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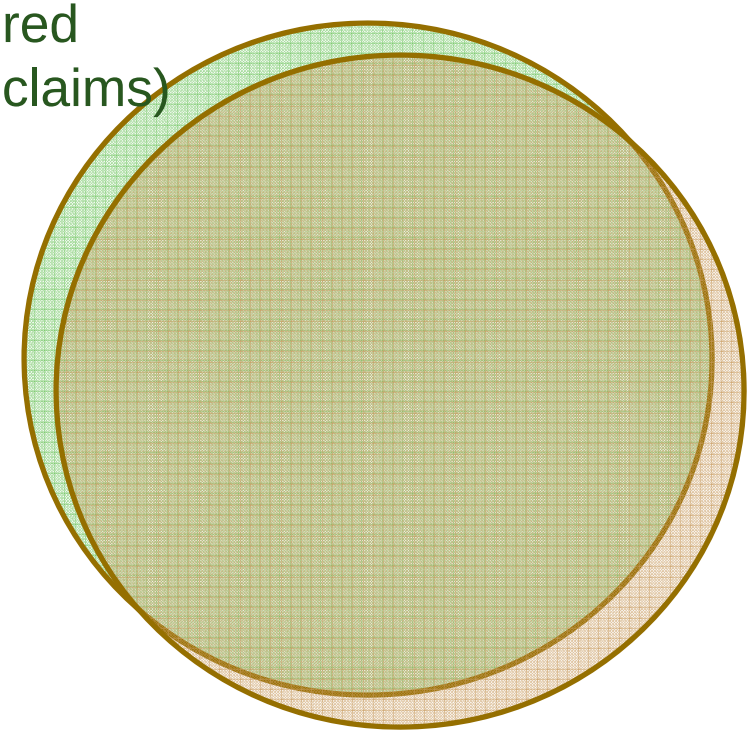
The old HMORN world:

Insured
(data in claims)



In Group Practice
(data in EHR)

So we defined denominator by single yes/no indicator of coverage

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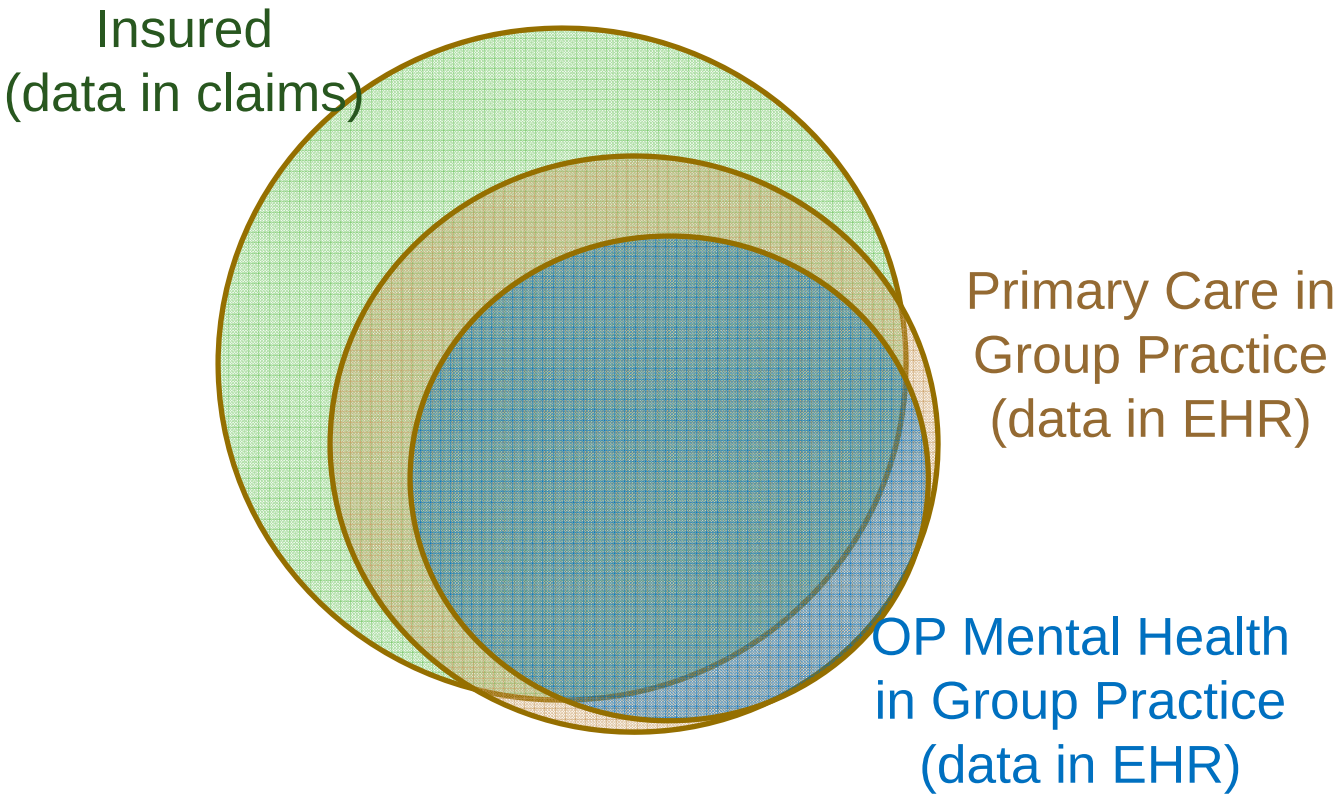
The new world can look like this:



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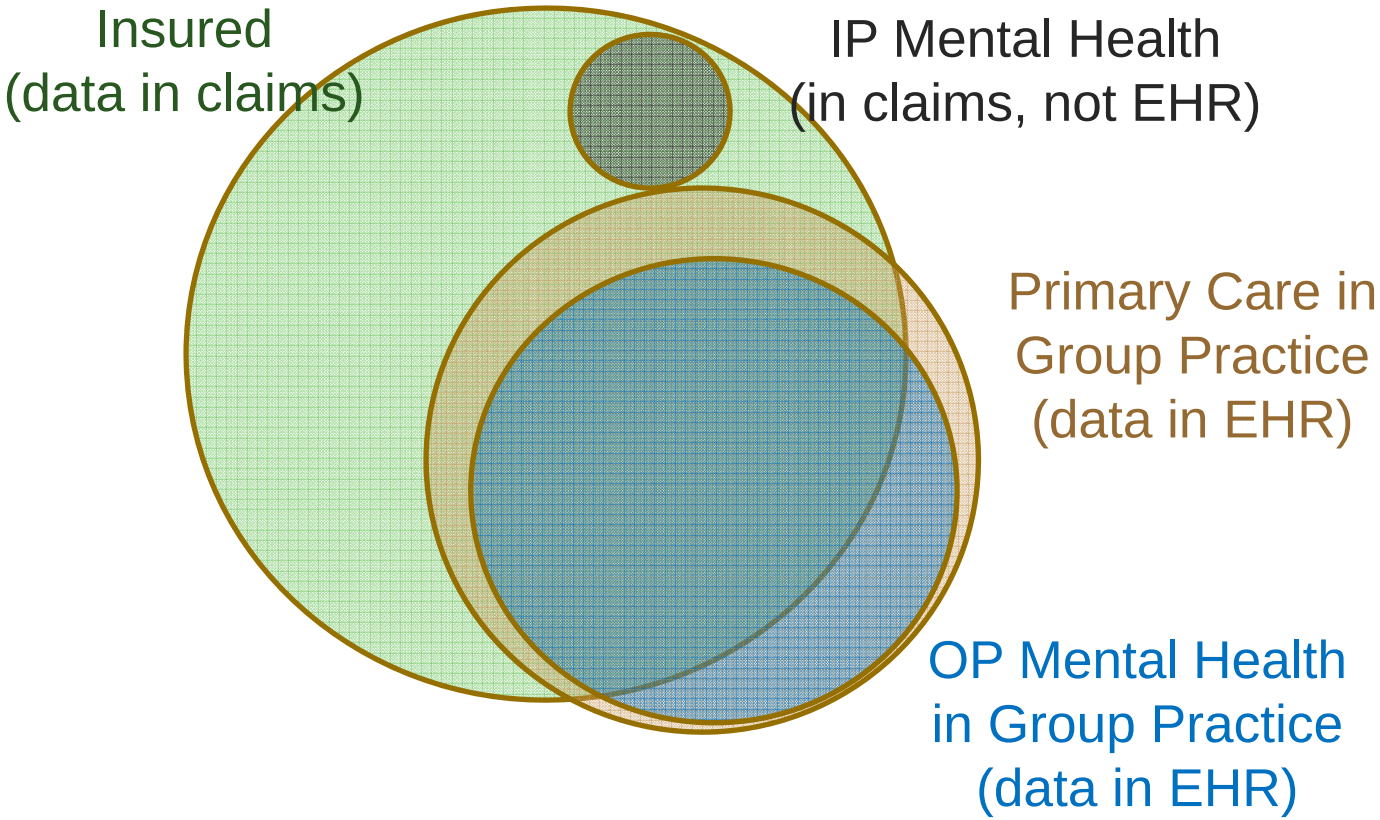
Or even like this:



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Defining denominator populations:

- Old Question: Was this person “covered” in X month?
- New Question: If this service was provided to this person in X month:
  - Would we observe it?
  - In what data source?

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The good old days were not that good

- There was always some “leakage” in claims data:
  - Dual coverage
  - Paid out of pocket because of privacy concerns

- We didn’t need to distinguish between claims and EHR capture because EHR data didn’t exist

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New denominator definitions:

- Likely data capture varies according to:
  - Health system structure
  - Insurance coverage
  - Geographic region within health sytem
  - Referral patterns
- Need new patient-level indicators that reflect likely capture of specific types of data in claims and/or EHR

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New denominator definitions example 1

Group Health member insured by commercial plan thru XXX retail chain, lives in Issaquah, Washington

	Claims	EHR
OP Primary Care Visit	Y	Y
OP Specialty MH Visit	Y	Y
IP Medical / Surgical Admit	Y	N
IP Mental Health Admit	Y	N
OP Medication Orders	N	Y
OP Medication Fills	N	?
ED Visit	Y	Y

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New denominator definitions example 2

Health Partners insured member receiving primary care from Essentia clinic and living in Brainerd, Minnnesota

	HealthPartners Claims	HealthPartners EHR	Essentia EHR
OP Primary Care Visit	Y	N	Y
OP Specialty MH Visit	Y	N	Y?
IP Medical / Surgical Admit	Y	N	Y?
IP Mental Health Admit	Y	N	Y?
OP Medication Orders	Y	N	Y?
OP Medication Fills	Y	N	Y?
ED Visit	Y	N	Y?

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Proposed new denominator table

One record per person per month:

	Claims Expected	Claims Observed	EHR Expected	EHR Observed
OP Primary Care Visit	Y/N	Y/N	Y/N	Y/N
OP Specialty MH Visit	Y/N	Y/N	Y/N	Y/N
IP Medical / Surgical Admit	Y/N	Y/N	Y/N	Y/N
IP Mental Health Admit	Y/N	Y/N	Y/N	Y/N
OP Medication Orders	Y/N	Y/N	Y/N	Y/N
OP Medication Fills	Y/N	Y/N	Y/N	Y/N
ED Visit	Y/N	Y/N	Y/N	Y/N
Etc.	Y/N	Y/N	Y/N	Y/N

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What is our expectation about claims data:

- Question: If this happened, would someone send us a bill for it?
- Assumption: If a provider has any hope of payment, they will send us a bill
- How much do we need to worry about:
  - Dual coverage
  - High deductibles
  - Low-cost generics
  - Low-prevalence coverage variants

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What is our expectation about EHR data:

- Question: If this patient received this service, would they receive it from us?
- Assumption:
- But how much are utilization patterns consistent:
  - Across types of service (primary care vs ED)
  - Across conditions (rheumatoid arthritis vs. depression)
- Lots of extrapolation needed for low-frequency events

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Example: Pragmatic trial of outreach to prevent suicide attempt

- Participants identified from PHQ9 depression questionnaires recorded in EHR
- Assigned to continued usual care or to usual care plus outreach intervention(s)
- Outcome is Inpatient or ED diagnosis of definite or probable self-inflicted injury – in EHR or claims

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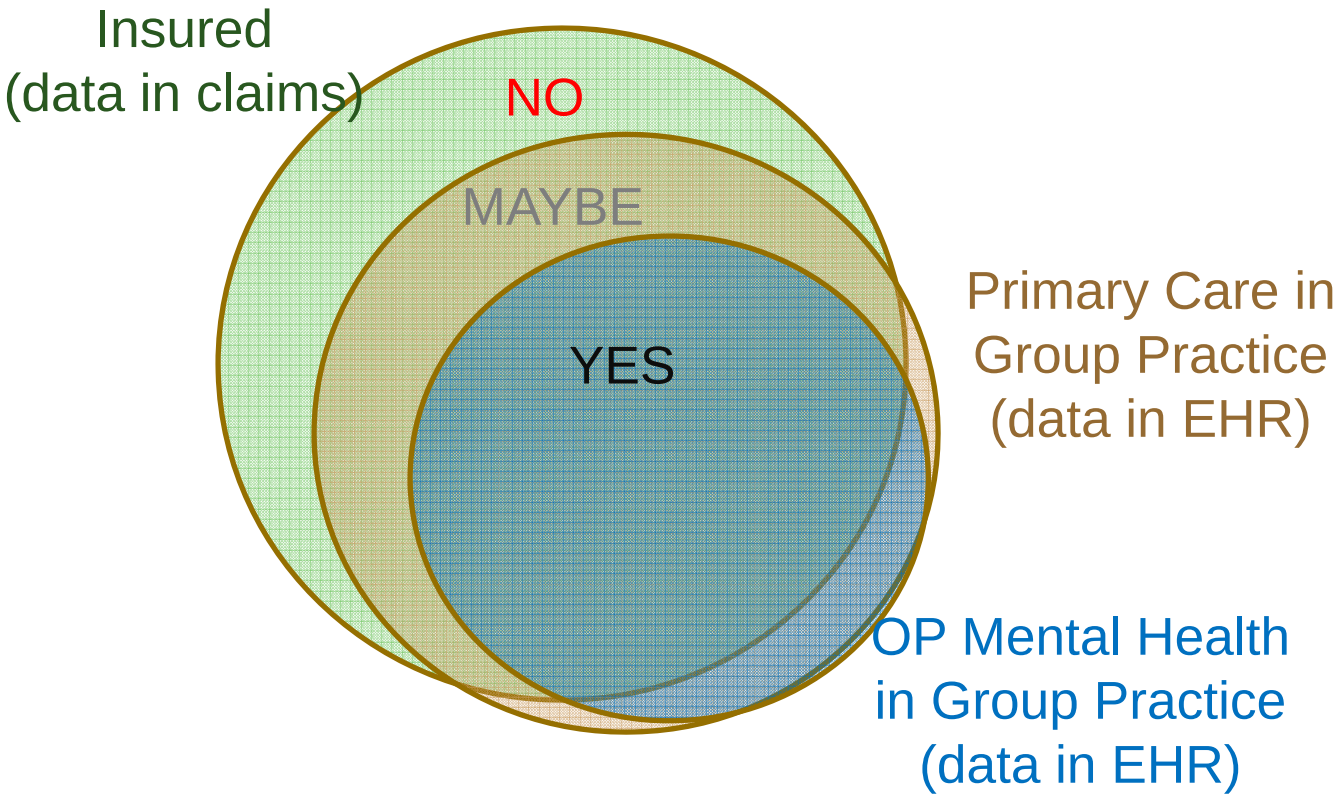
If a PHQ9 were completed, would it be in our EHR?



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For eligibility (PHQ9 in EMR):

- We can include any PHQ9 record
- We know that primary care will be somewhat over-represented

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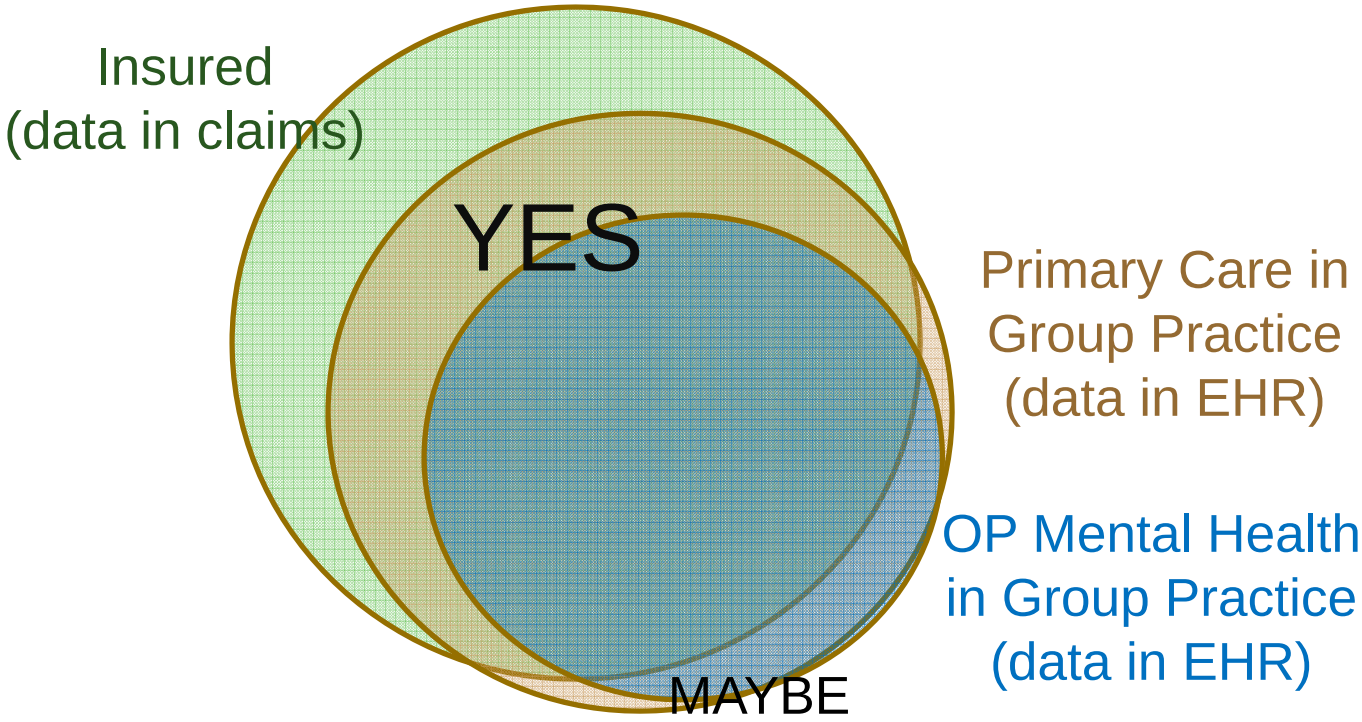
Would an ED visit for suicide attempt show in our claims?



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Outcome ascertainment (diagnosis in EHR or claims)

- We can certainly include those insured at time of PHQ9 – and censor at disenrollment
- What about those receiving care but not insured?
  - We cannot assume that EHR capture of outpatient PHQ9 implies EHR capture of ED visit for suicide attempt
  - What about ED care for other conditions? OR ED care for mental health problem?

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Summary

- Increasing diversity of healthcare systems will require more complex denominator definitions (even the HMORN is not just HMOs any more)
- There is a trade-off between higher certainty of capture (claims) and much richer clinical information (EHR)
- “Coverage” or “denominator-hood” has within-person as well as between-person variation
- Documenting variation in claims and EHR coverage will usually require local knowledge (and maybe blood oaths)
- Utilization-based proxies for “denominator-hood” have promise, but certainly need more work