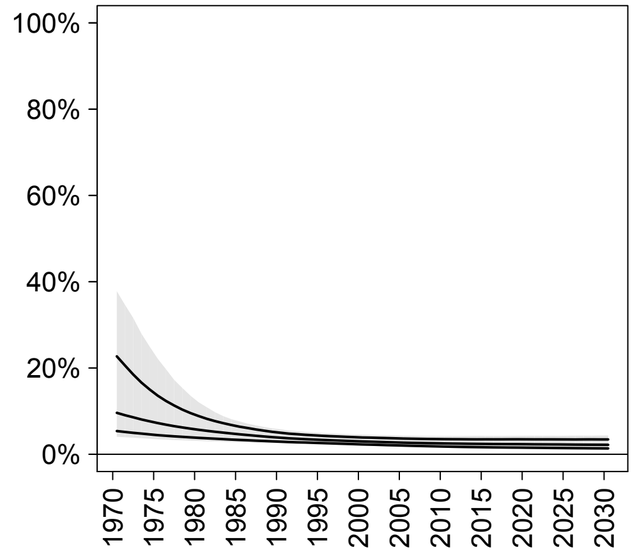
CP (any)



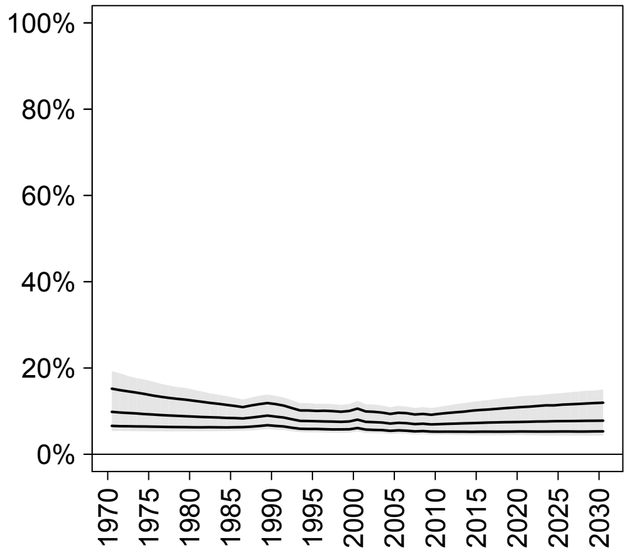
CP (modern)



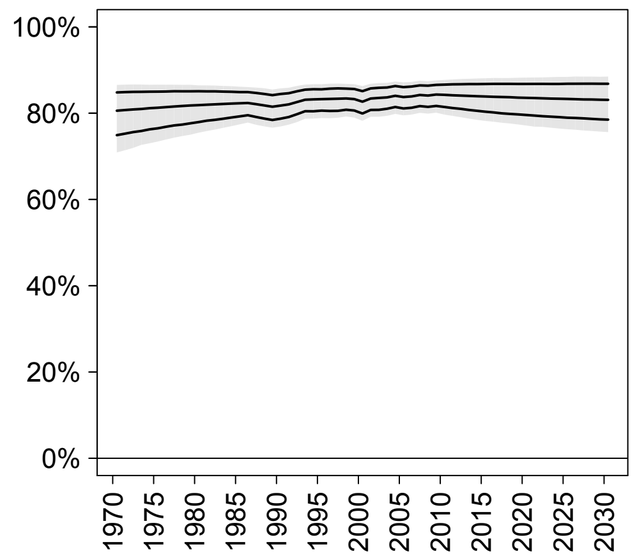
CP (traditional)



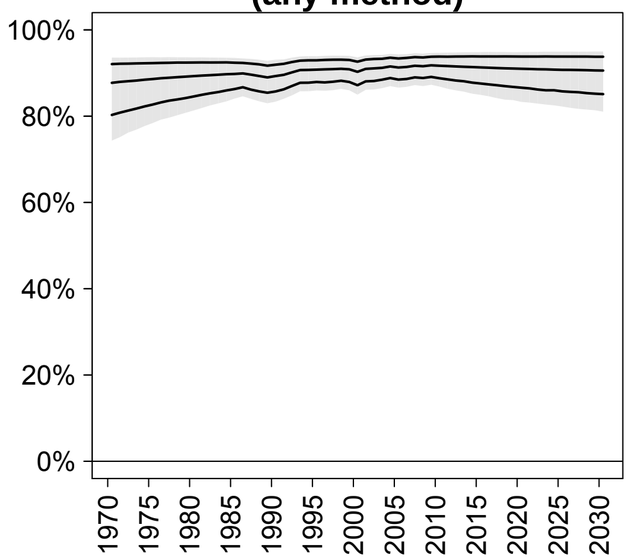
Unmet need



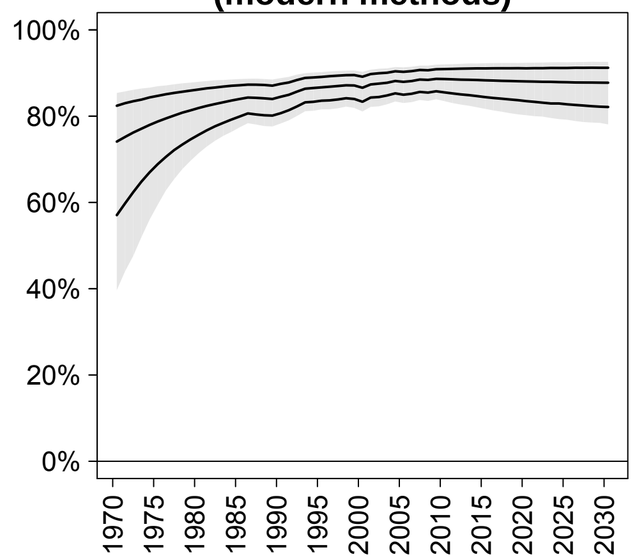
Total demand



Demand satisfied (any method)

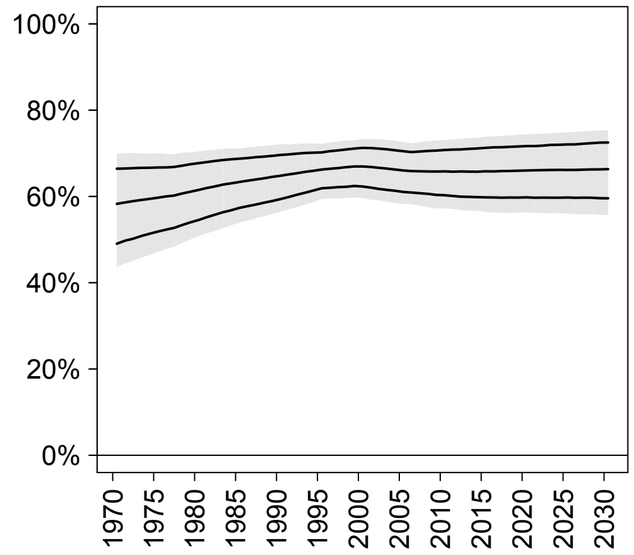


Demand satisfied (modern methods)

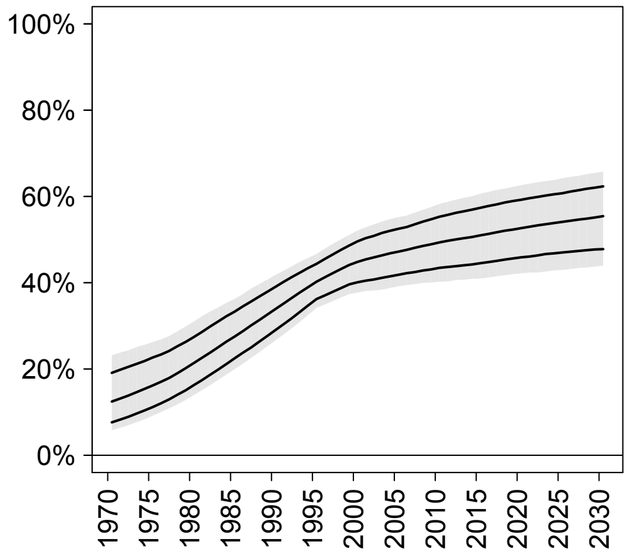


Southern Europe

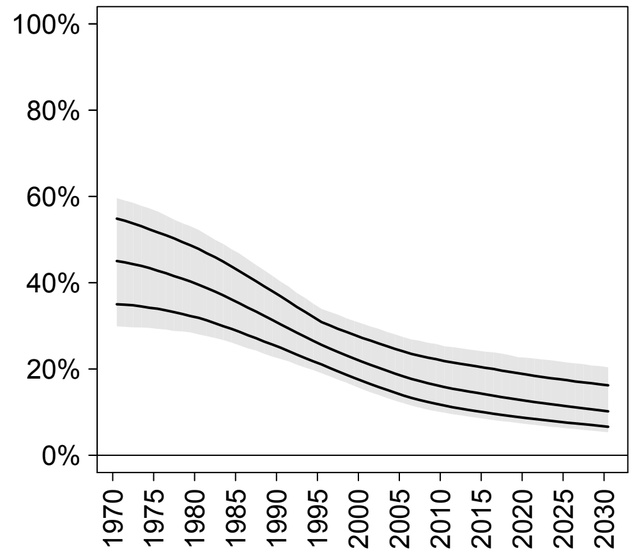
CP (any)



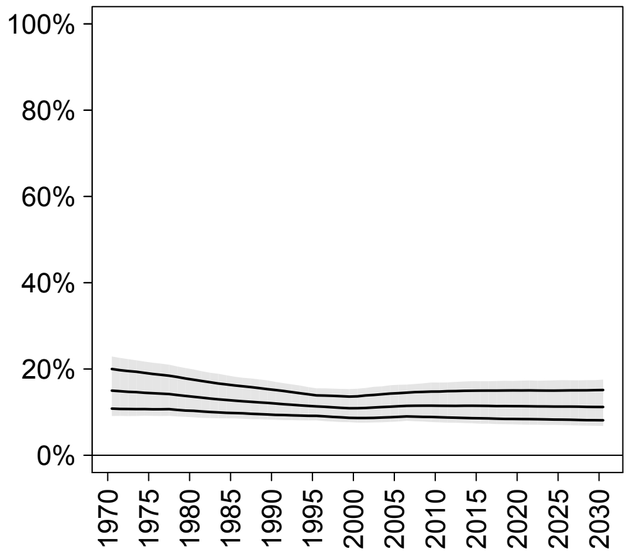
CP (modern)



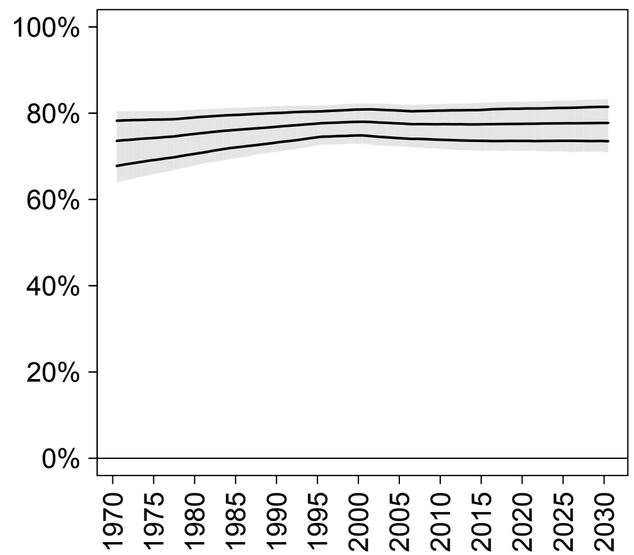
CP (traditional)



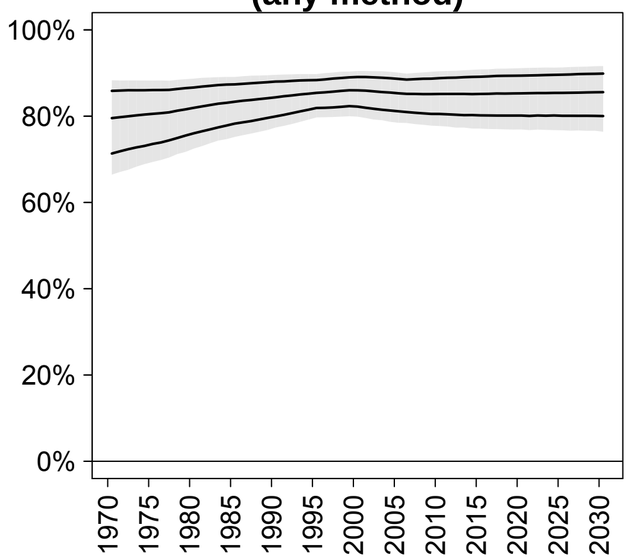
Unmet need



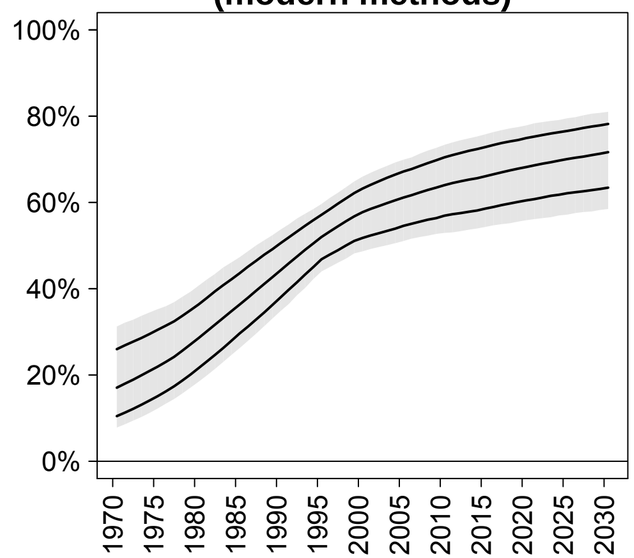
Total demand



Demand satisfied (any method)

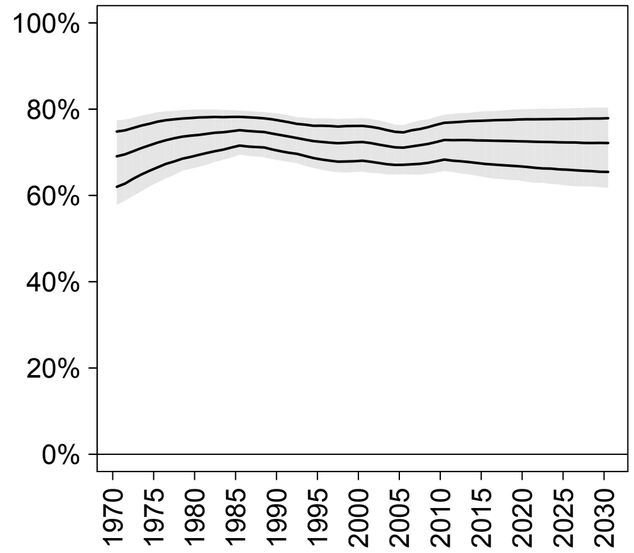


Demand satisfied (modern methods)



Western Europe

CP (any)



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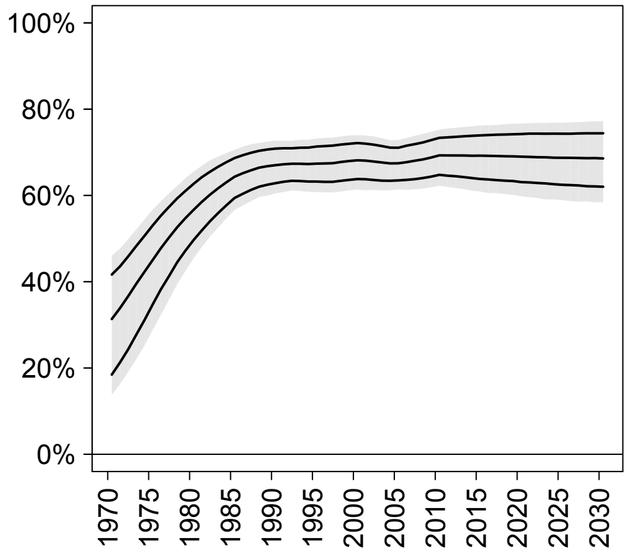
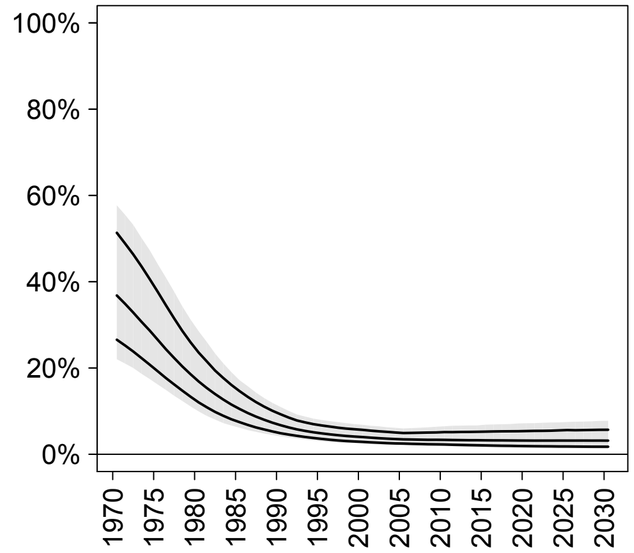
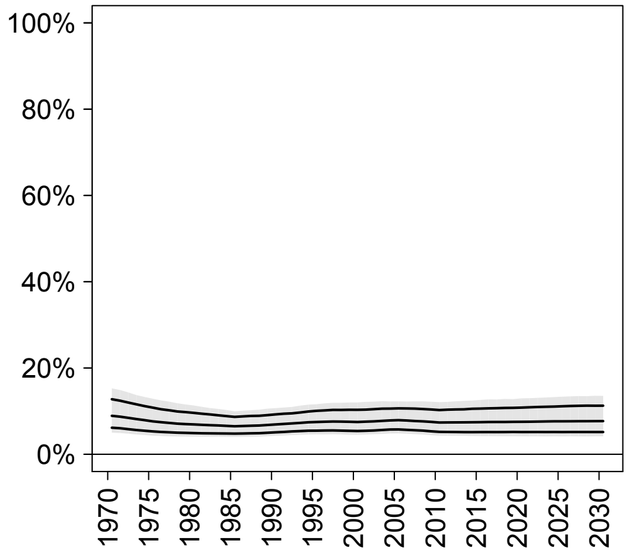


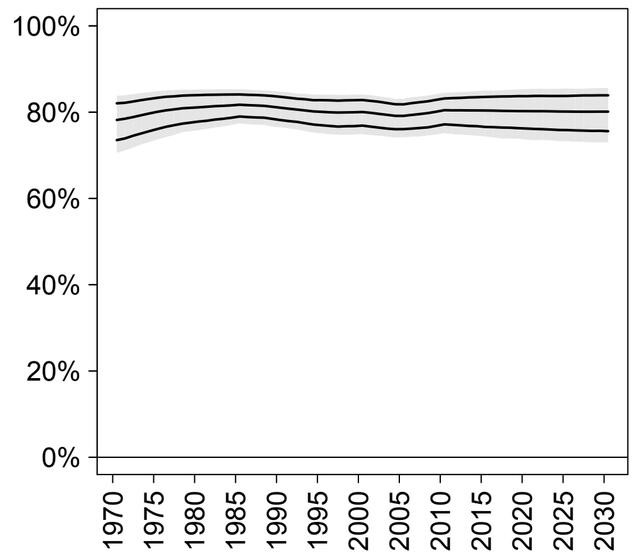
CP (traditional)



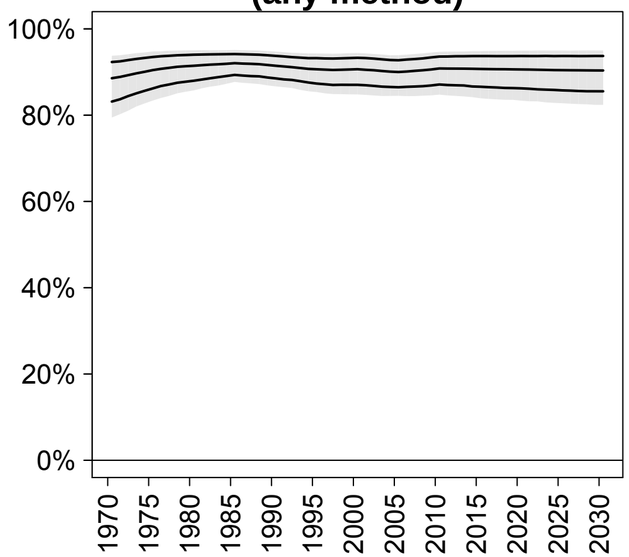
Unmet need



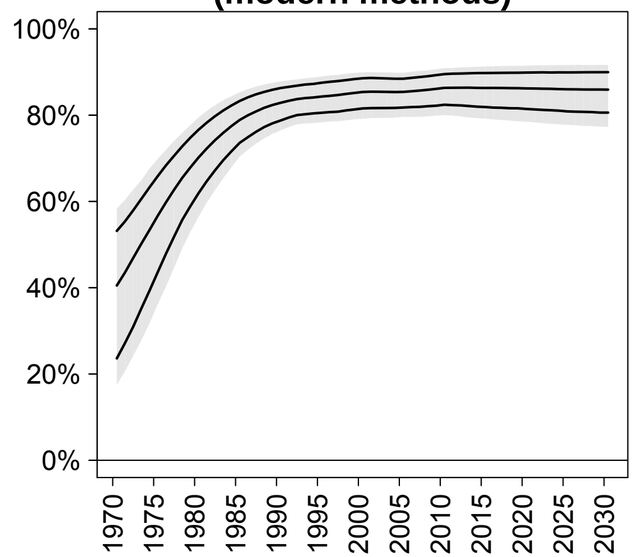
Total demand



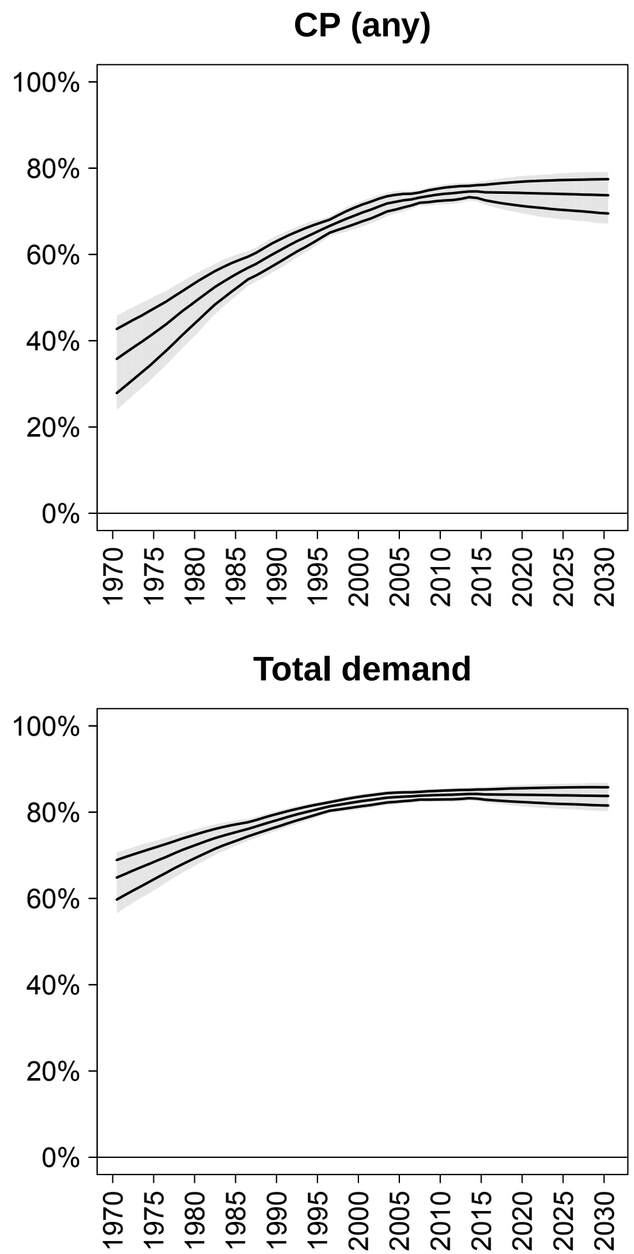
Demand satisfied (any method)

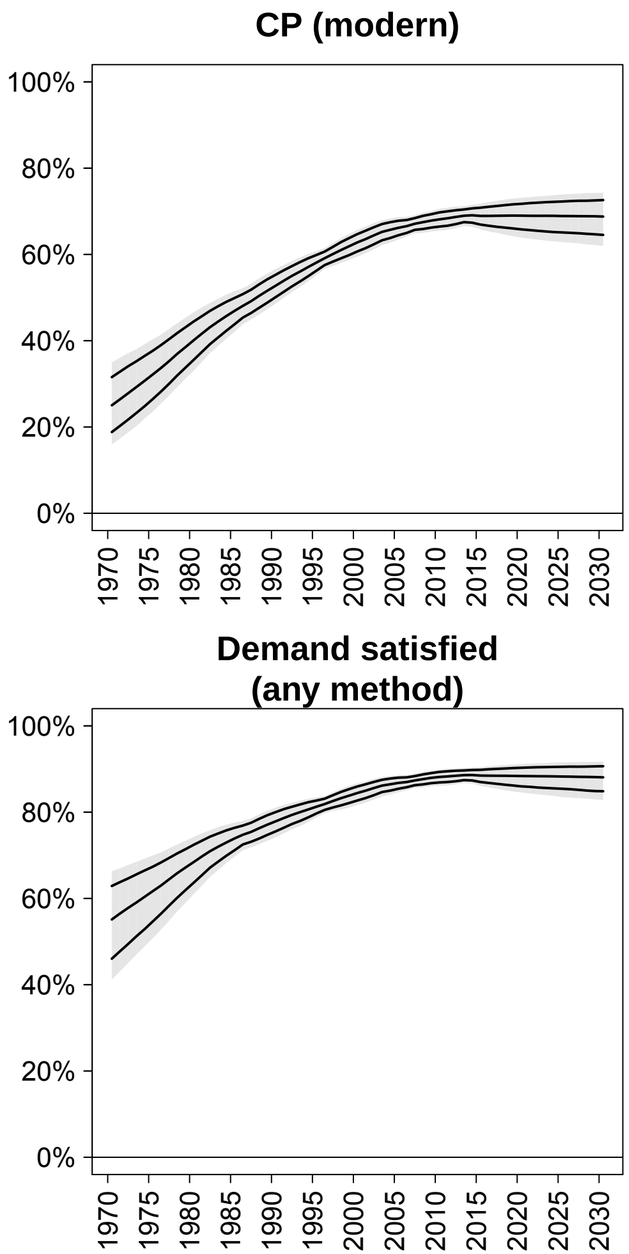


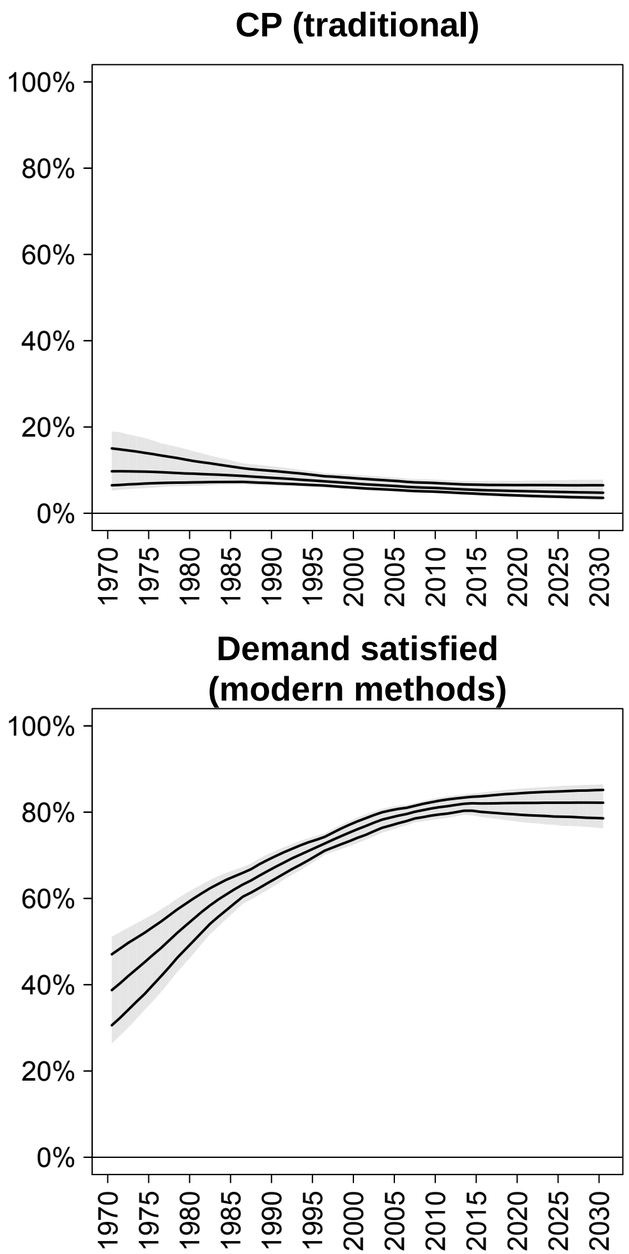
Demand satisfied (modern methods)

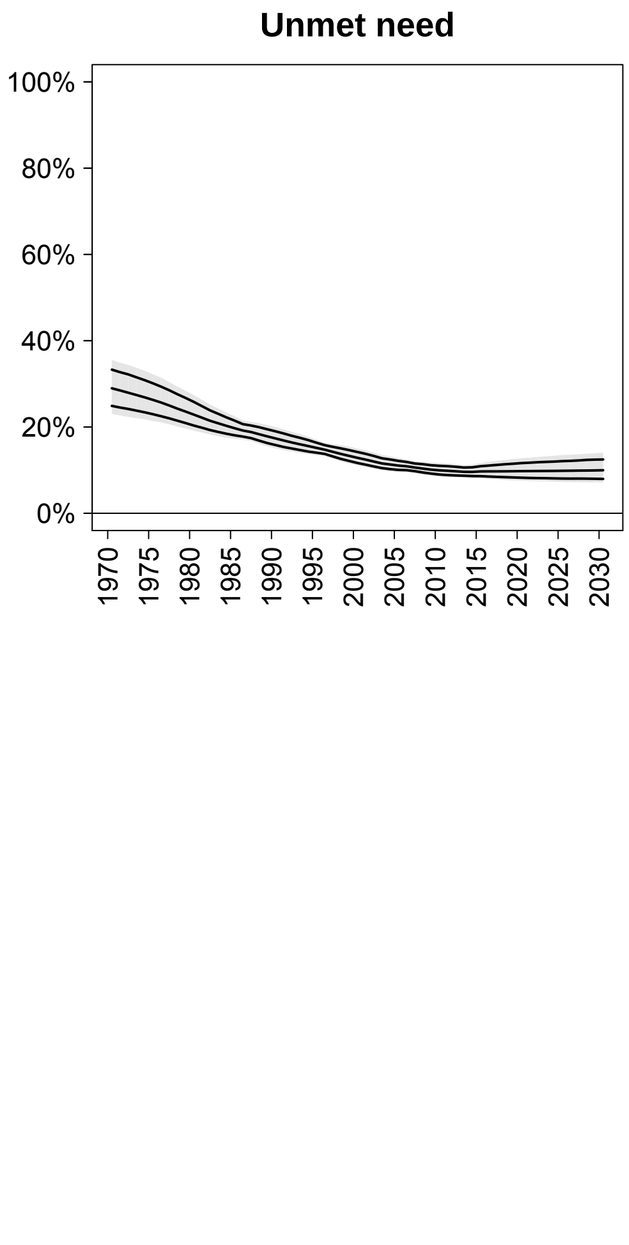


Latin America and the Caribbean

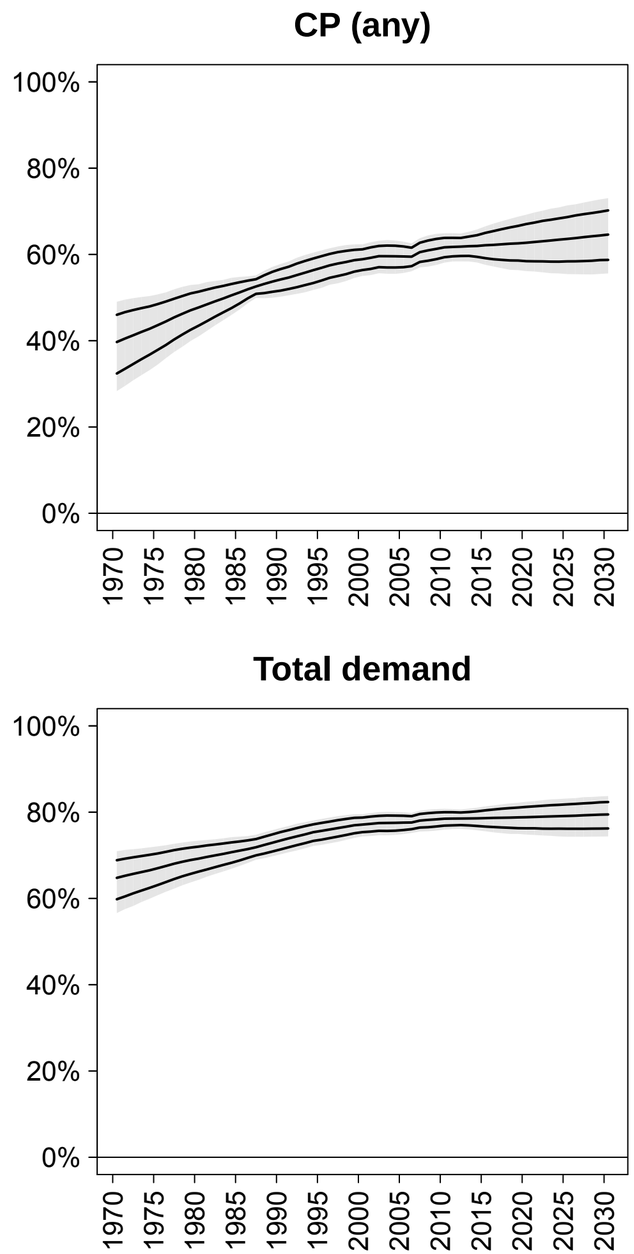








Caribbean


CP (any)
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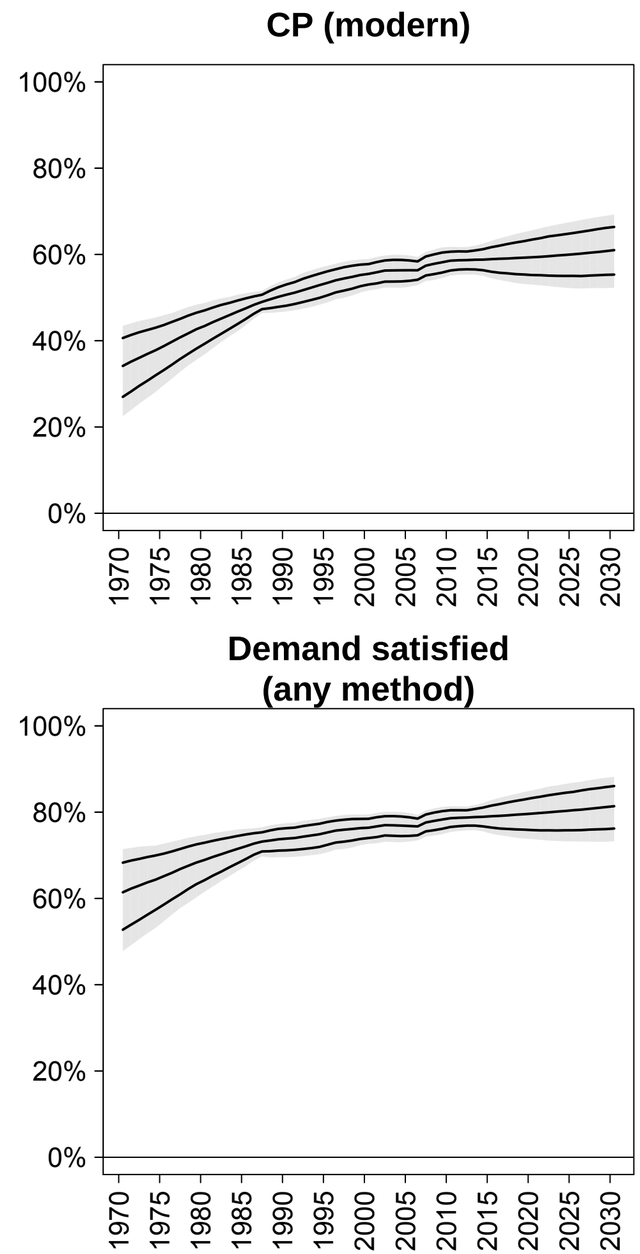
CP (modern)
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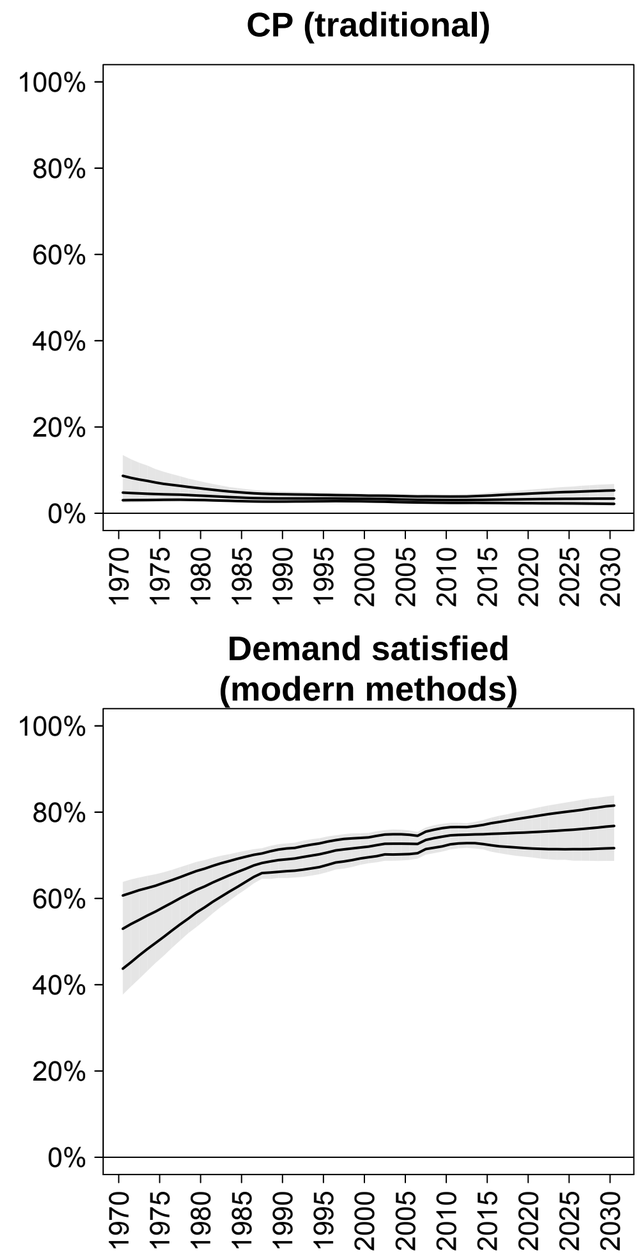
CP (traditional)
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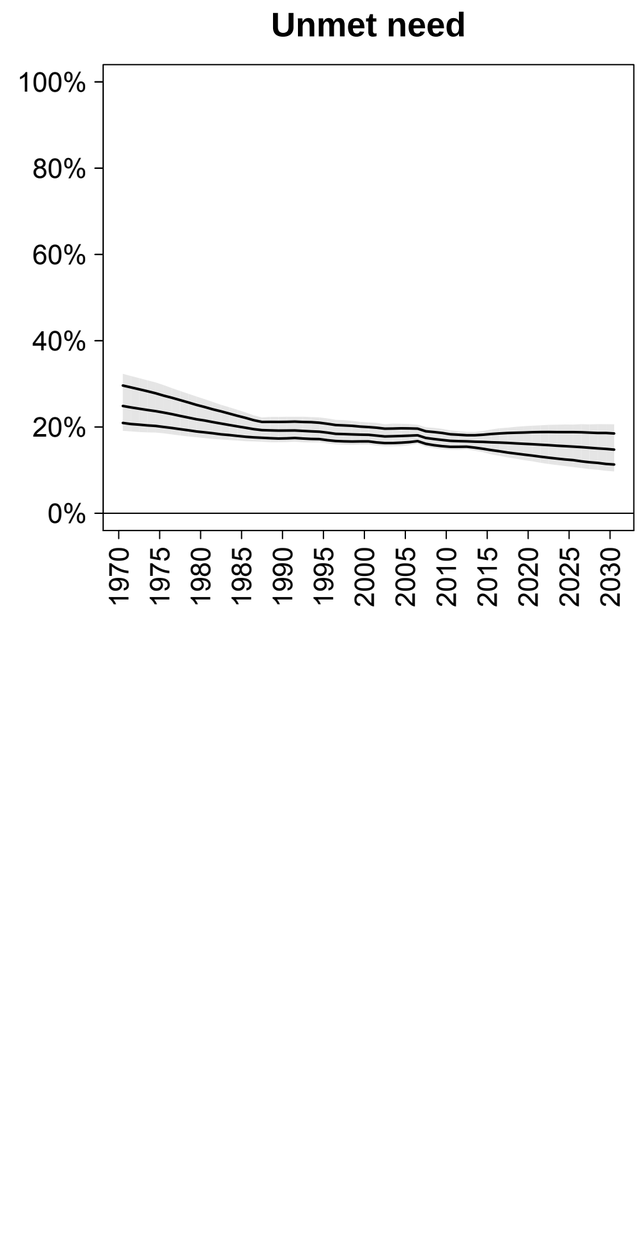
Unmet need
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Total demand
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Demand satisfied
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Demand satisfied
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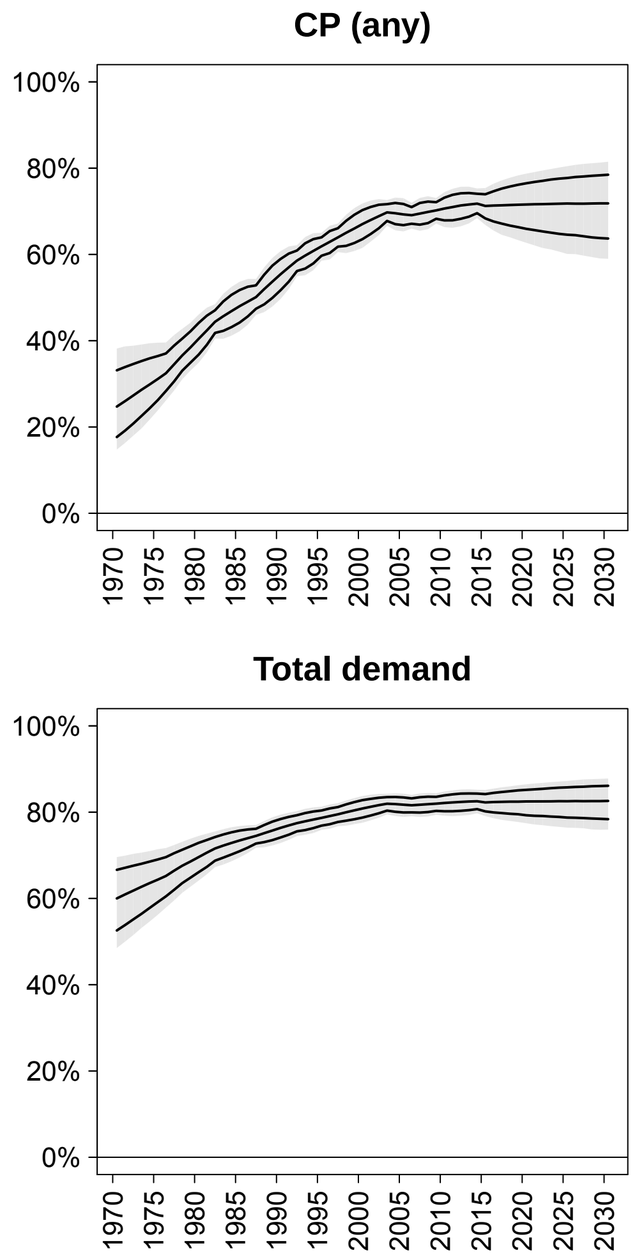
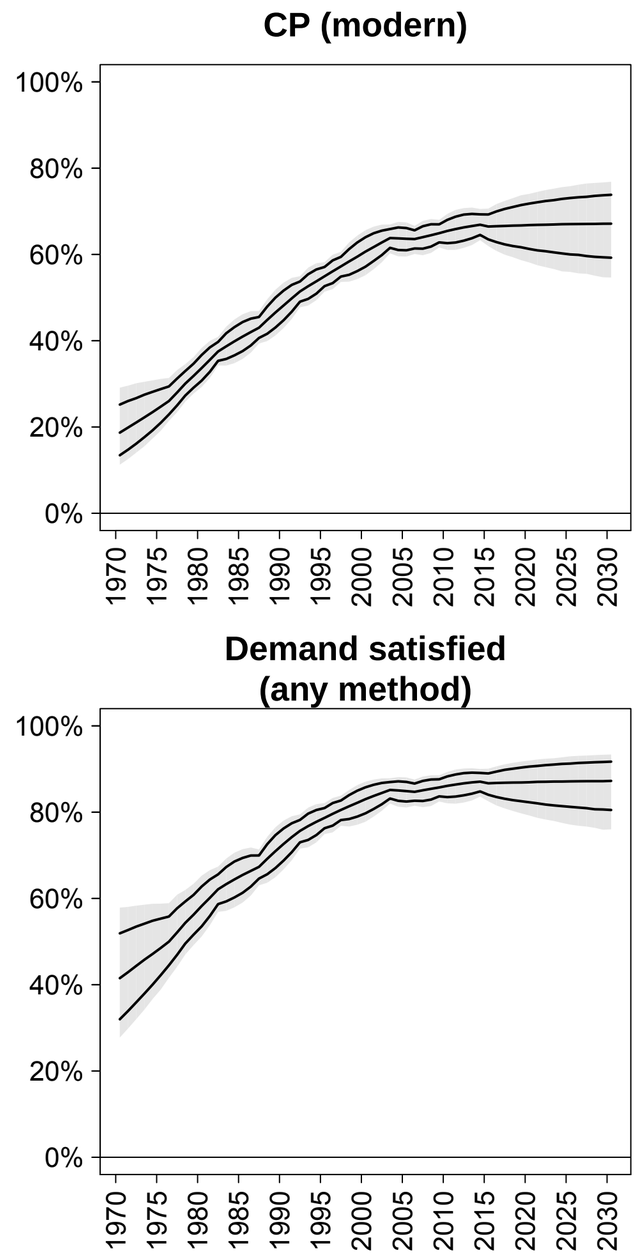
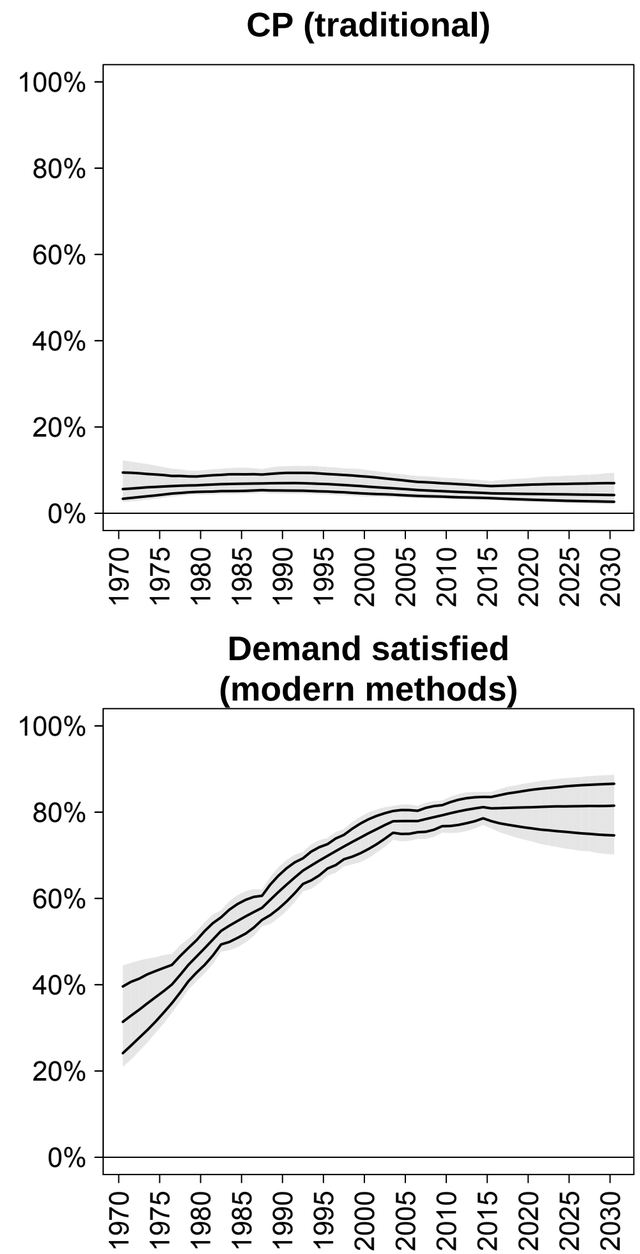
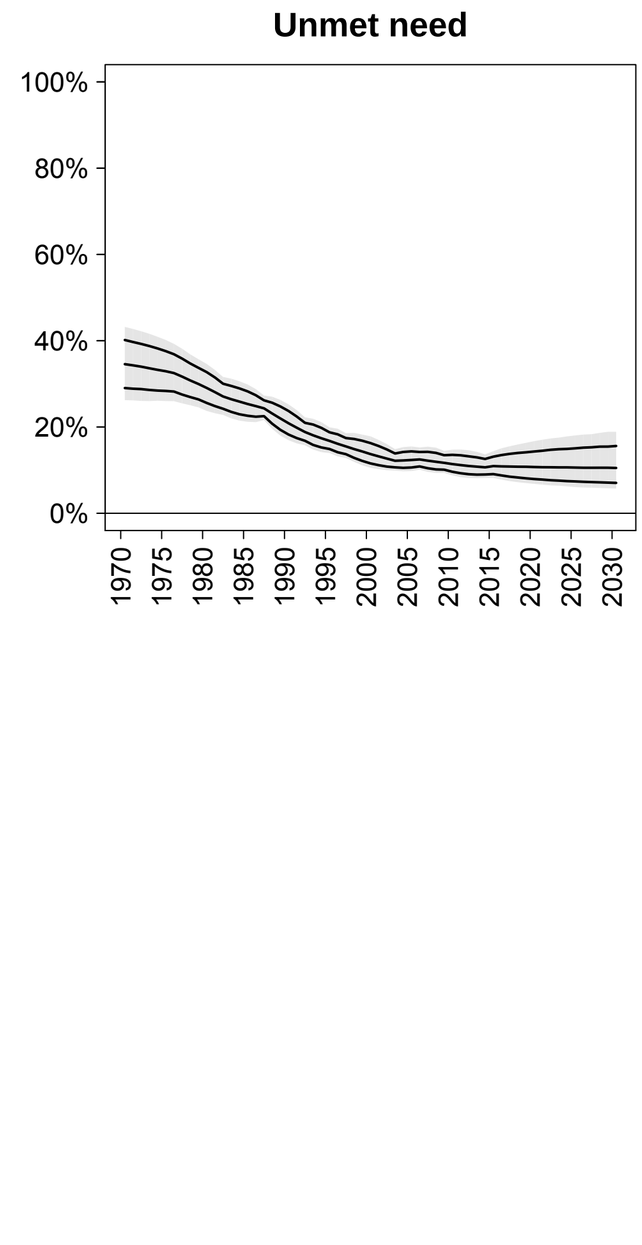
Central America



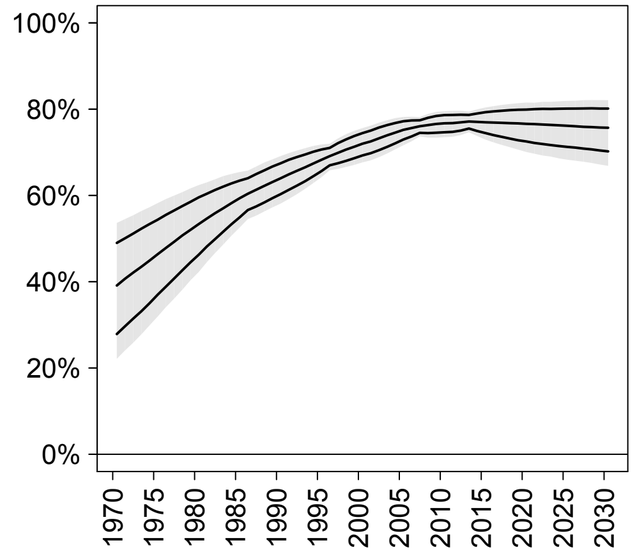




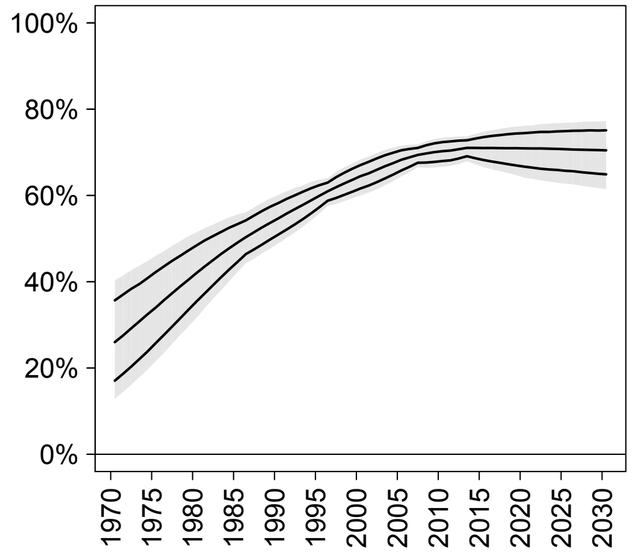


South America

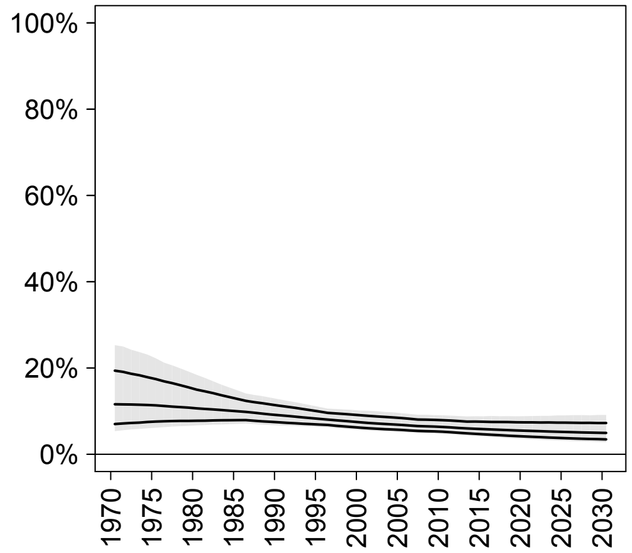
CP (any)



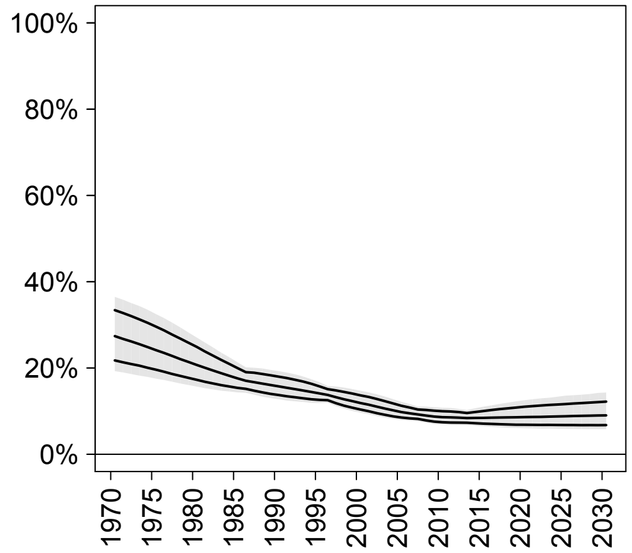
CP (modern)



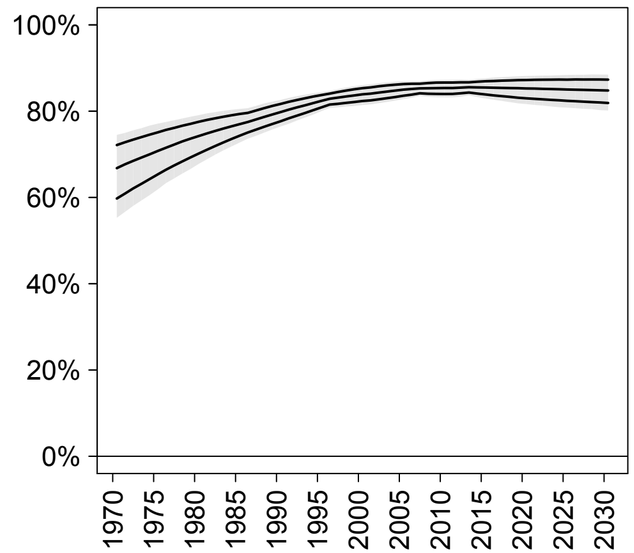
CP (traditional)



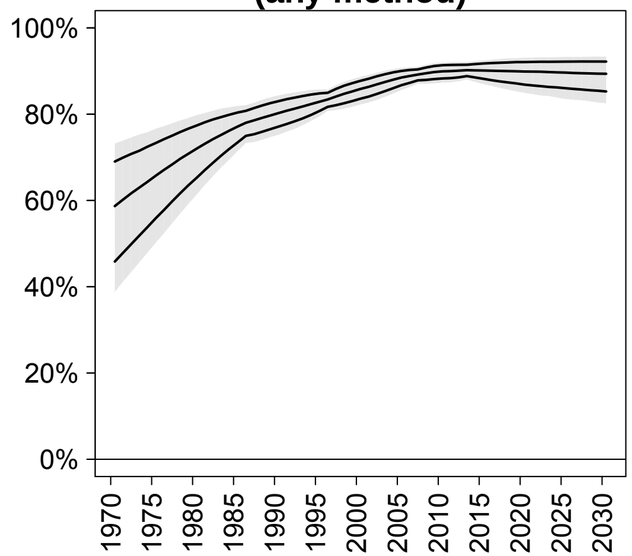
Unmet need



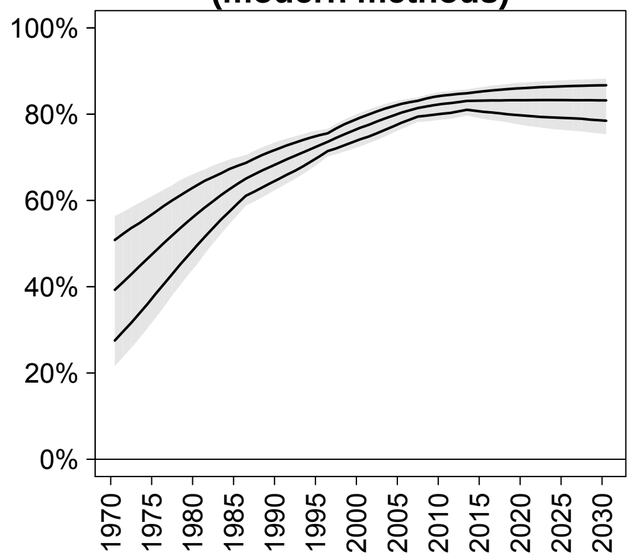
Total demand



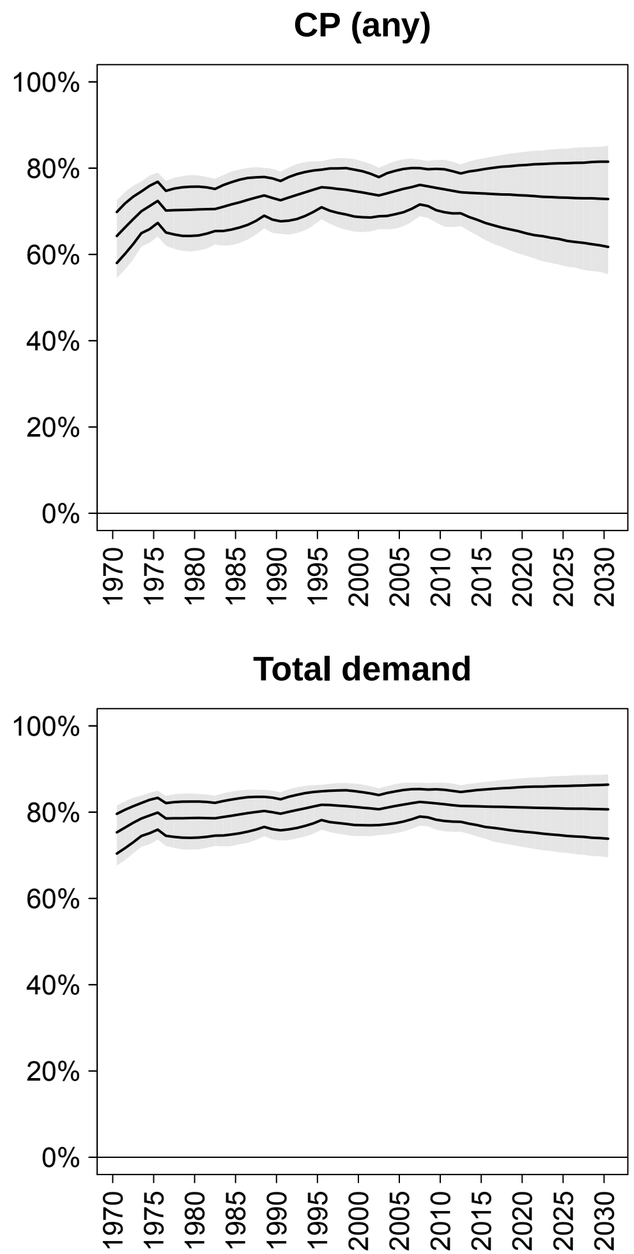
Demand satisfied (any method)

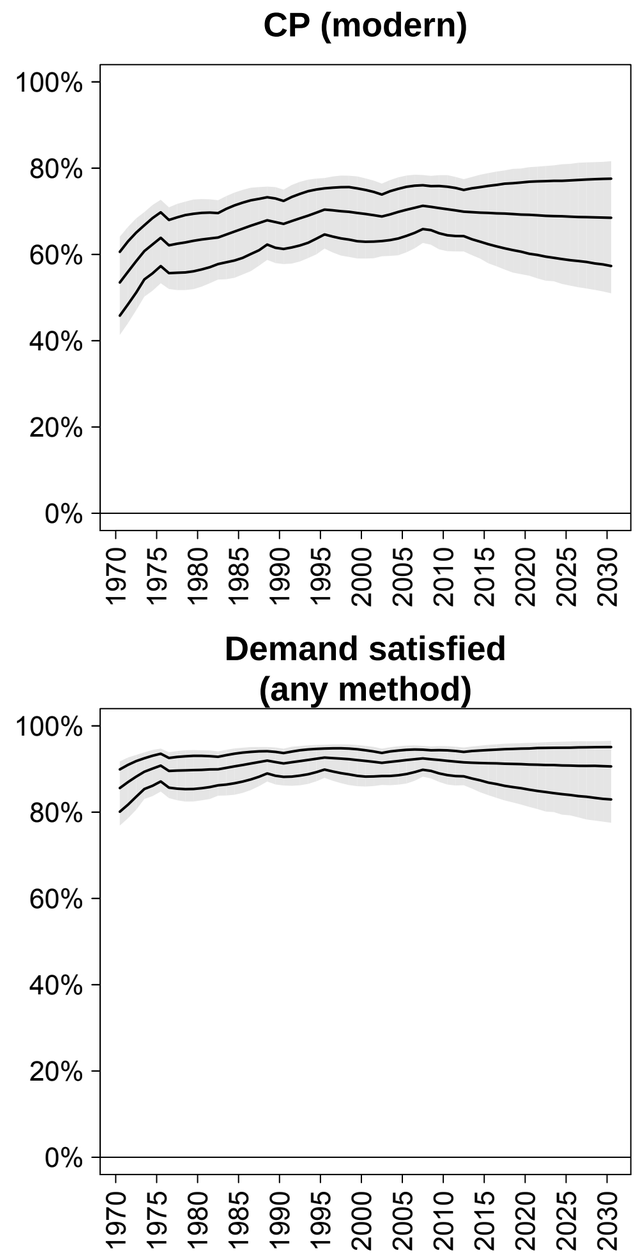


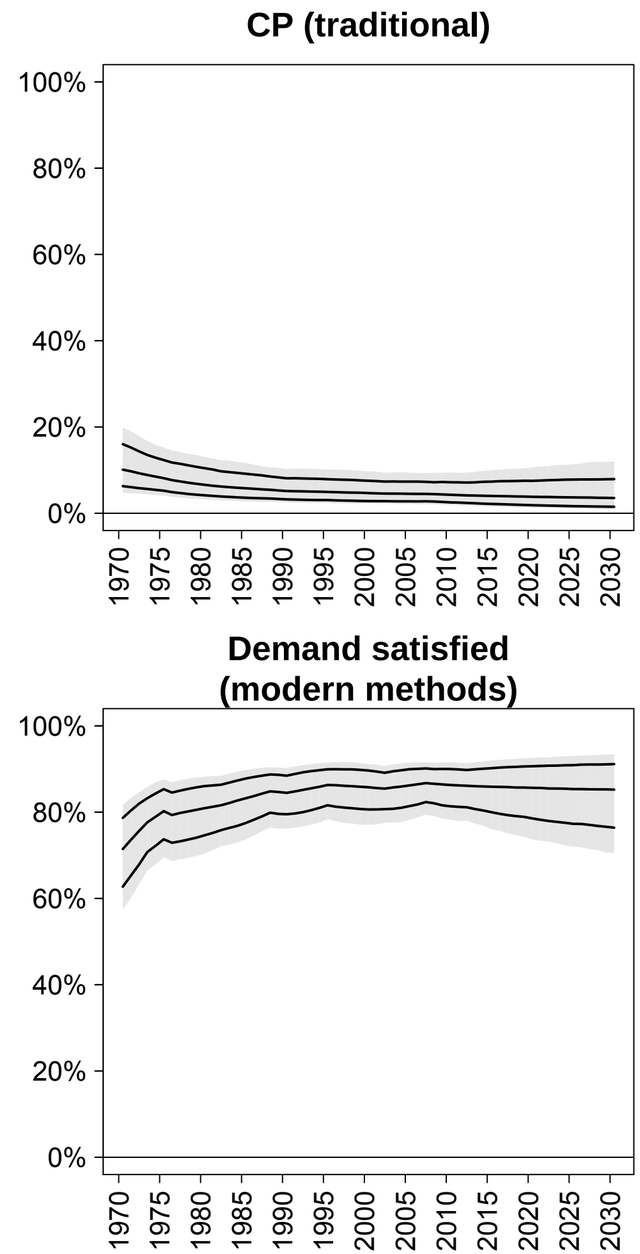
Demand satisfied (modern methods)

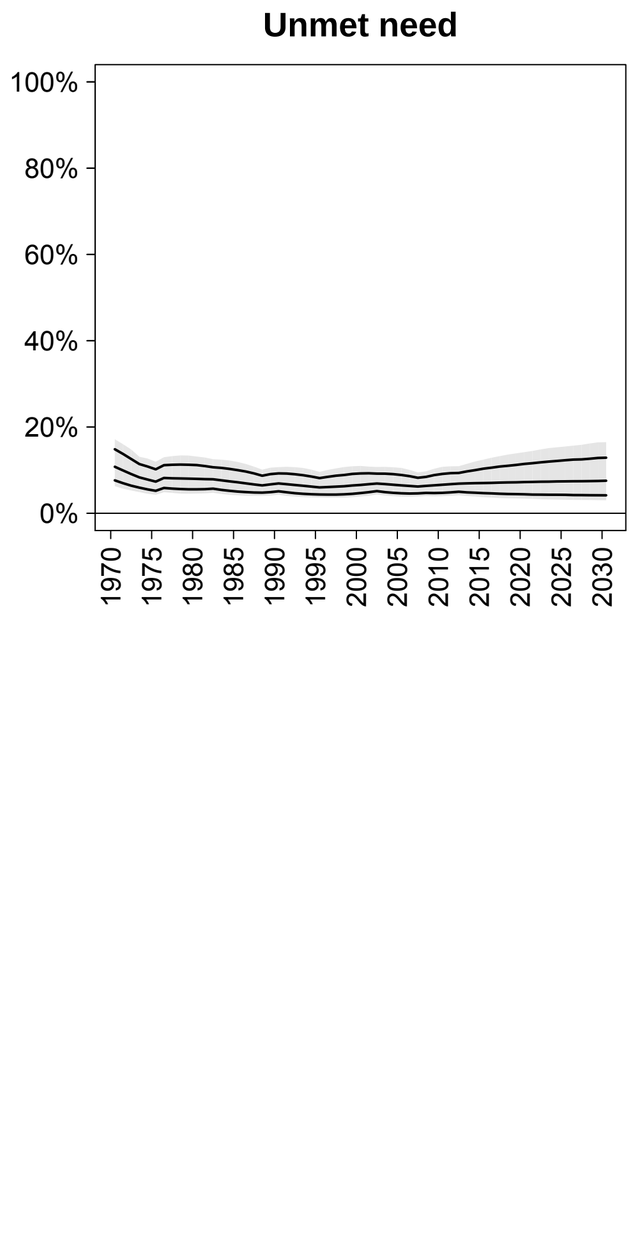


Northern America

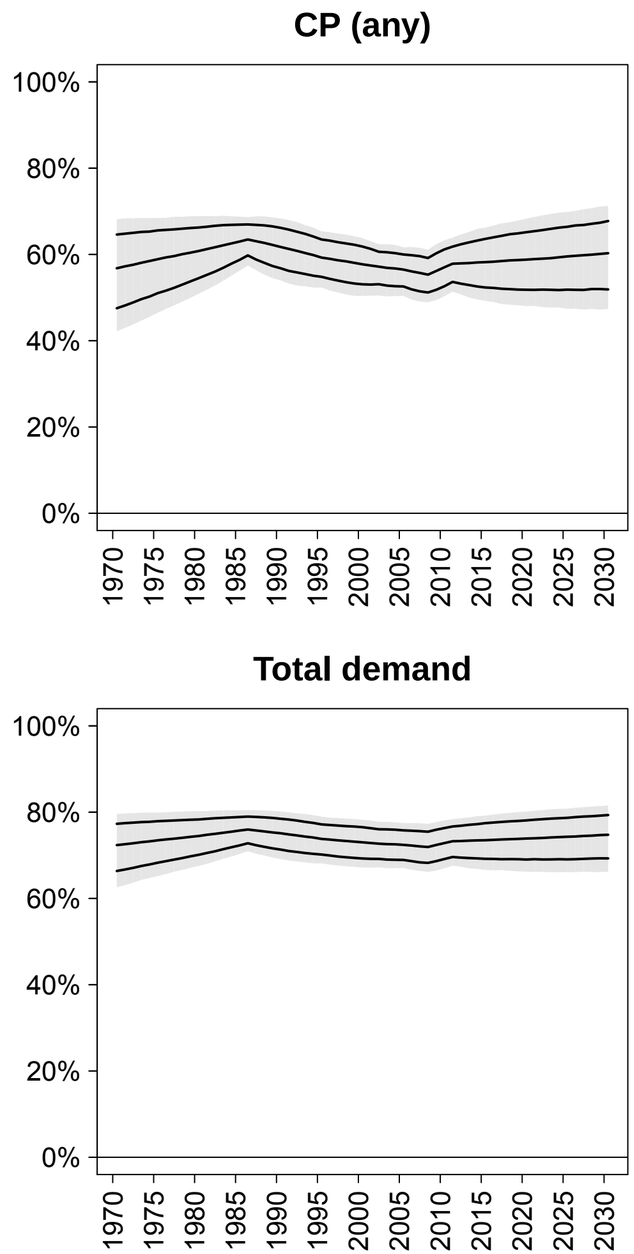








Oceania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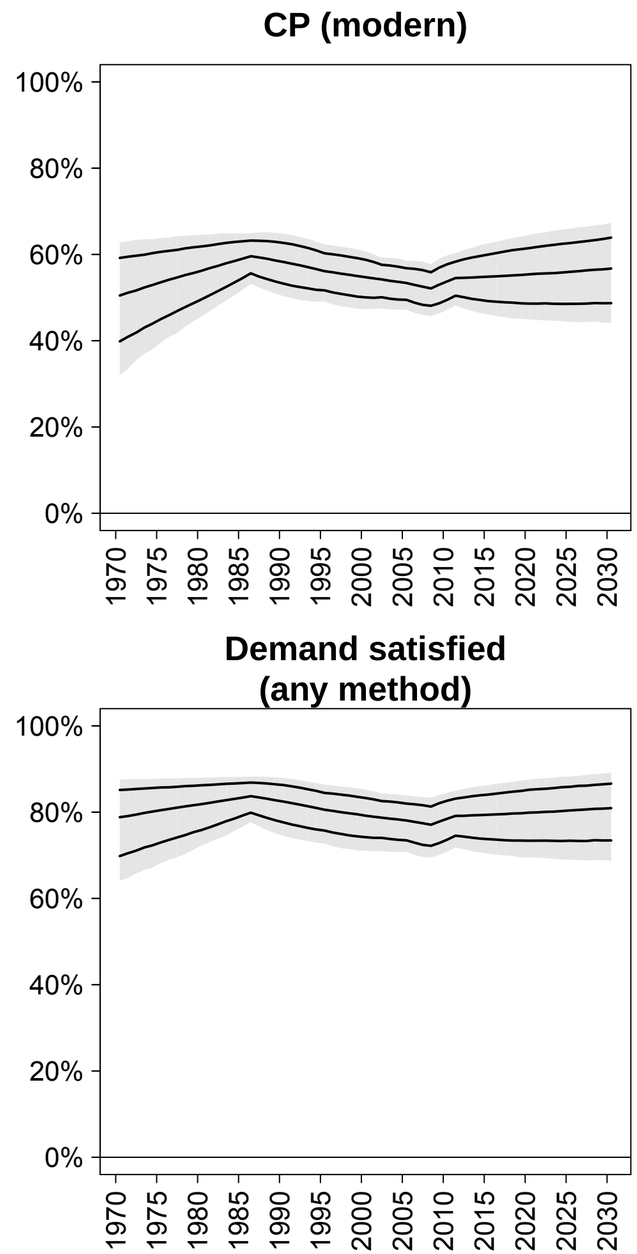
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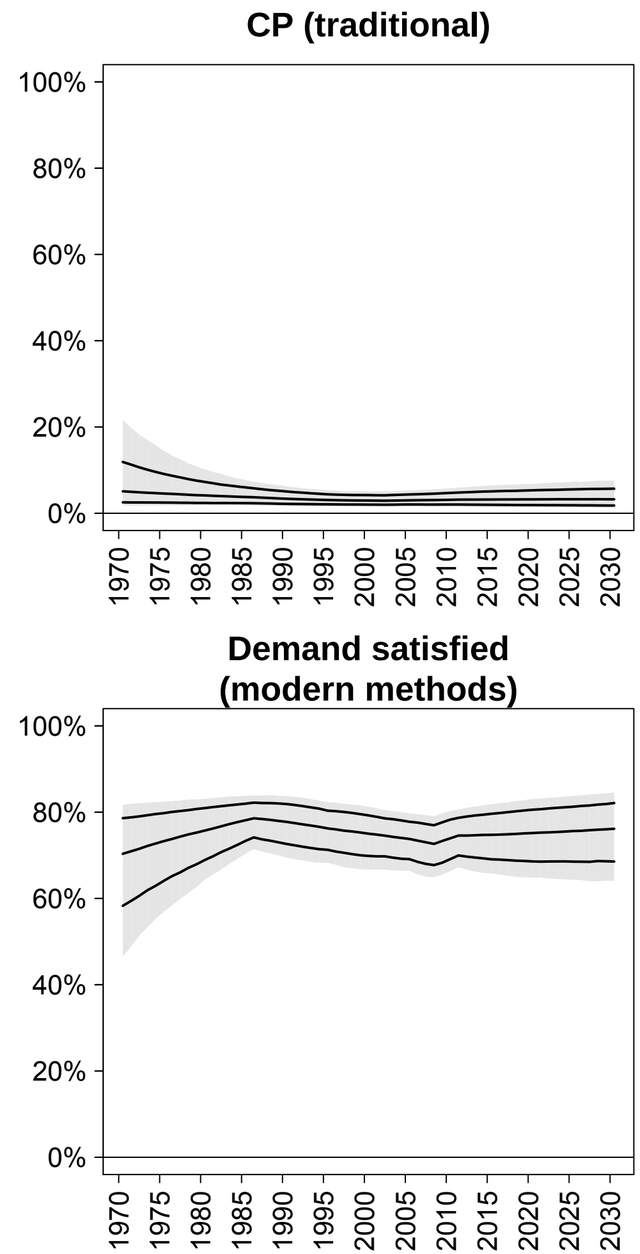
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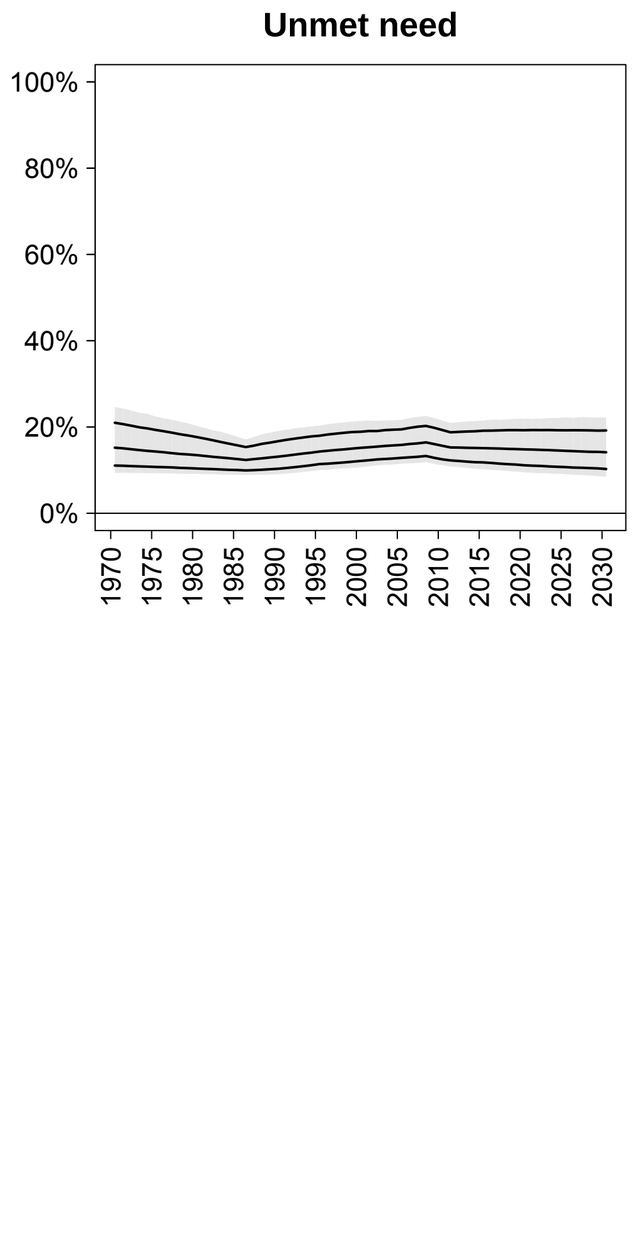
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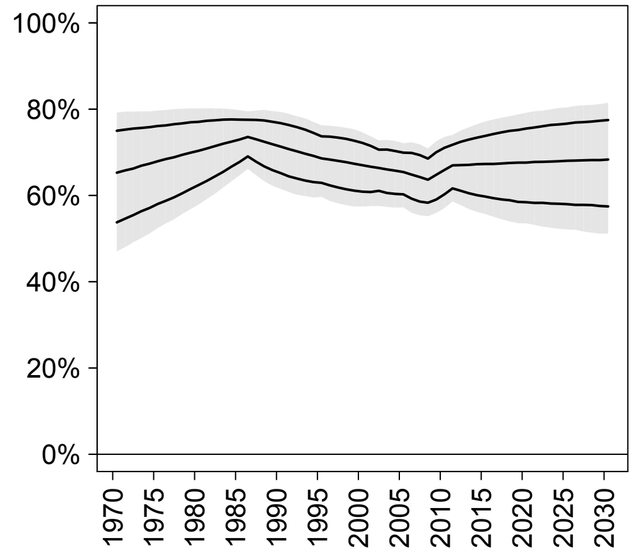
Australia and New Zealand

CP (any)



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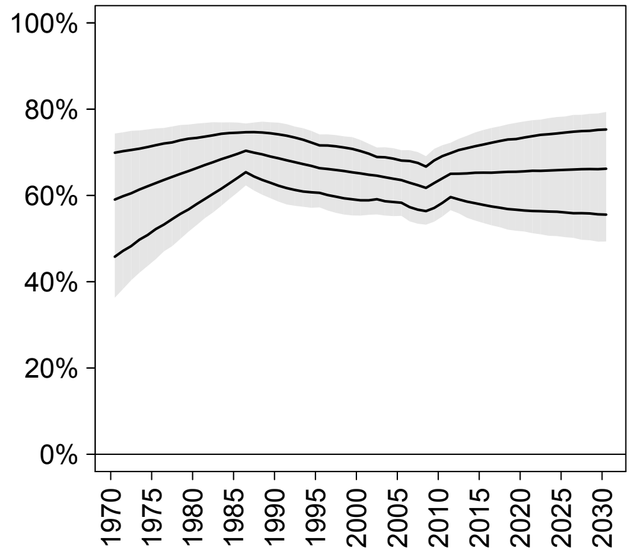

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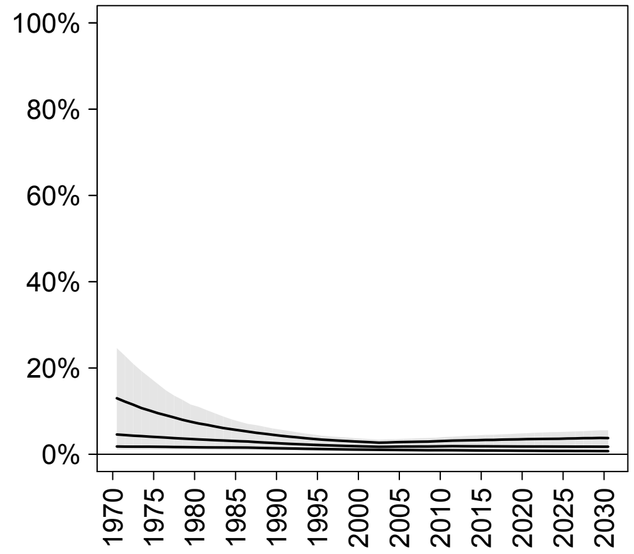

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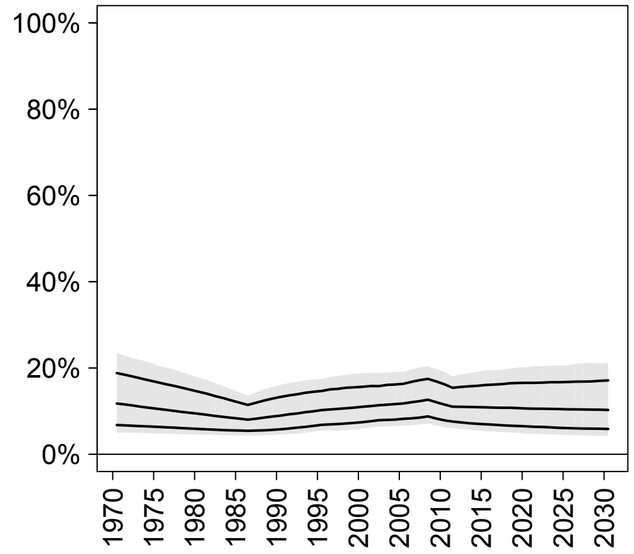
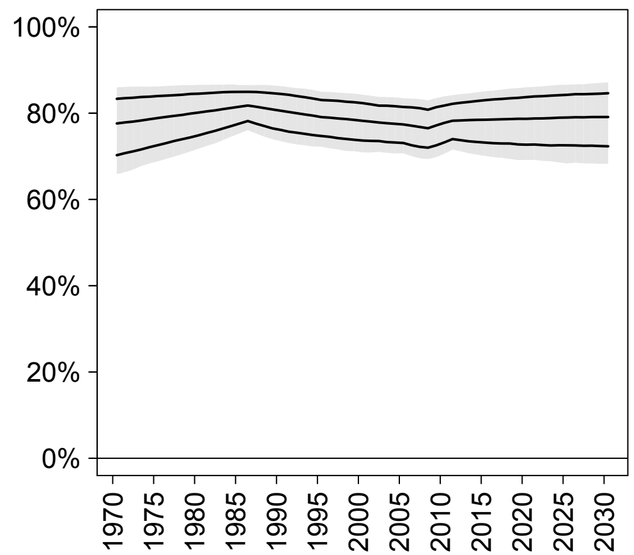
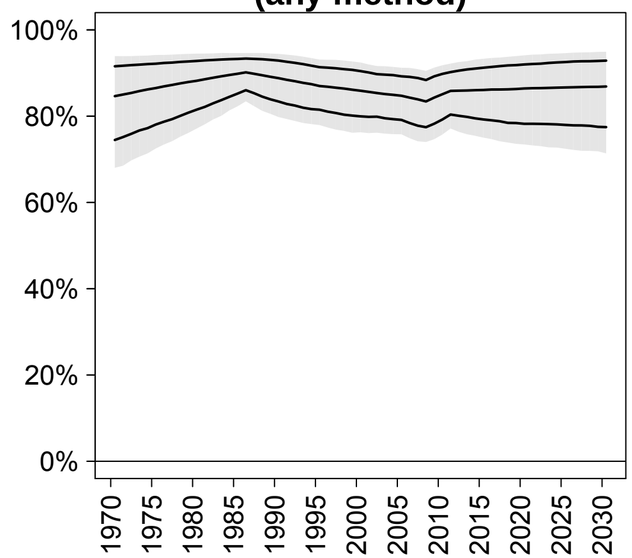


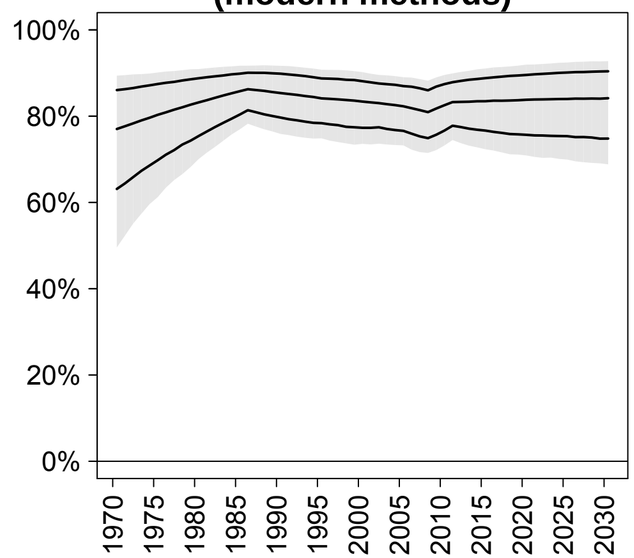
Total demand



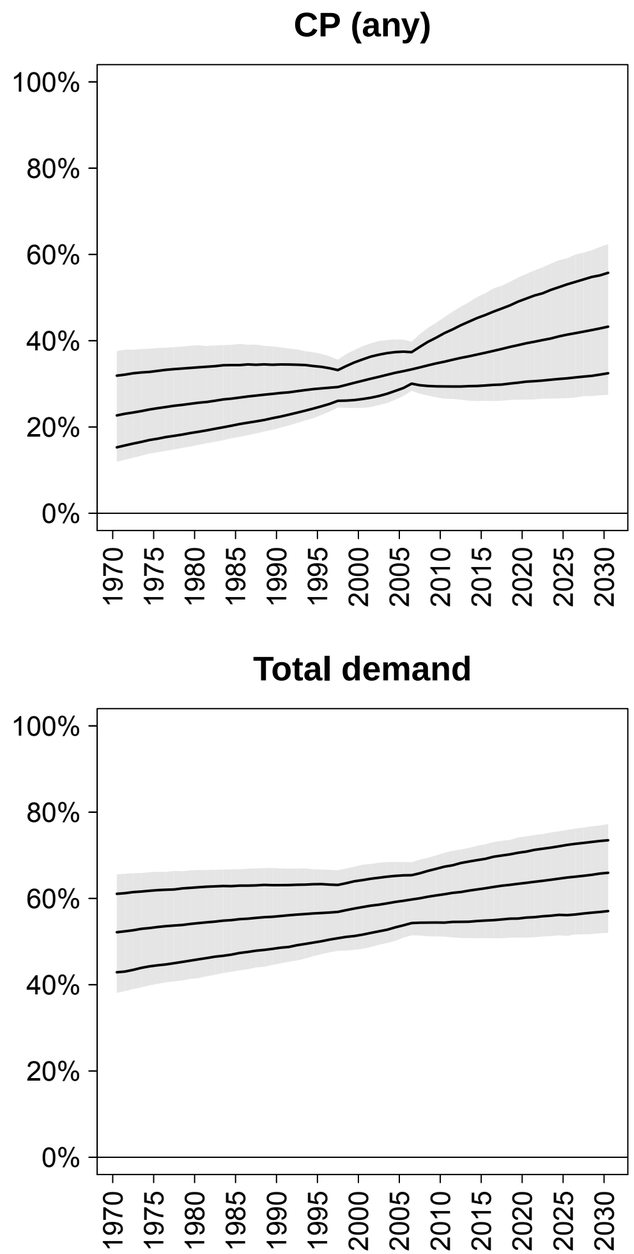
Demand satisfied (any method)

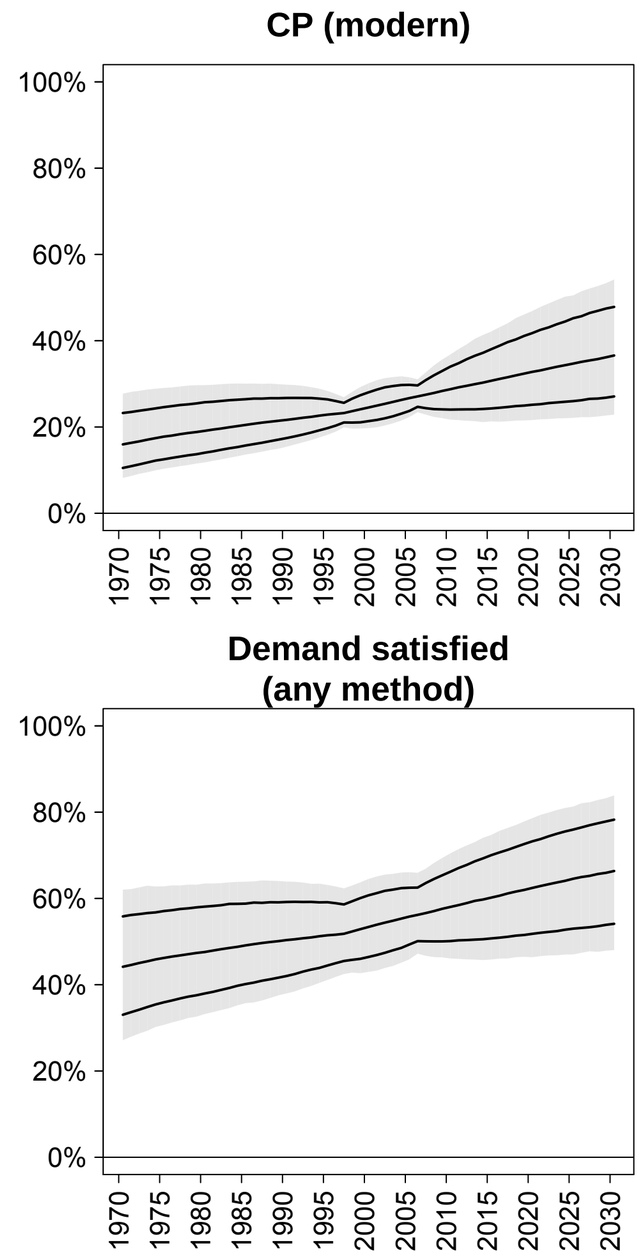


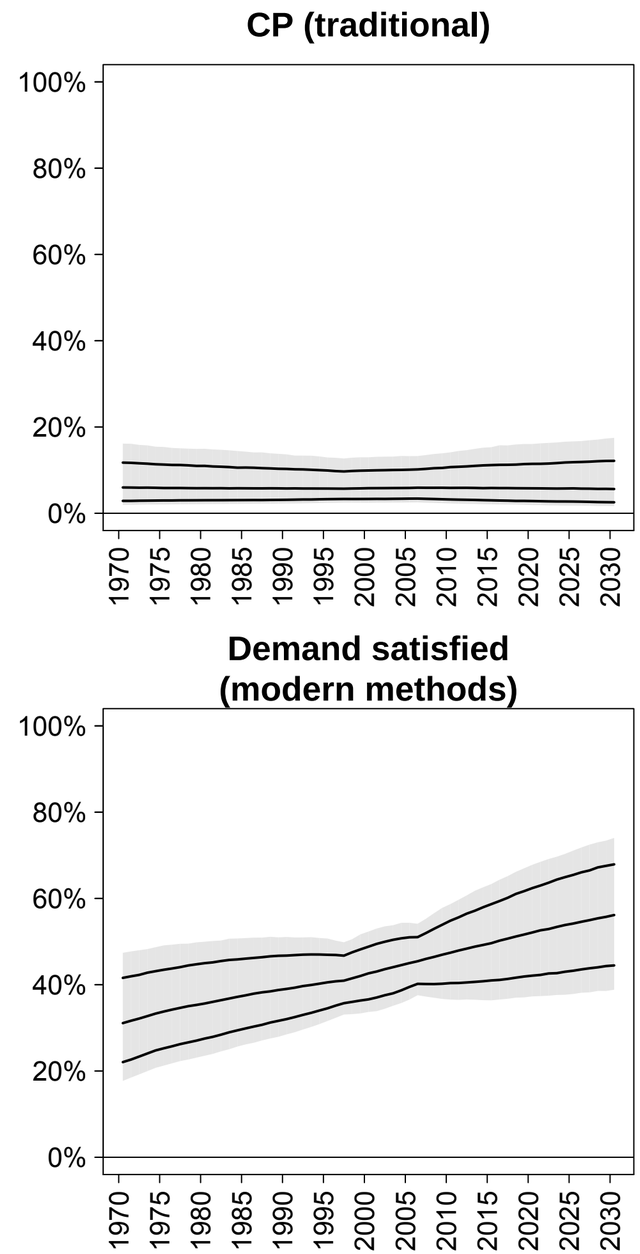
Demand satisfied (modern methods)

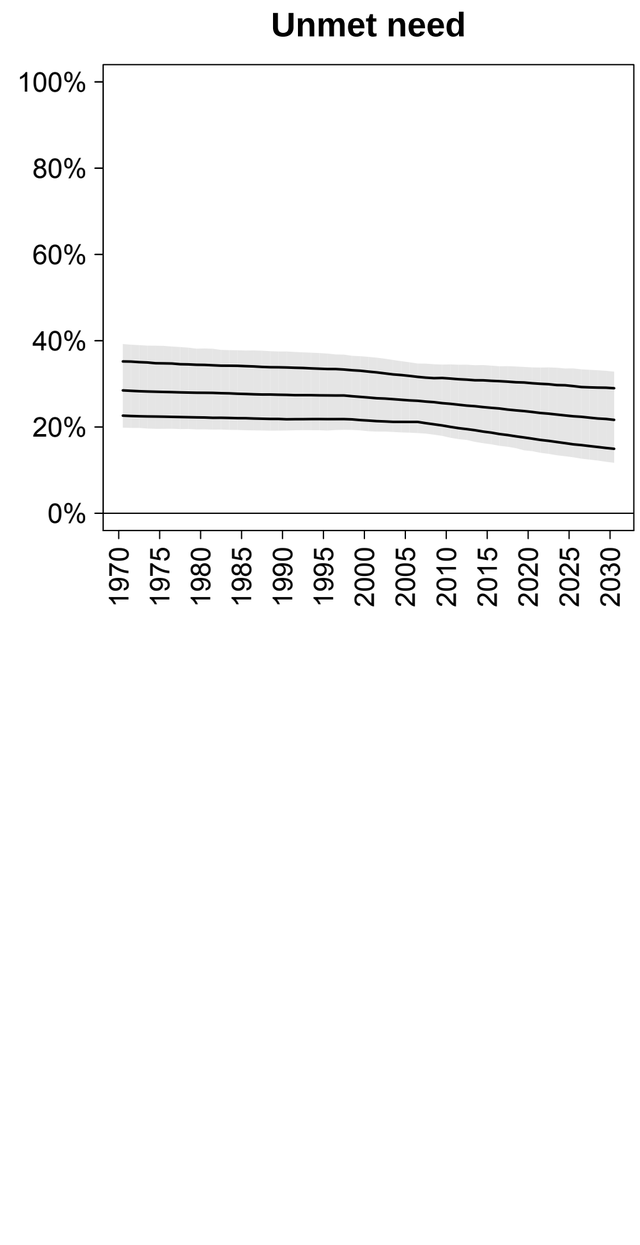


Melanesia/Micronesia/Polynesia

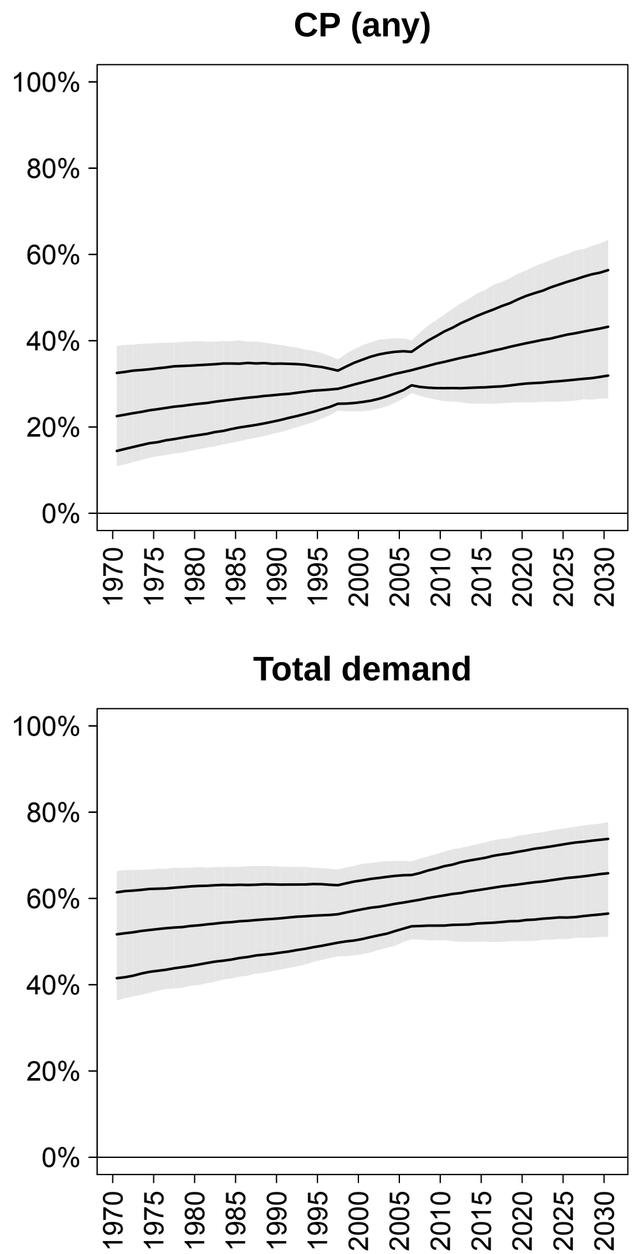








Melanesia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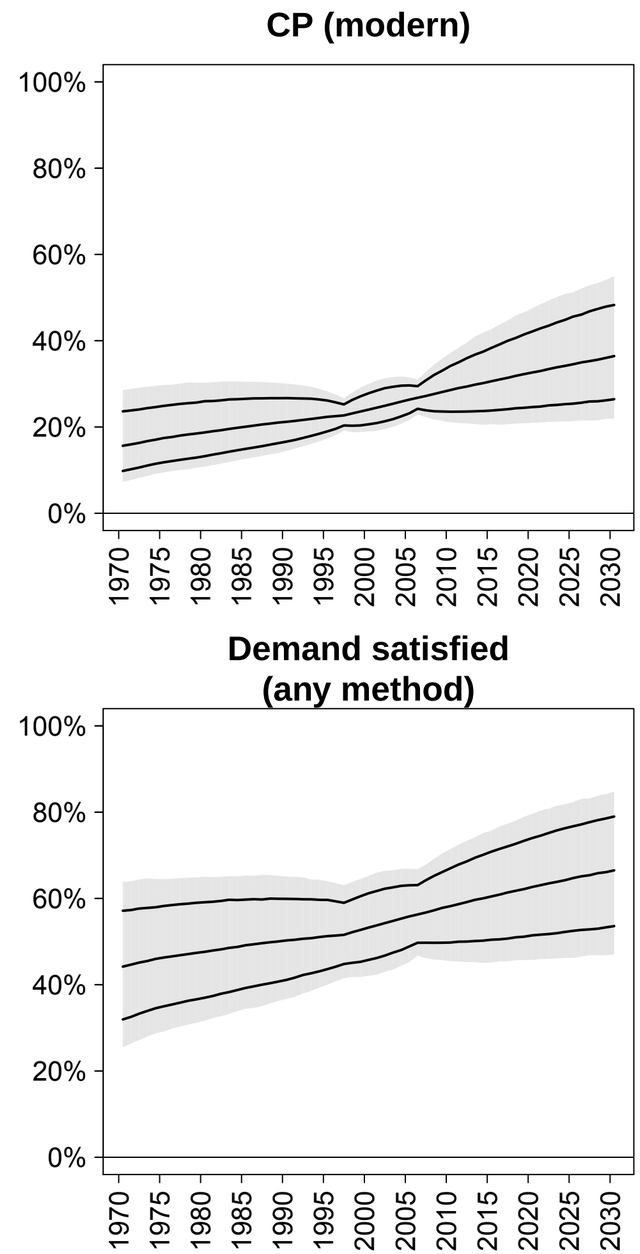
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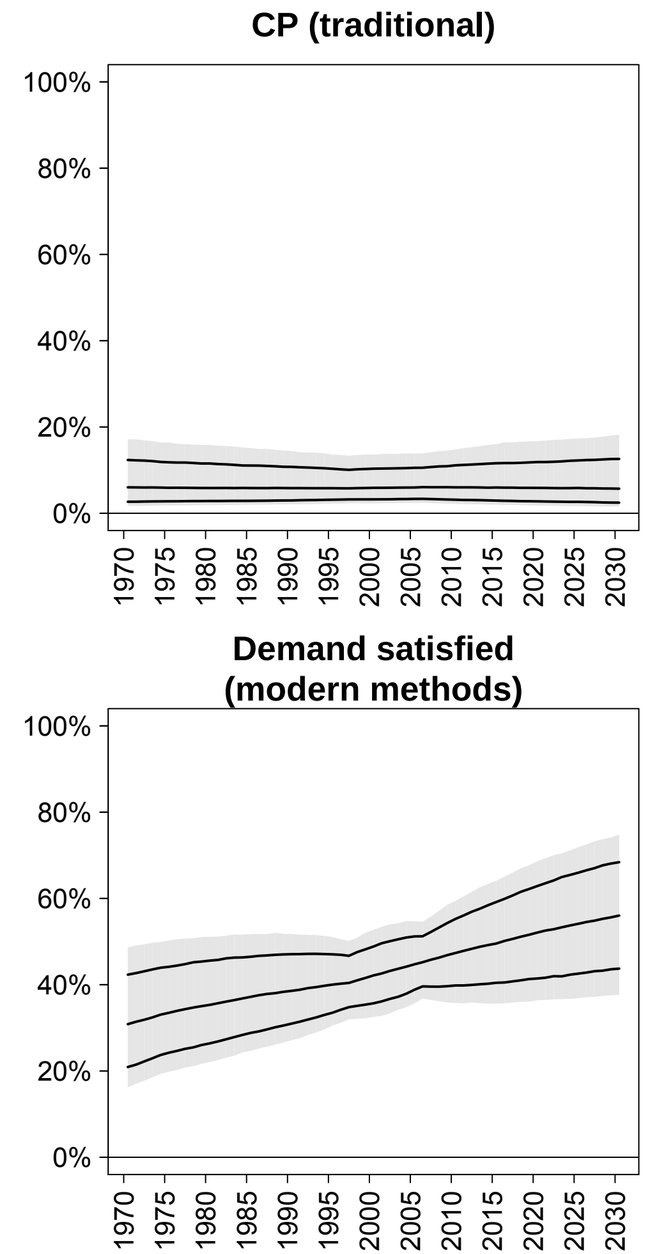
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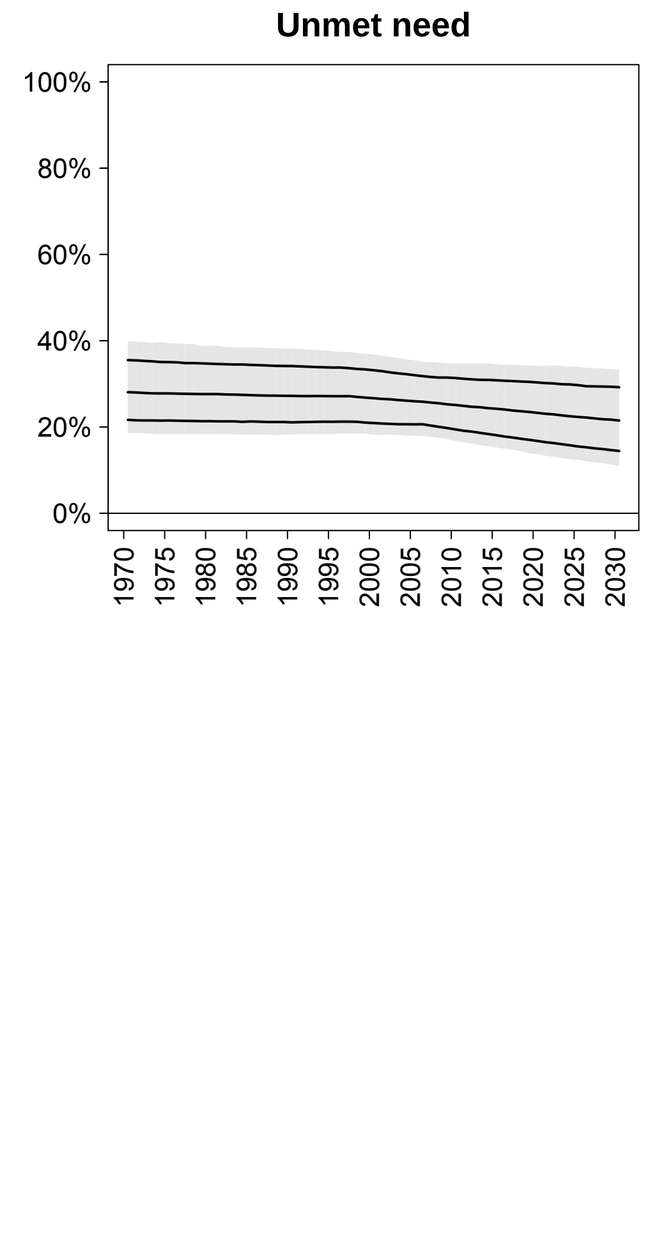
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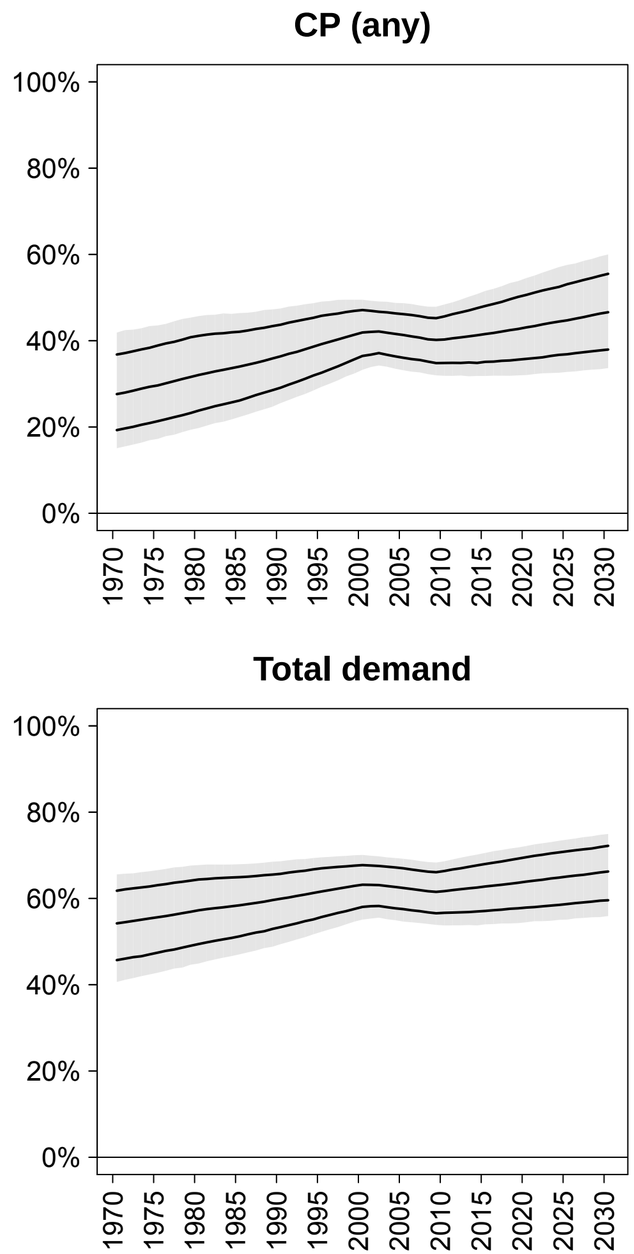
Micronesia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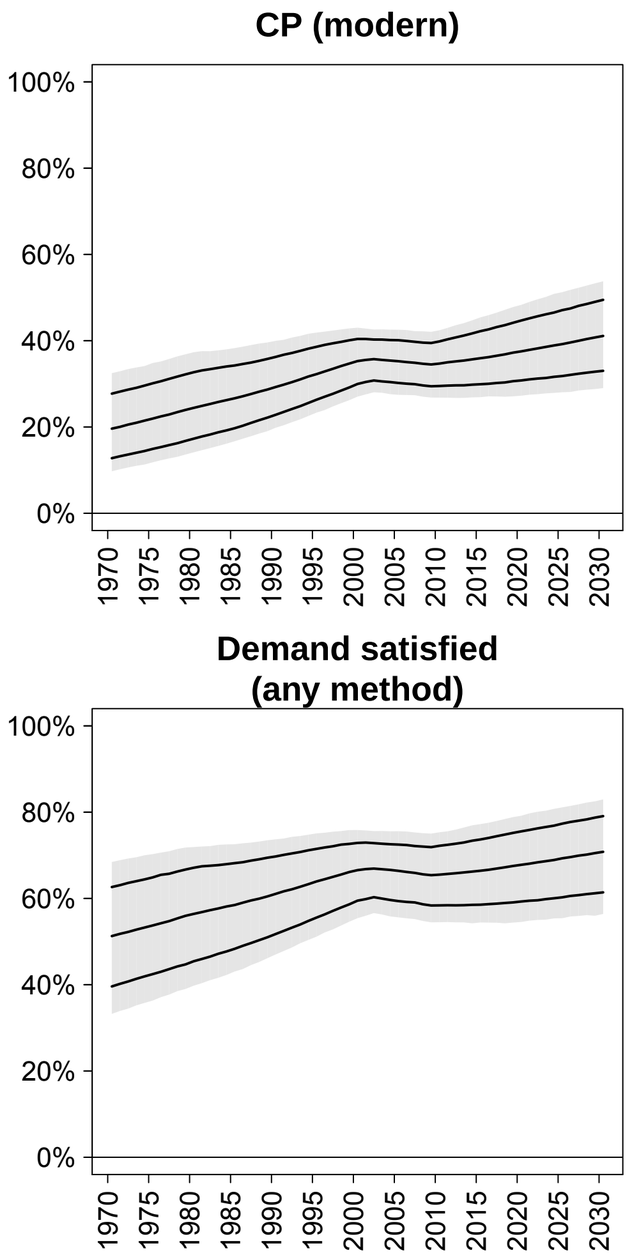
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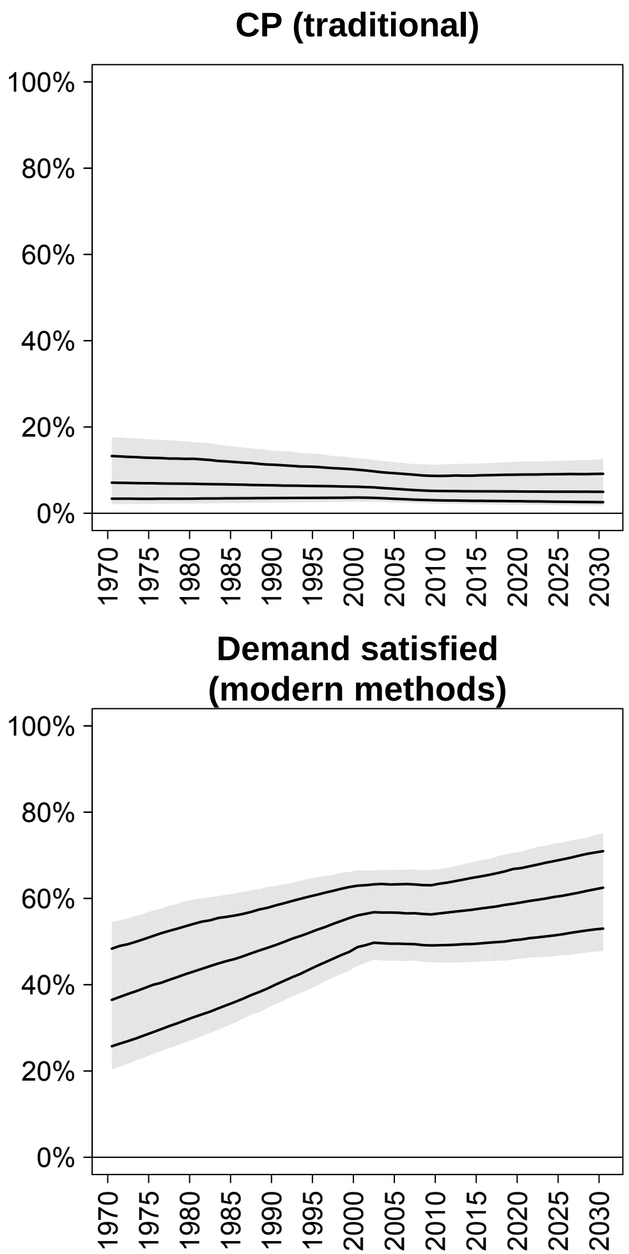
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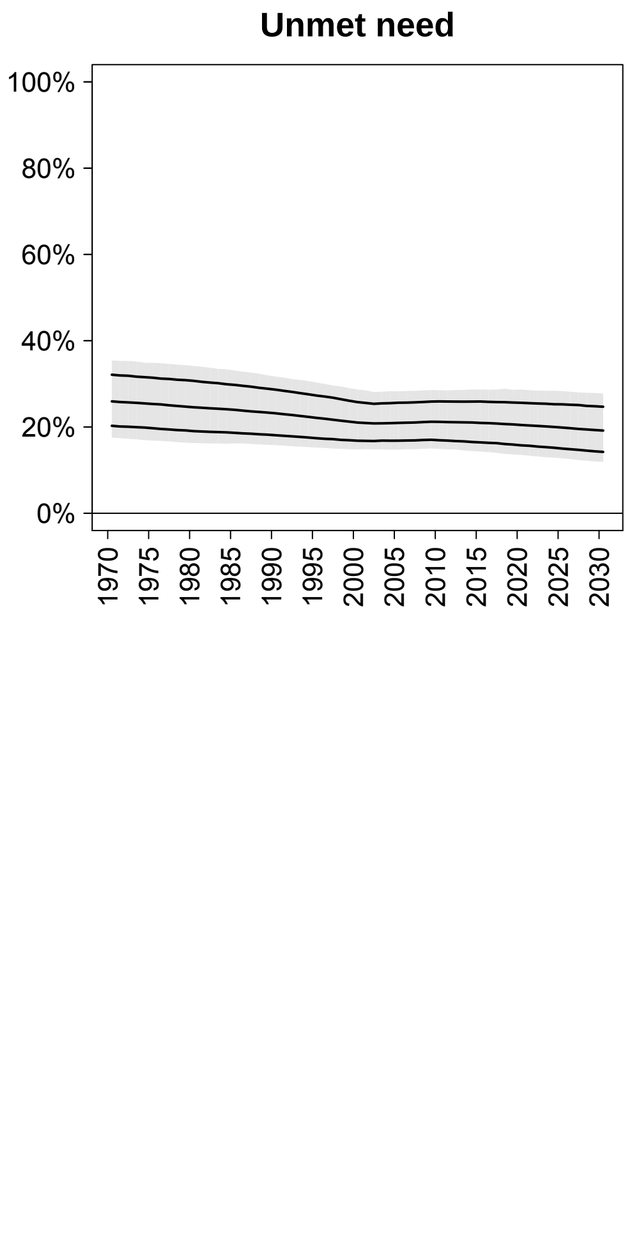
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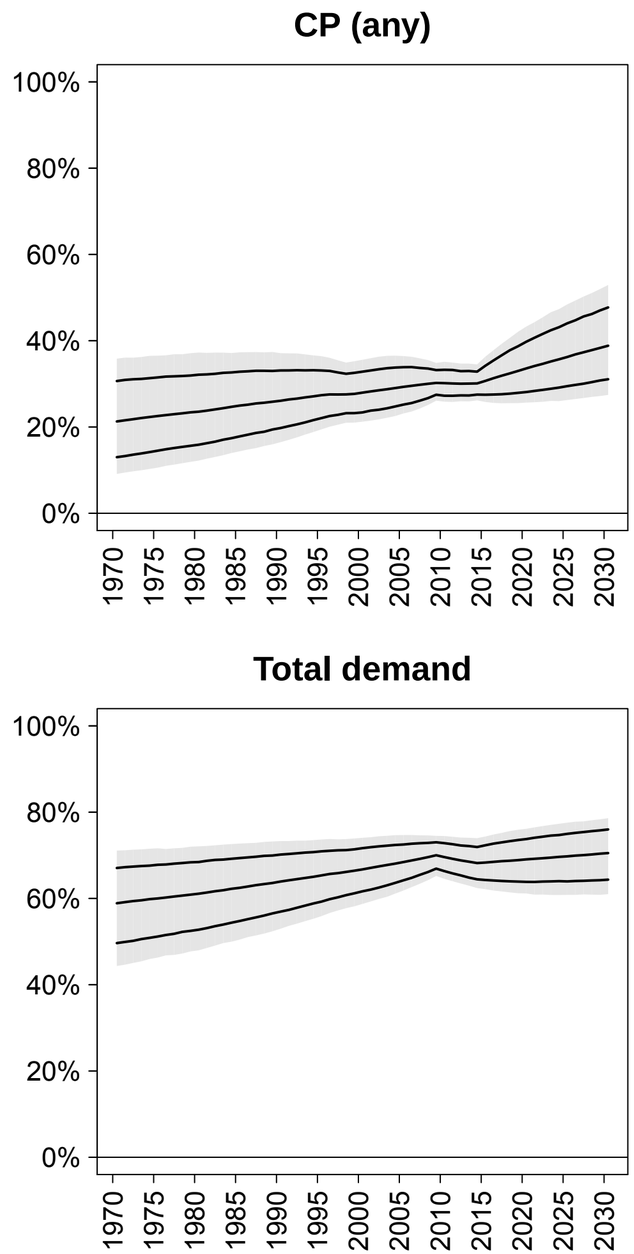
Polynesia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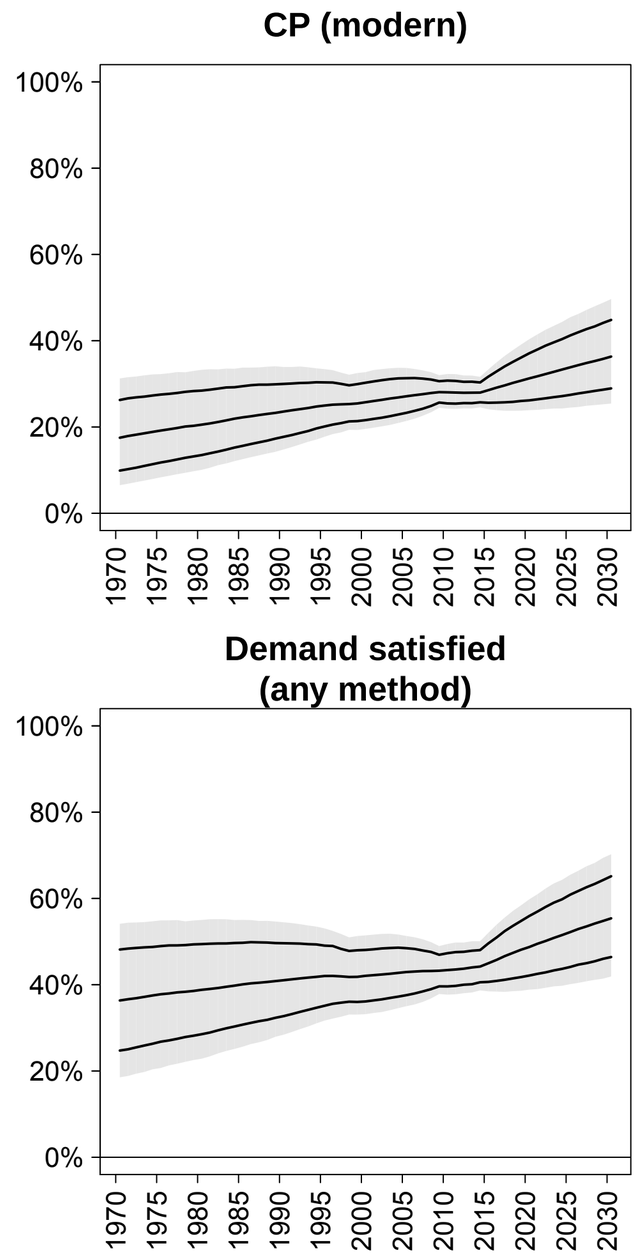
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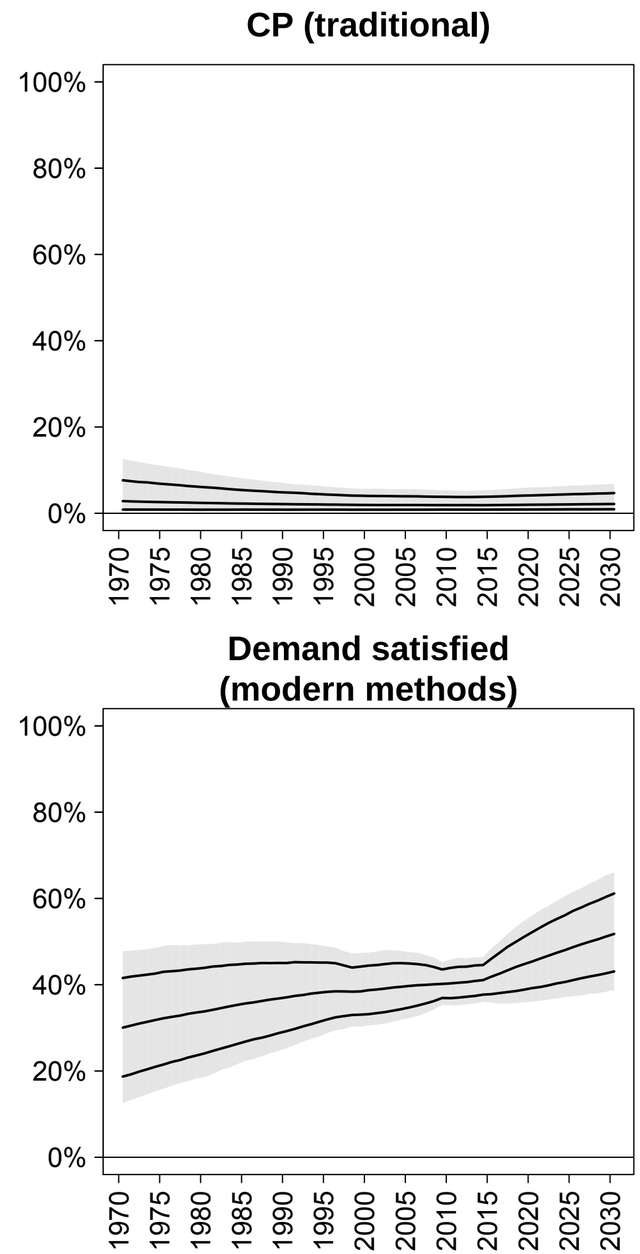
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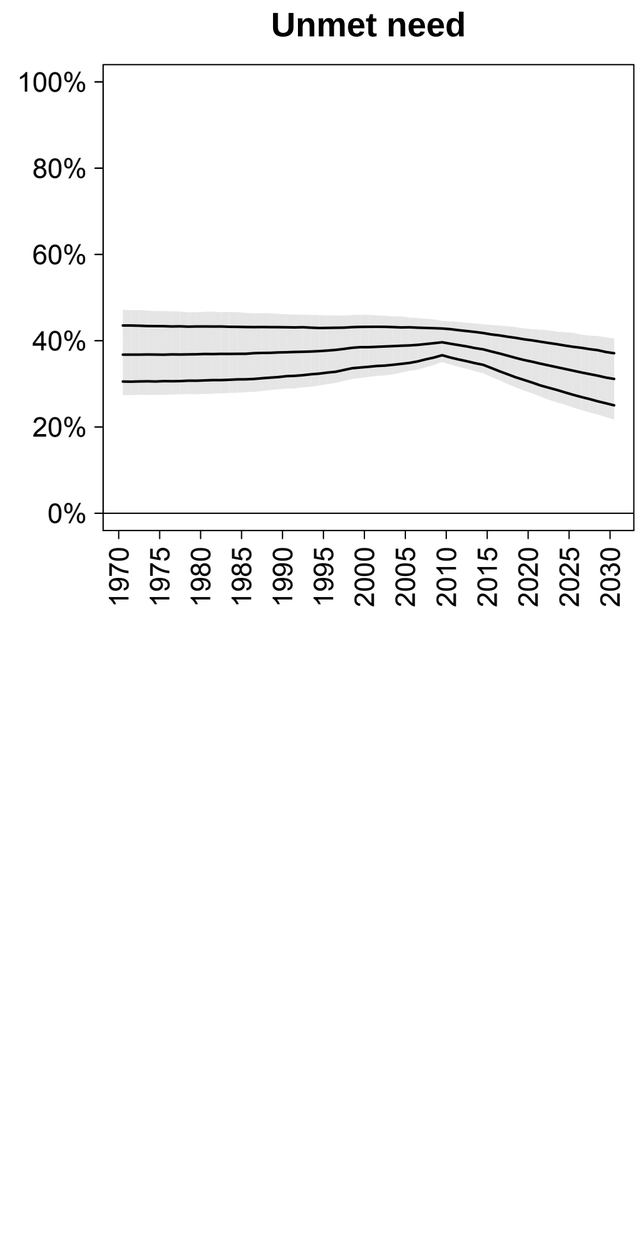
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