

# 1903ここ30年の金属トレードフローの 変化に見るモノづくりJapanの位置

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- **【緒言】**この発表は2009年に筆者らが発表した「トレードフローに見る日本素材産業の位置」のフォローである。当該論文は「素材Japan」との表現を生み出すほど社会の中に置ける工業素材産業と技術の重要さを示したが、それから10年その変化が急速に起きている。またバブル30年といわれる今、歴史を遡及してその変化をみってみる。
- **【方法】**トレードフローのデータは国連貿易統計Comtradeのデータベースより取得した。対象とする品目に対して、年間の輸出総額、輸入総額の上位10か国、および、輸入国側のデータから二国間貿易の上位20ケースを取得した。これらのデータをMicrosoft Office VBAで処理し、デフォルトした地図上に図示した。その際、白抜きは総輸出国、白丸は総輸入国を表し、二国間貿易は輸出から輸入への矢印でその太さを世界総貿易額との比で表した。それぞれの国は国連二桁コードで表した。
- また日本の輸出内訳は貿易統計の品目別表の輸出額データを用いた。その際、品目を、工業素材、器械、電気電子、輸送機械、およびその他に分類した。さらに工業素材は、化学物質、プラスチック、窯業素材、鉄、非鉄金属、構成基材、製品、などに再分類し、輸出総額および工業素材輸出額との比を得た。なお構成基材とは、製品の一部の機能現出(構造的機能を含む)のために作り込まれた材料(prepared material, member subject)を指し、鉄、非鉄金属、プラスチックに分類されるのは汎用の一次加工材にとどめた。
- **【結果】**得られたトレードフロー図の一例として1988年の鉄のフローを示す。典型的な20世紀に形成されてきたグローバルな日米欧の三極構造を示している。これが2017年には東亜、米、欧のエリア化された構造に変化してきている。非鉄金属のフローはここ数年で中国一国集中が起きており、特に鉱石のフローでの一極集中が著しい。我が国の輸出構成では1988年にはその一割に過ぎなかった工業素材が20世紀に入って主役となり、2017年時点も機械、輸送機器、電気電子機器を凌いで輸出額シェアの1/4を占めている。工業素材の中でも比率が高いのは構成基材である。我が国のモノづくりのカギは構成基材であり、今後汎用素材と目的に合わせて調製された構造基材を区別して分析を進める必要がある。

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Basic Query Results: [help](#)

Statistics: 502 rows returned in 1.37 seconds.

Quick filter







Selected classification: HS as reported

Selected commodities: 8105

Selected reporters: All

Selected years: 1990

Selected partners: All

Selected trade flows: Import, Export

Sort Order

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Period	Trade Flow	Reporter	Partner	Code	Trade Value	NetWeight (kg)	Quantity Unit	Trade Quantity	Flag
1990	Export	Australia	World	<a href="#">8105</a>	\$202,516	110,026	<a href="#">8</a>	110,026	0
1990	Export	Australia	Netherlands	<a href="#">8105</a>	\$142,045	106,246	<a href="#">8</a>	106,246	0
1990	Export	Australia	New Zealand	<a href="#">8105</a>	\$46,853	3,312	<a href="#">8</a>	3,312	0
1990	Export	Australia	United Kingdom	<a href="#">8105</a>	\$13,618	468	<a href="#">8</a>	468	0
1990	Export	Brazil	World	<a href="#">8105</a>	\$1,727,954	125,254	<a href="#">8</a>	125,254	0
1990	Export	Brazil	Netherlands	<a href="#">8105</a>	\$899,695	79,921	<a href="#">8</a>	79,921	0
1990	Export	Brazil	USA	<a href="#">8105</a>	\$783,631	44,000	<a href="#">8</a>	44,000	0
1990	Export	Brazil	France	<a href="#">8105</a>	\$21,000	597	<a href="#">8</a>	597	0
1990	Export	Brazil	Italy	<a href="#">8105</a>	\$15,805	500	<a href="#">8</a>	500	0
1990	Export	Brazil	Thailand	<a href="#">8105</a>	\$6,530	100	<a href="#">8</a>	100	0

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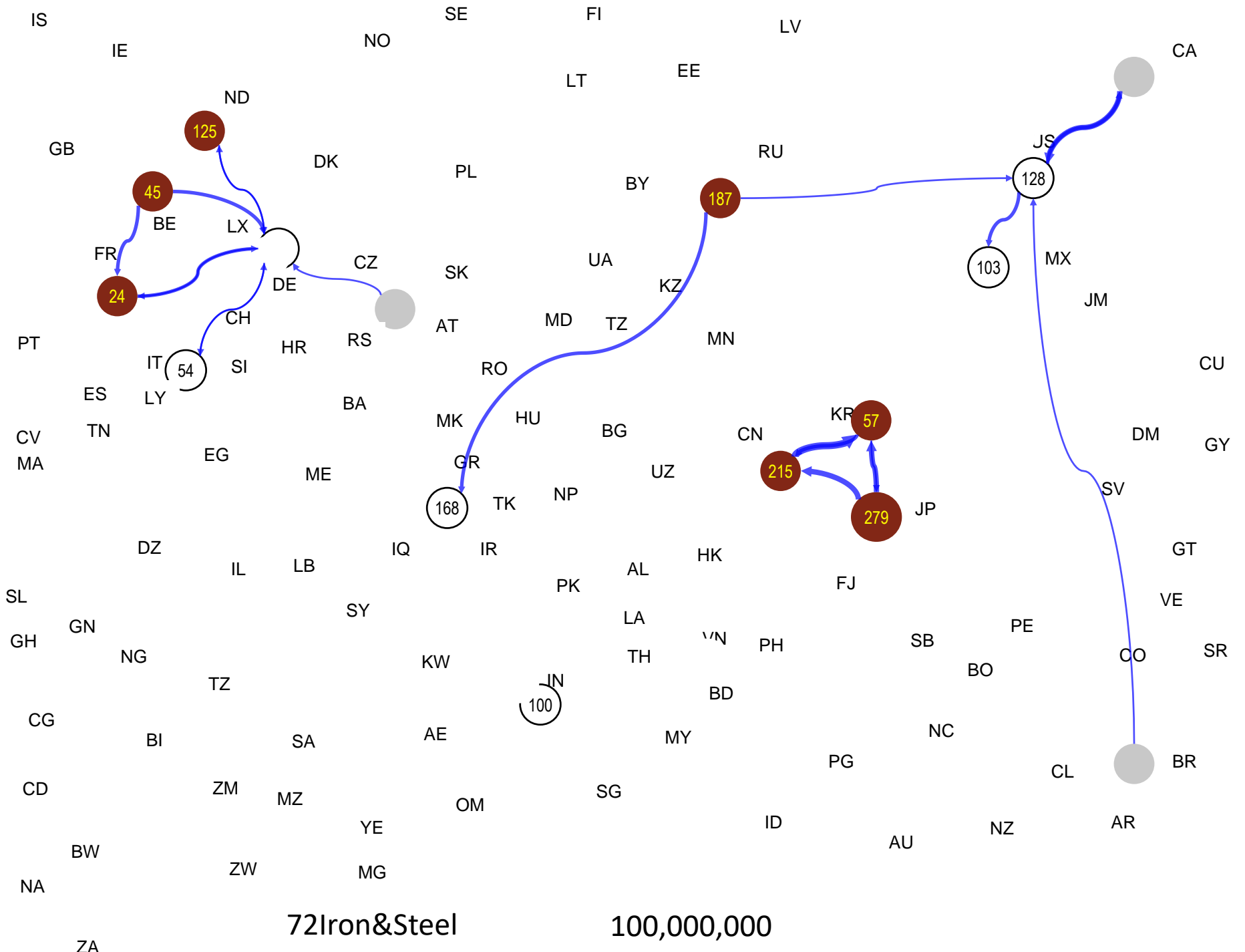


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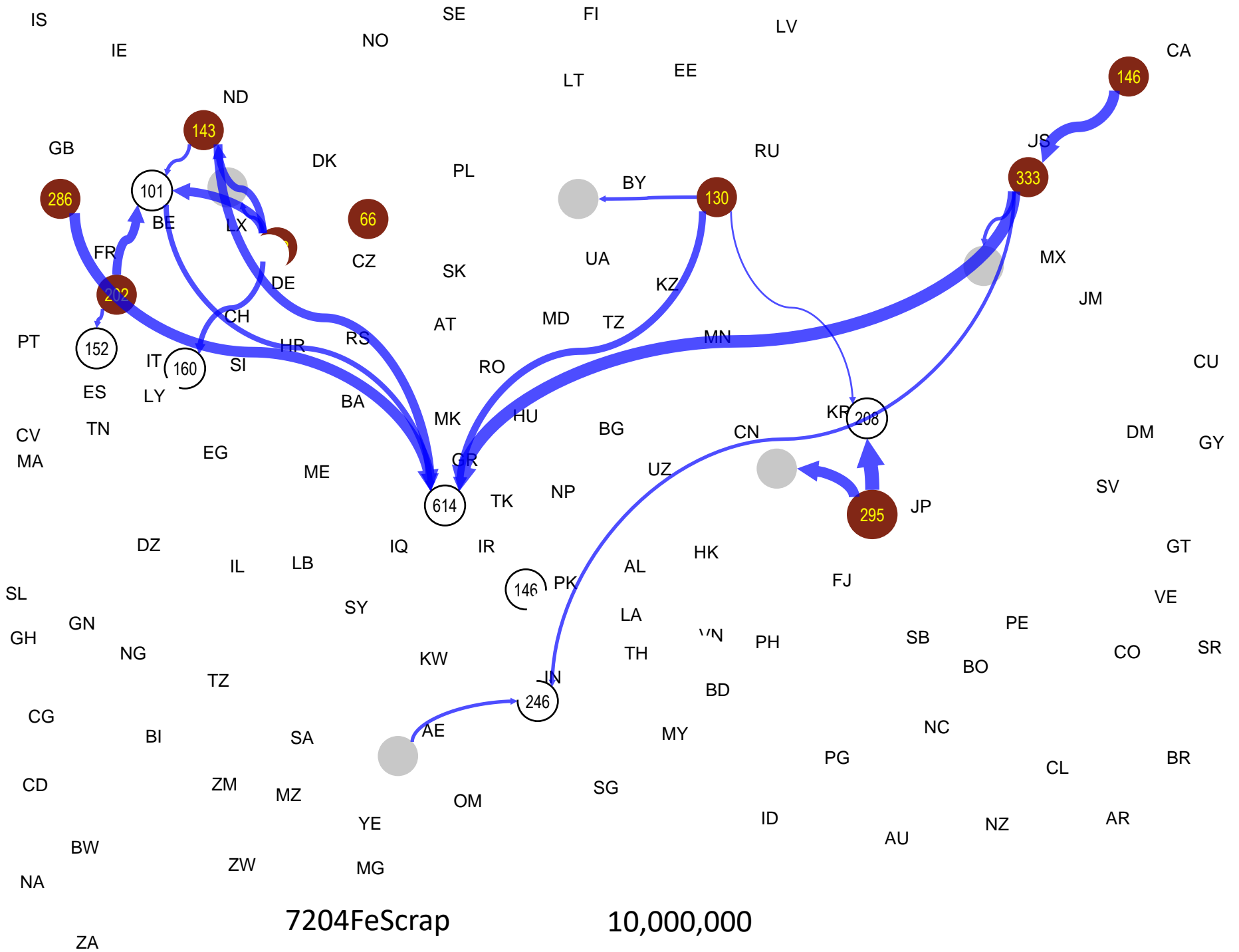
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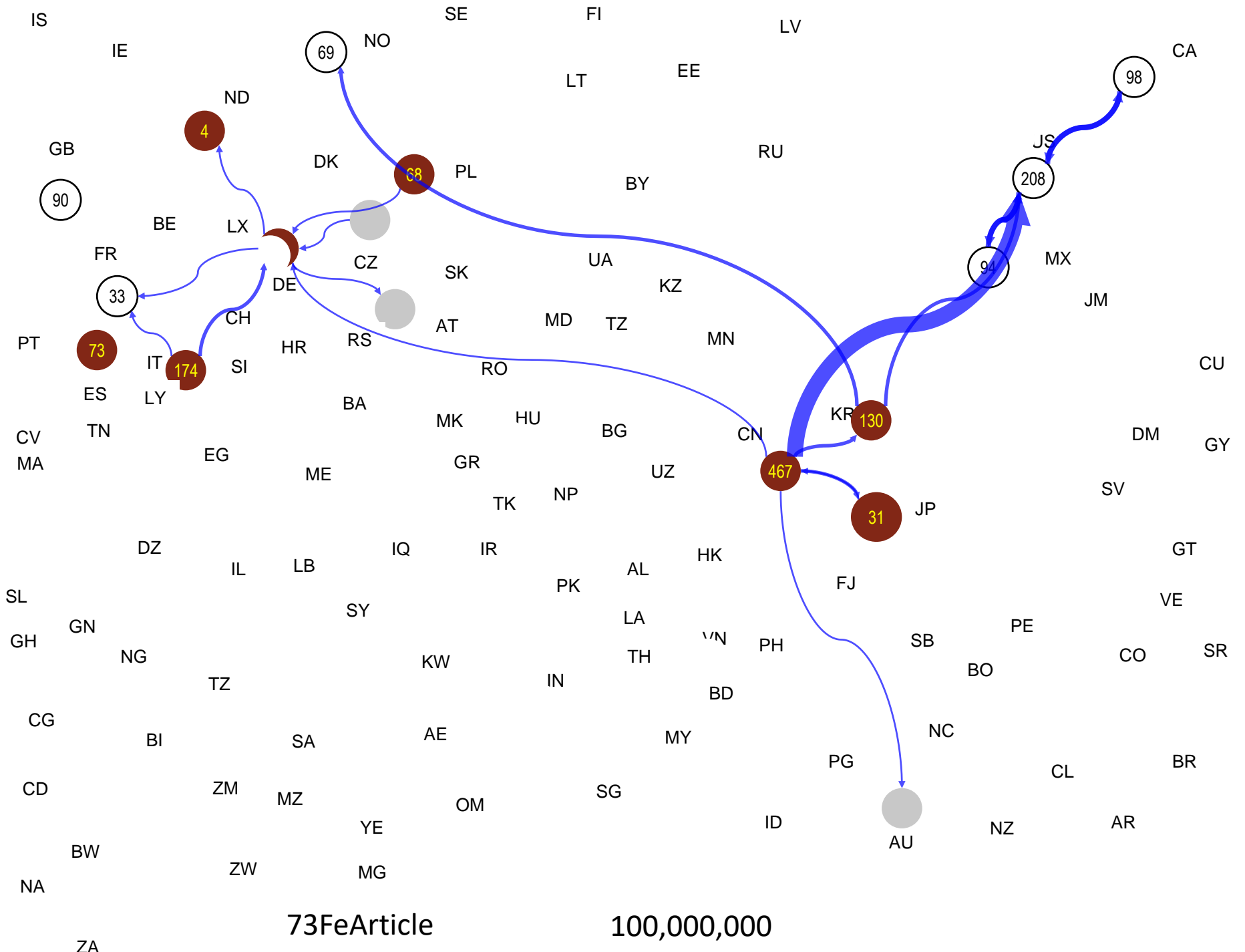
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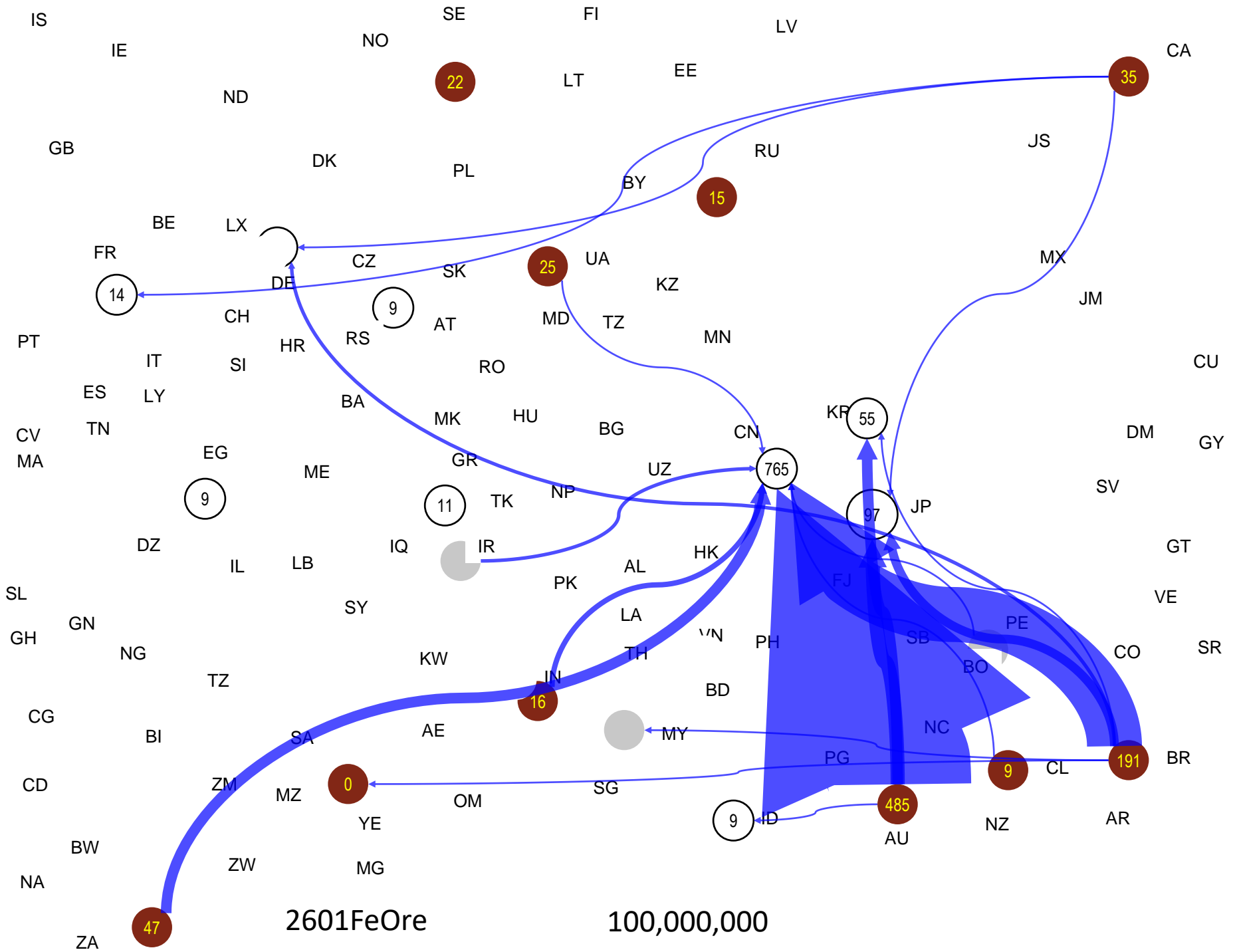


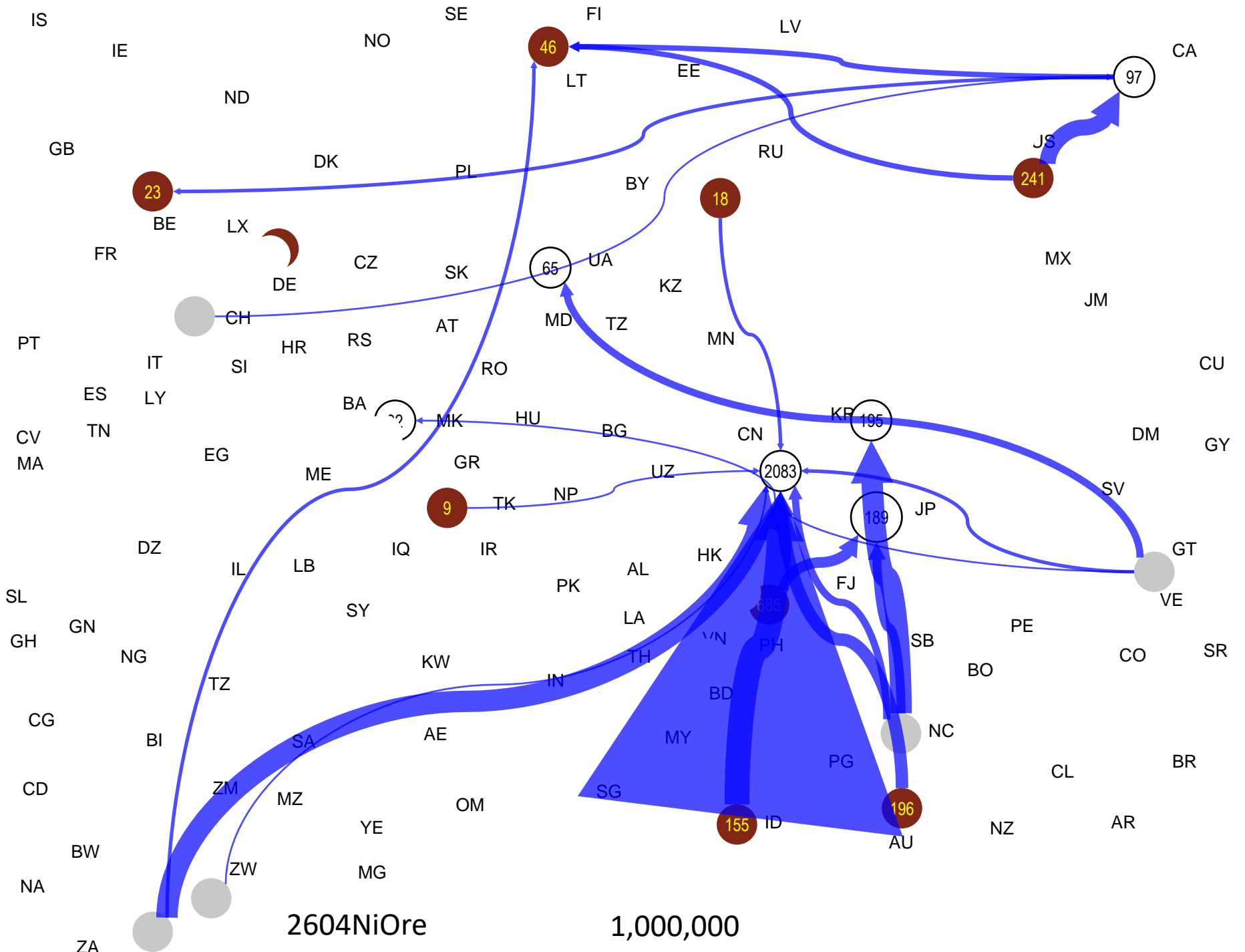
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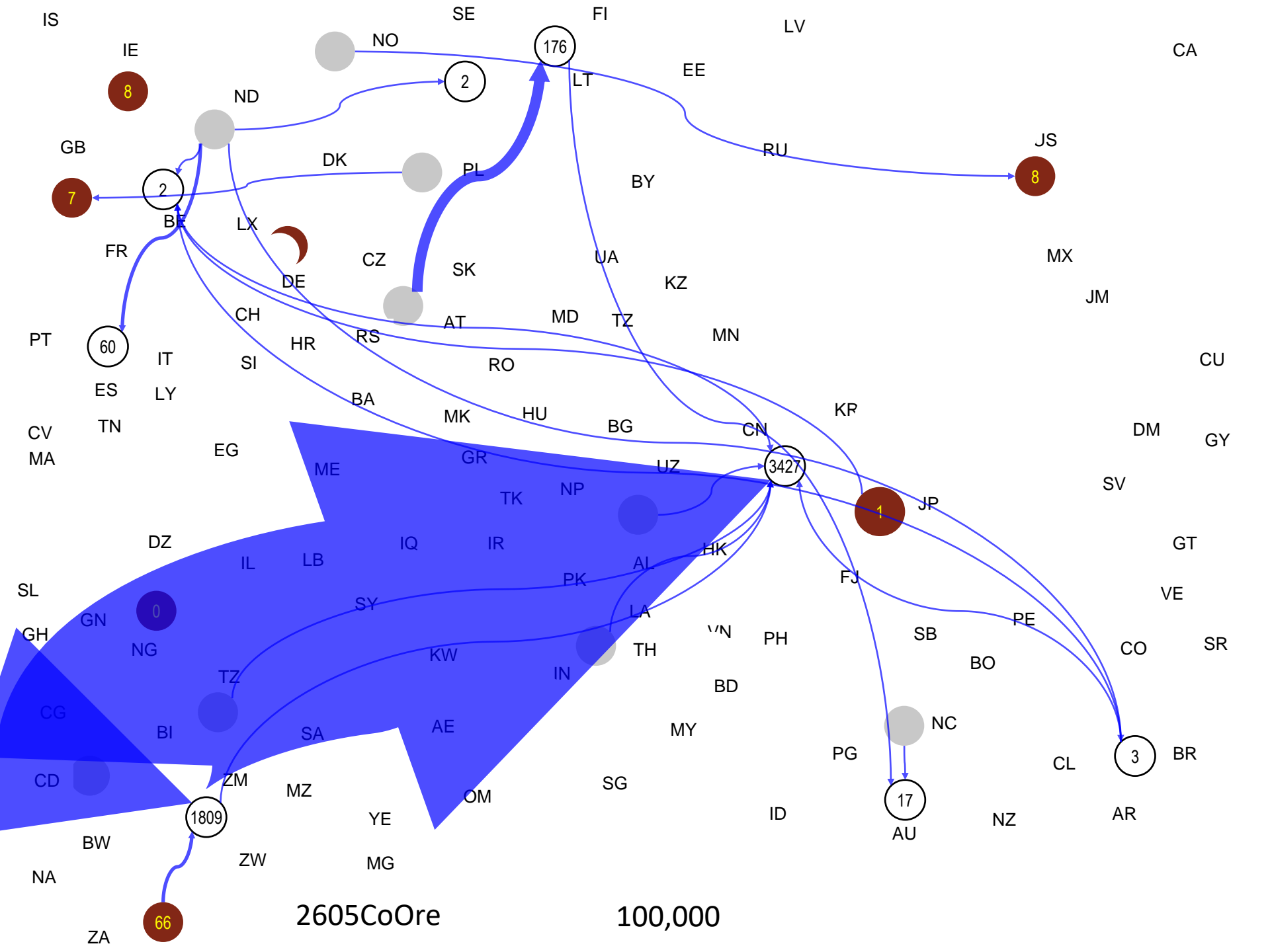


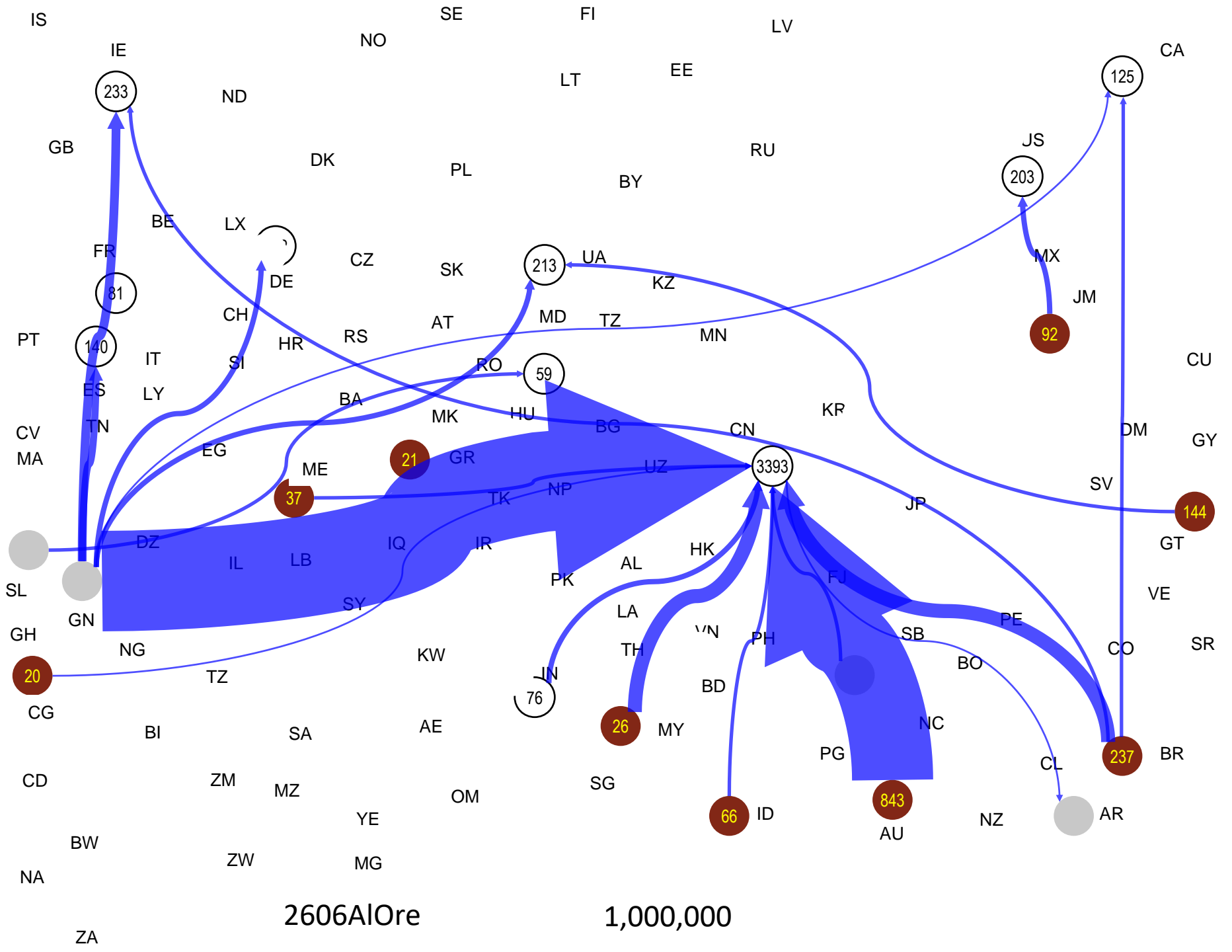


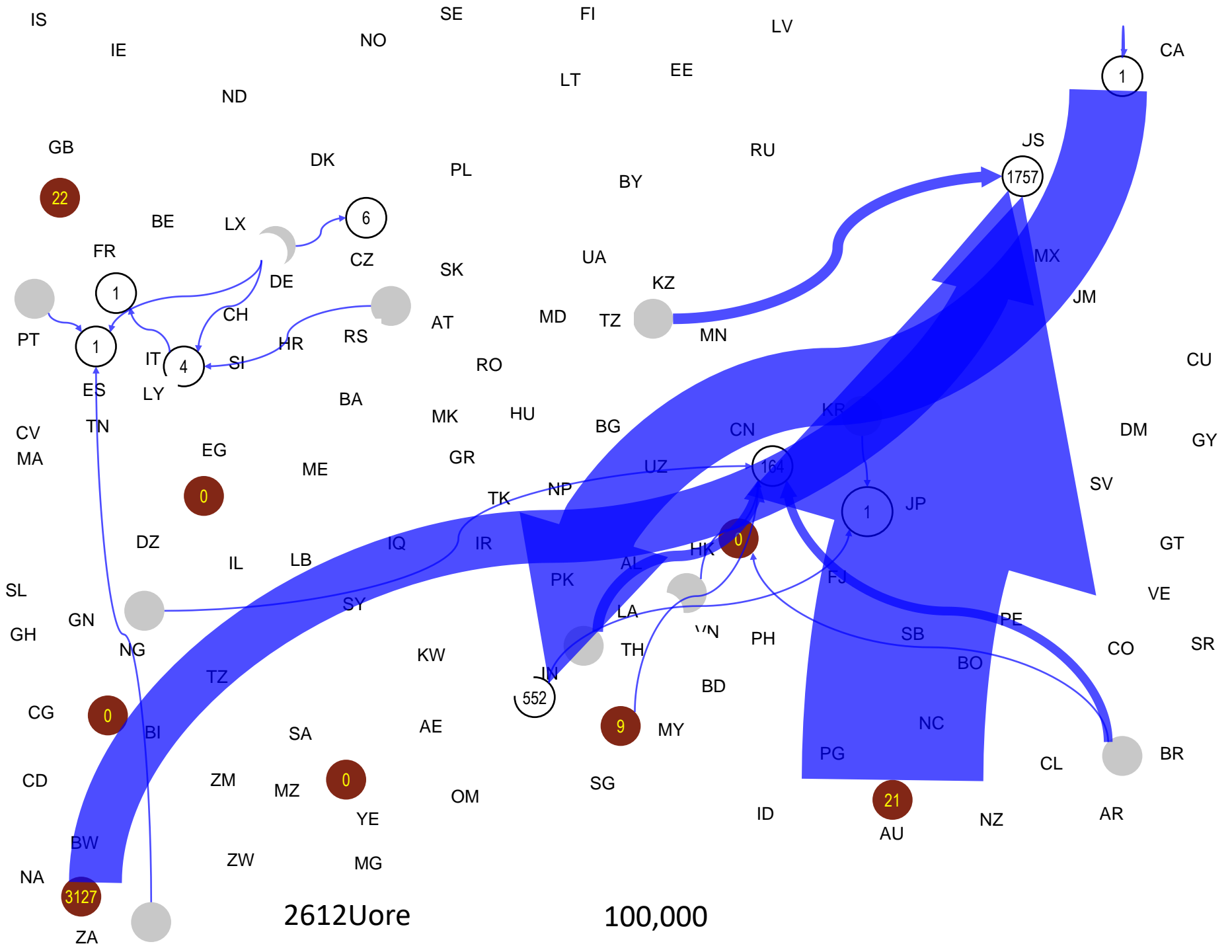


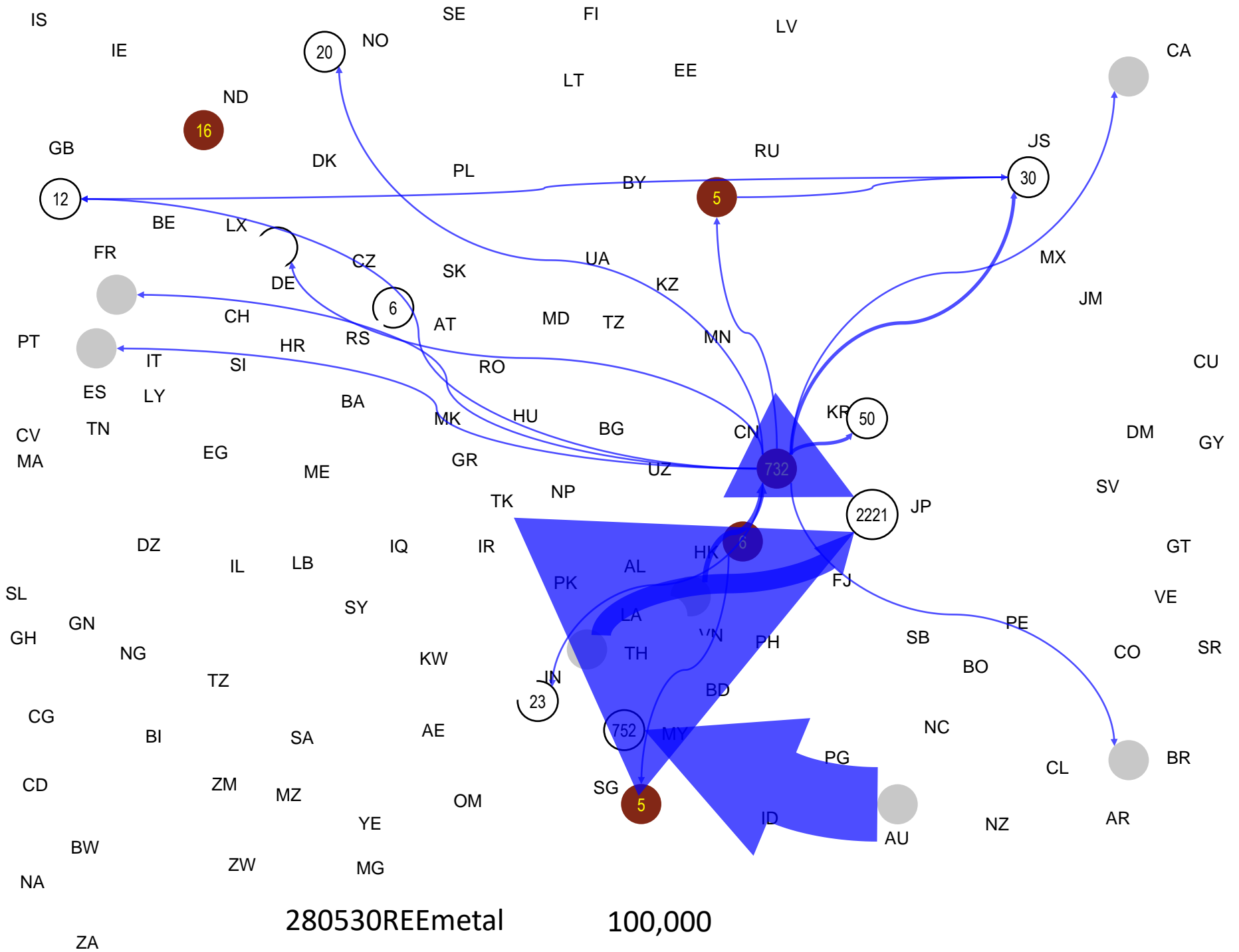


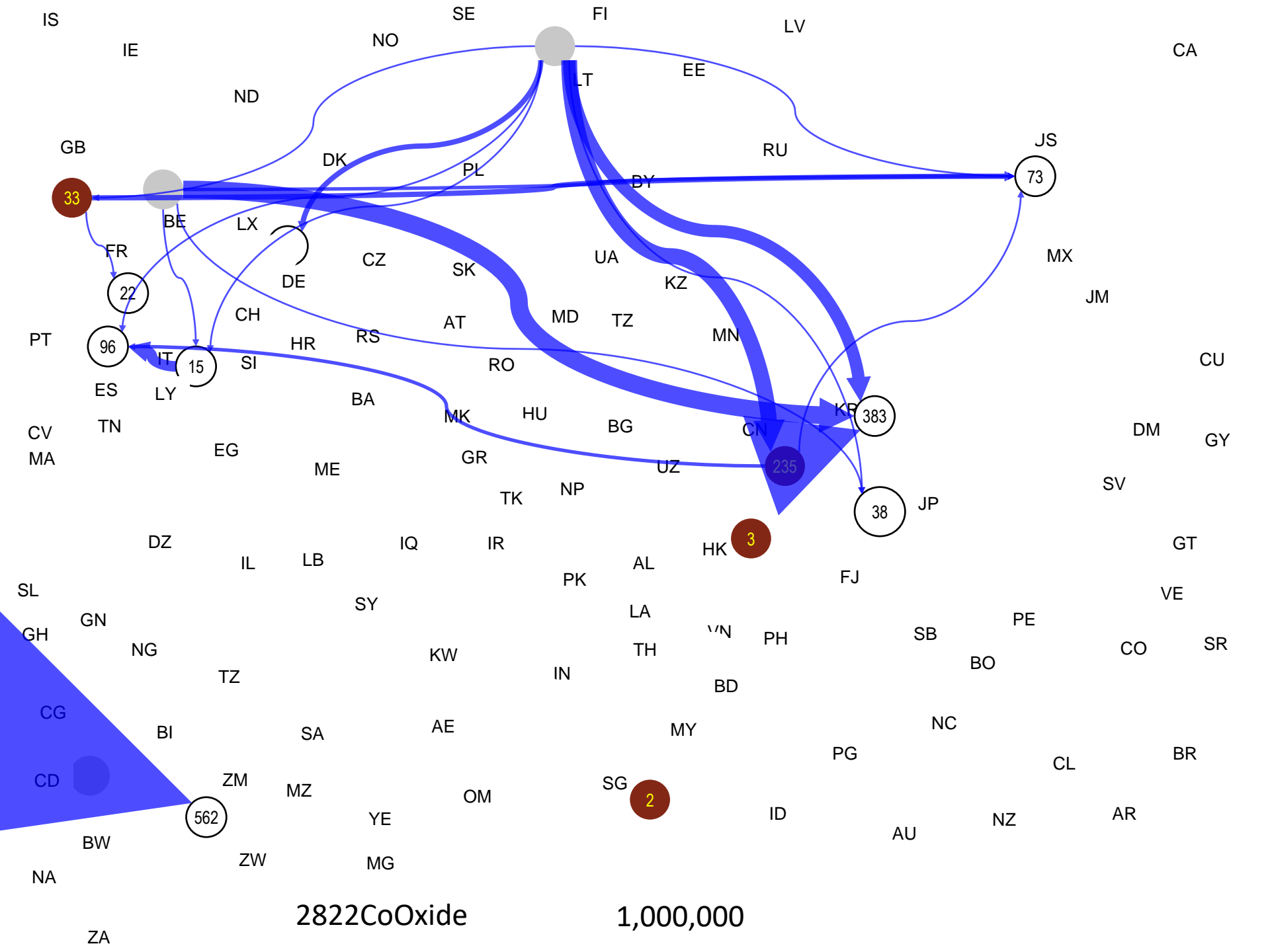


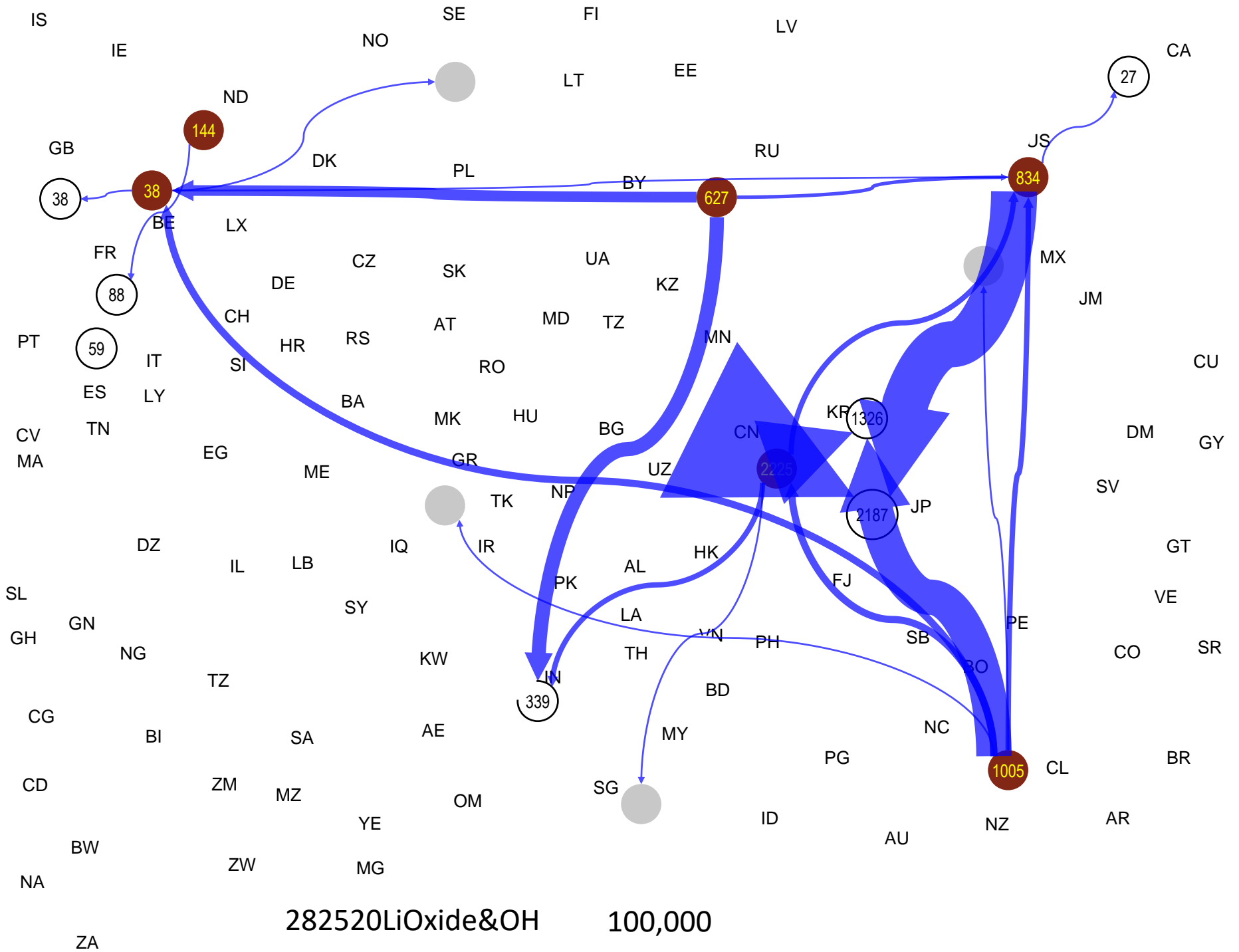


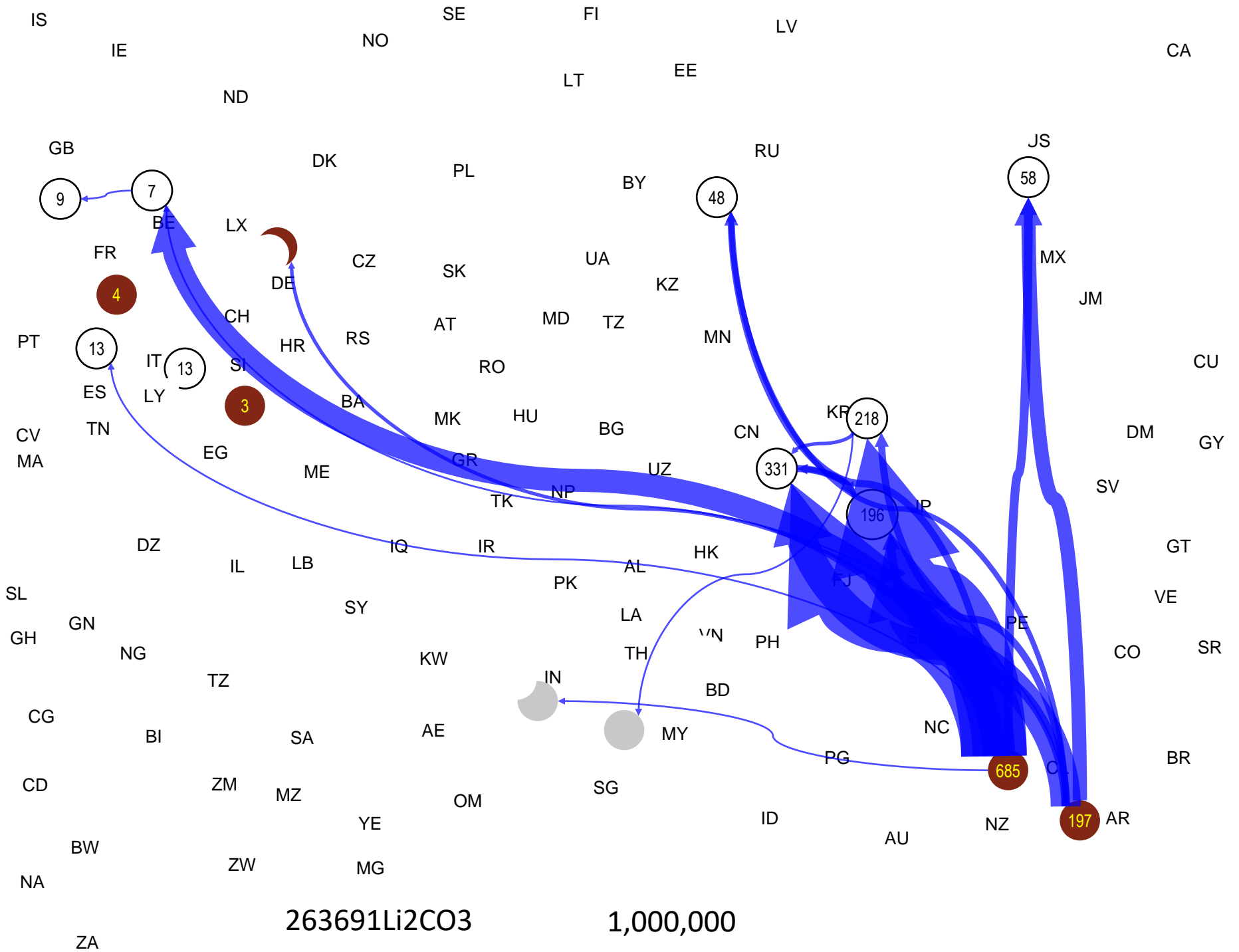


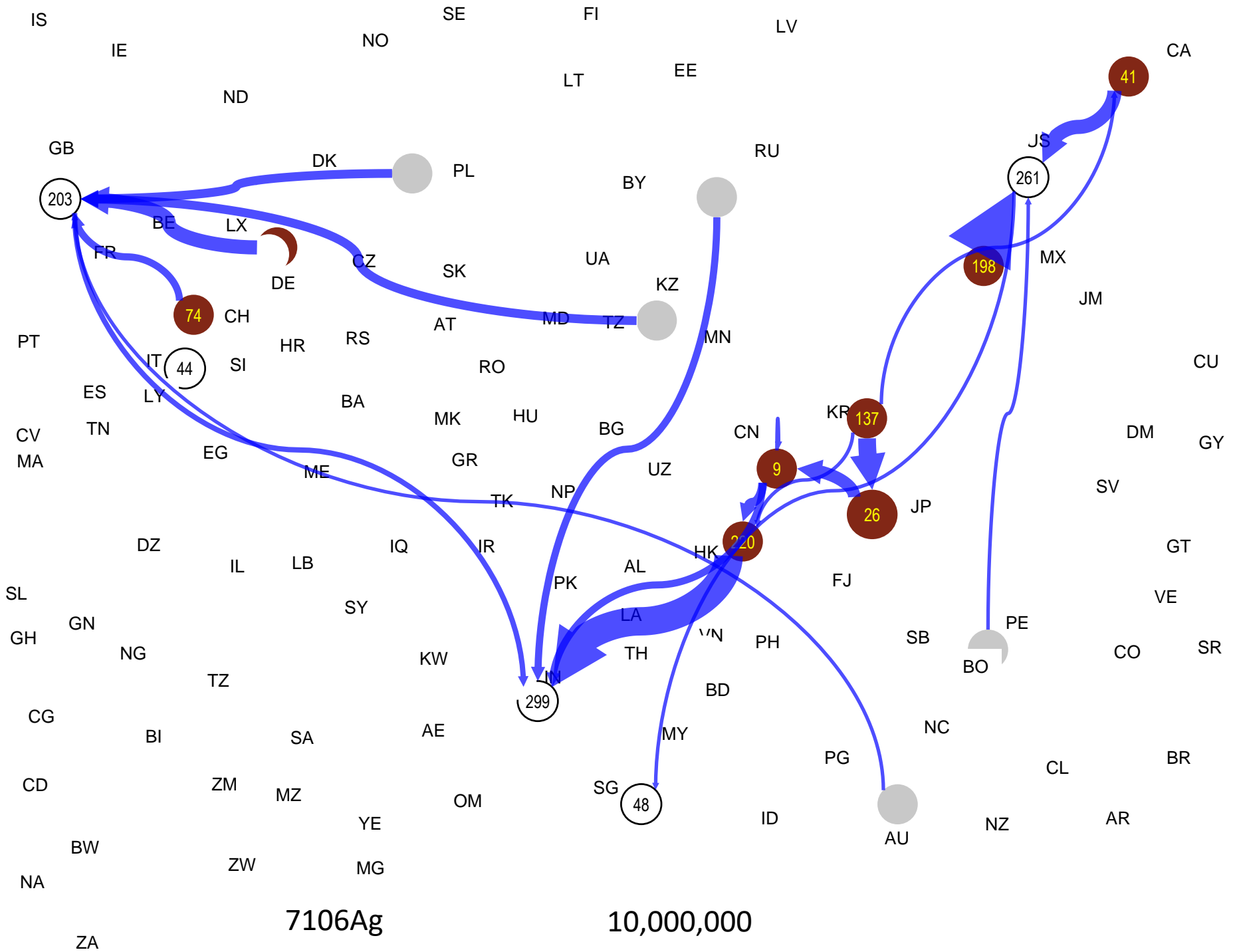




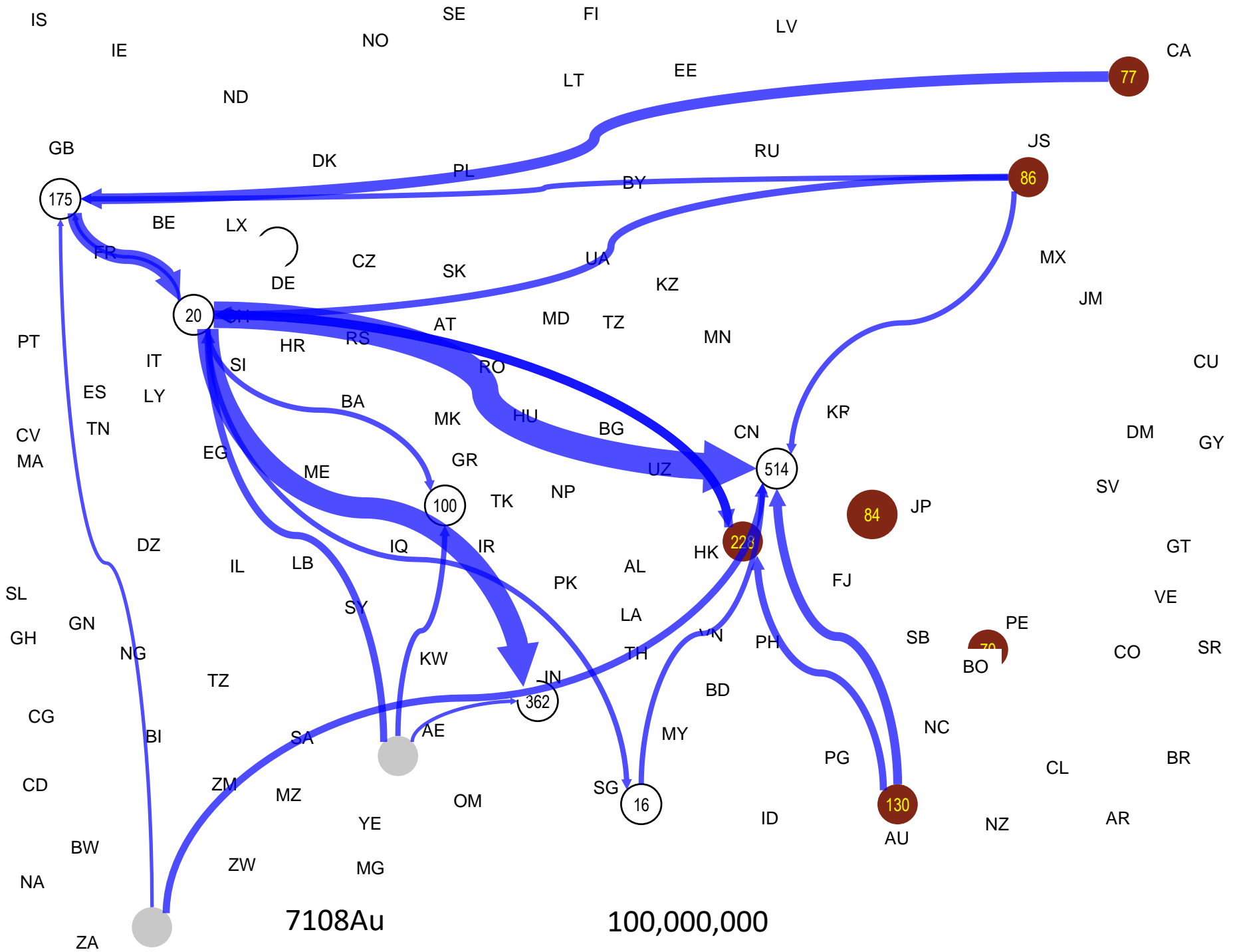


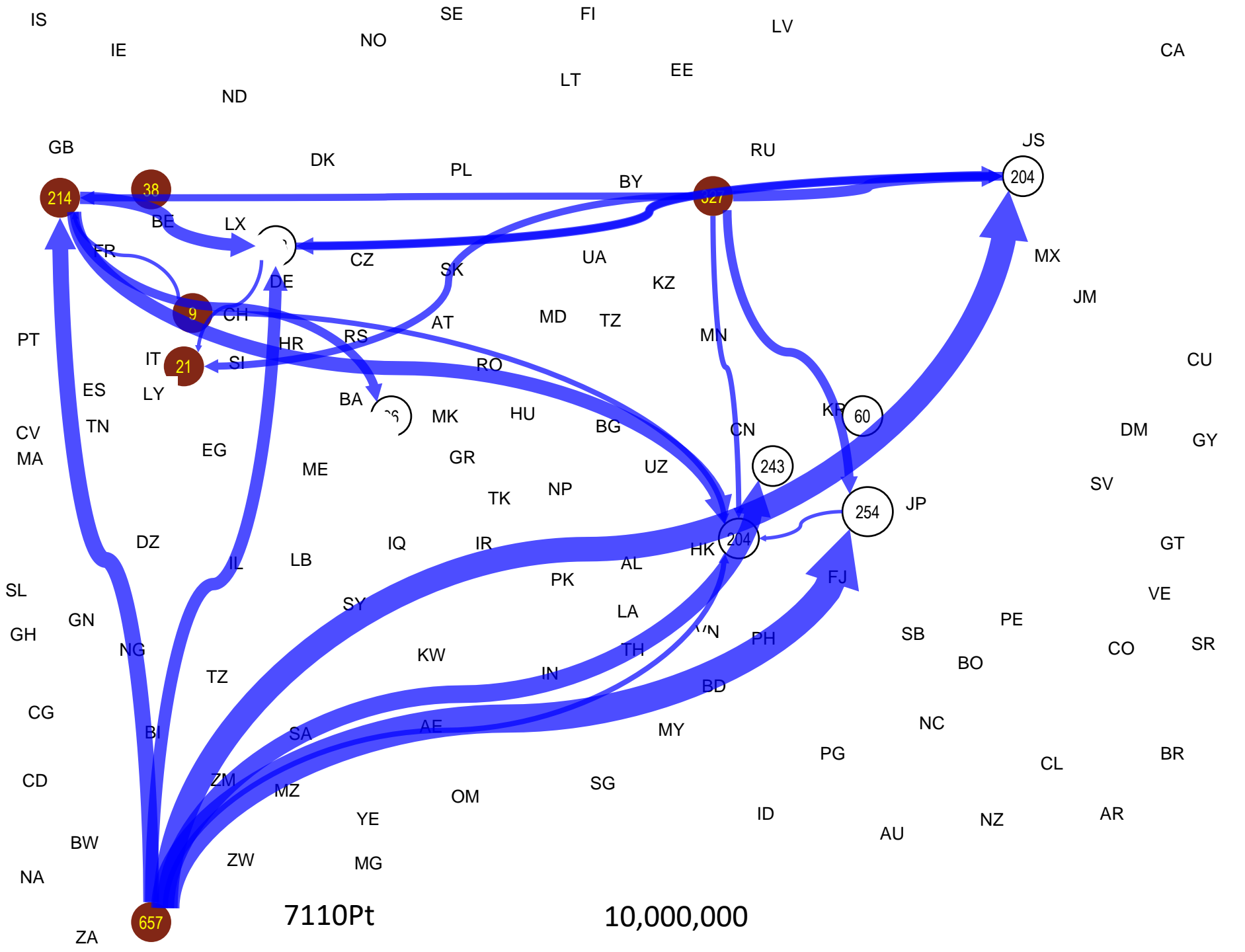


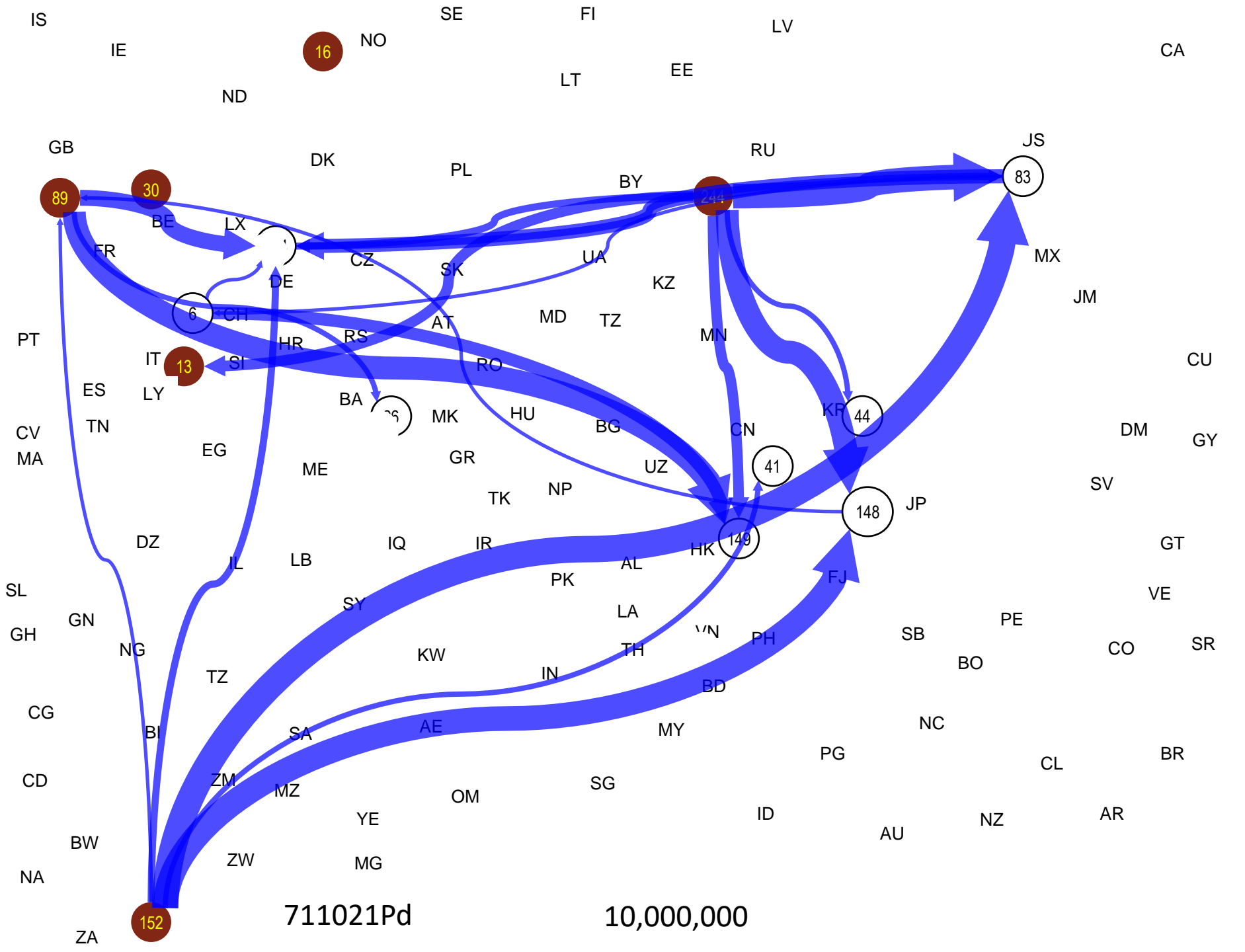


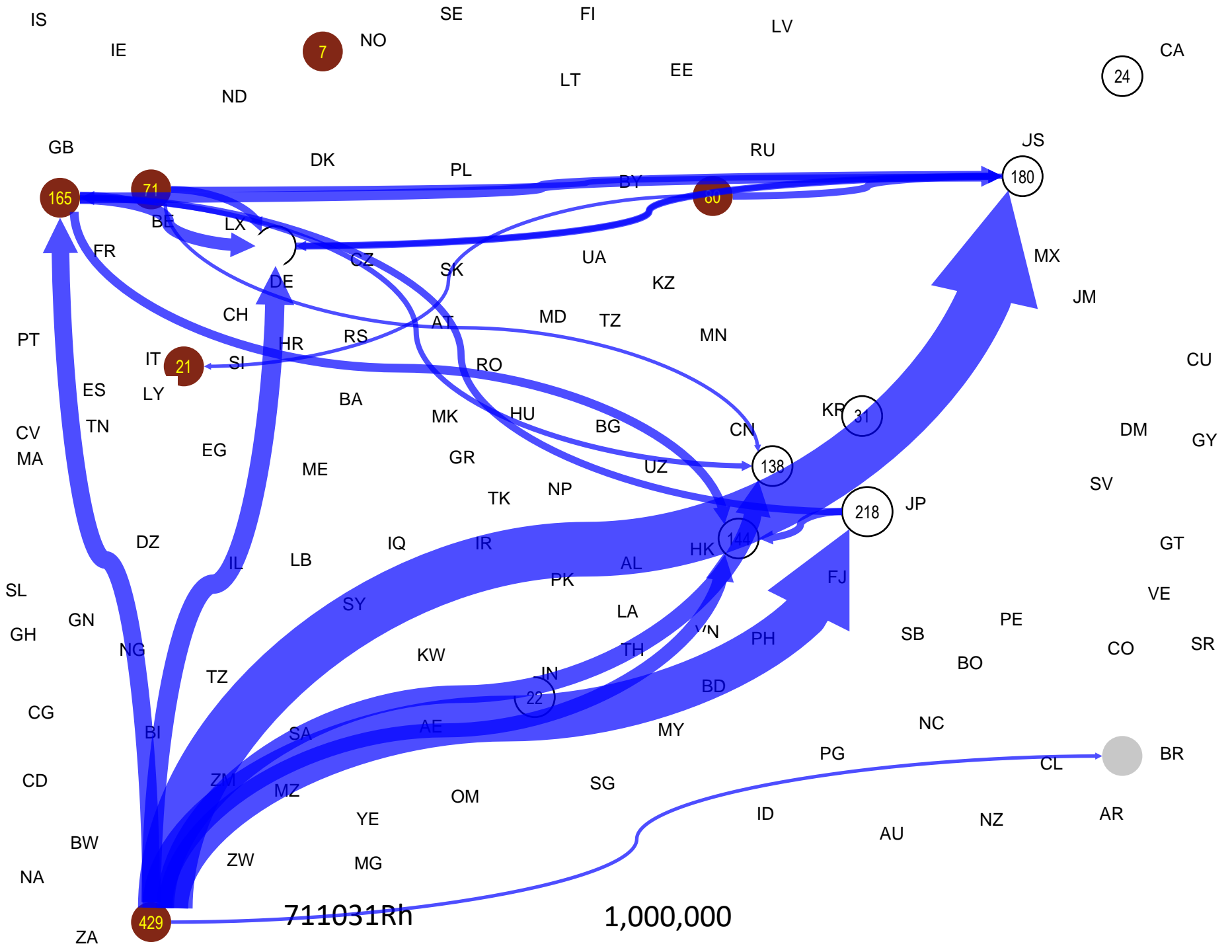


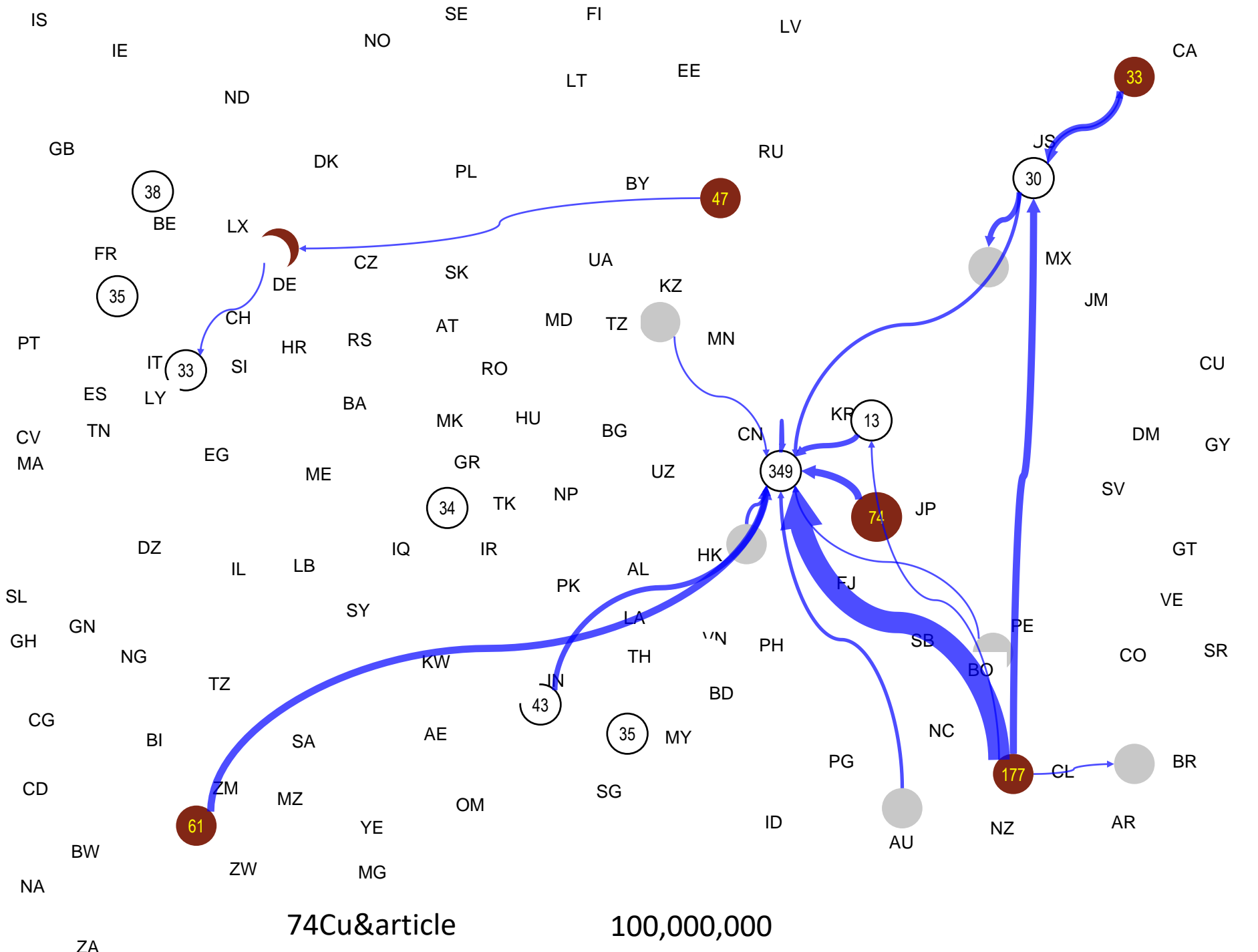






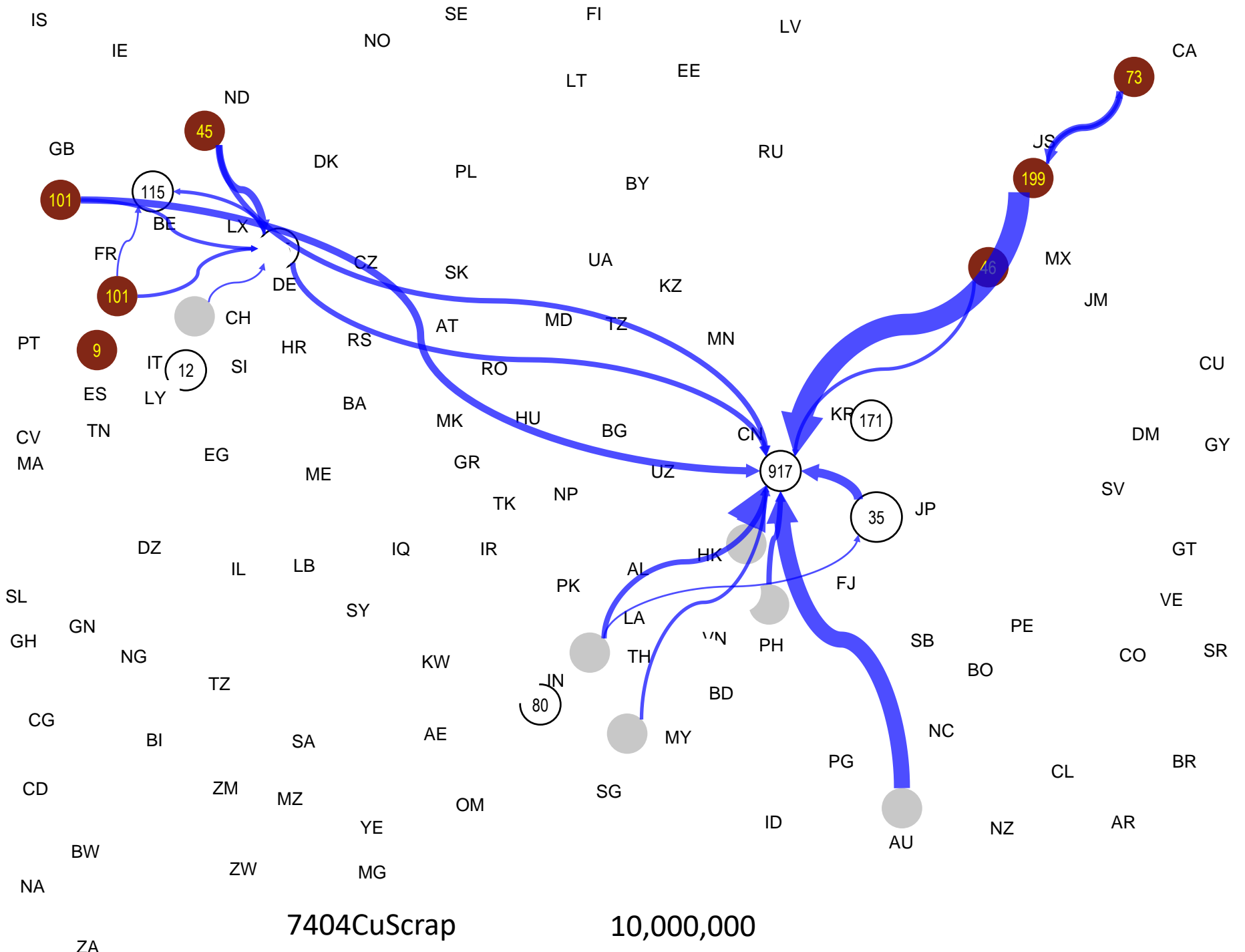


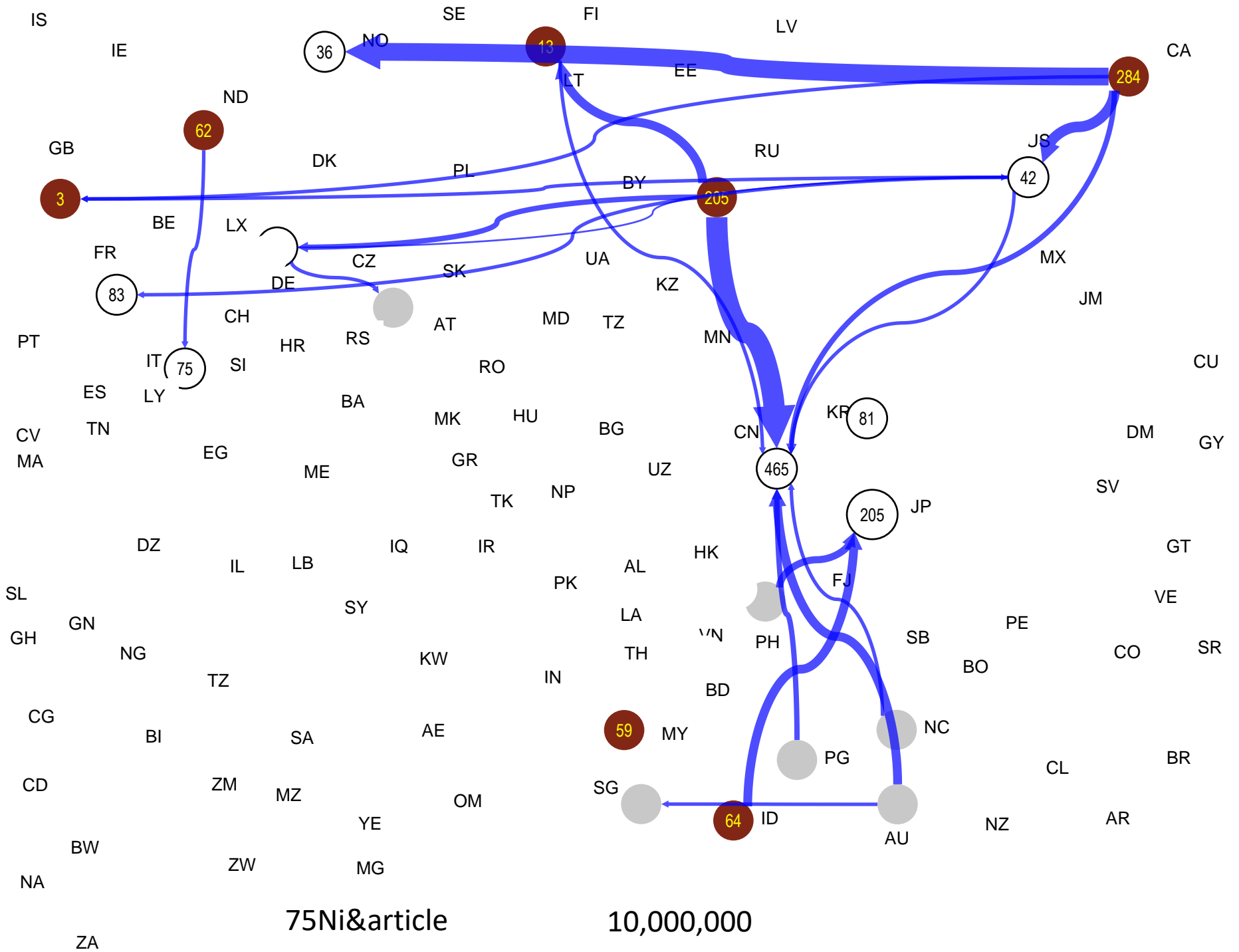




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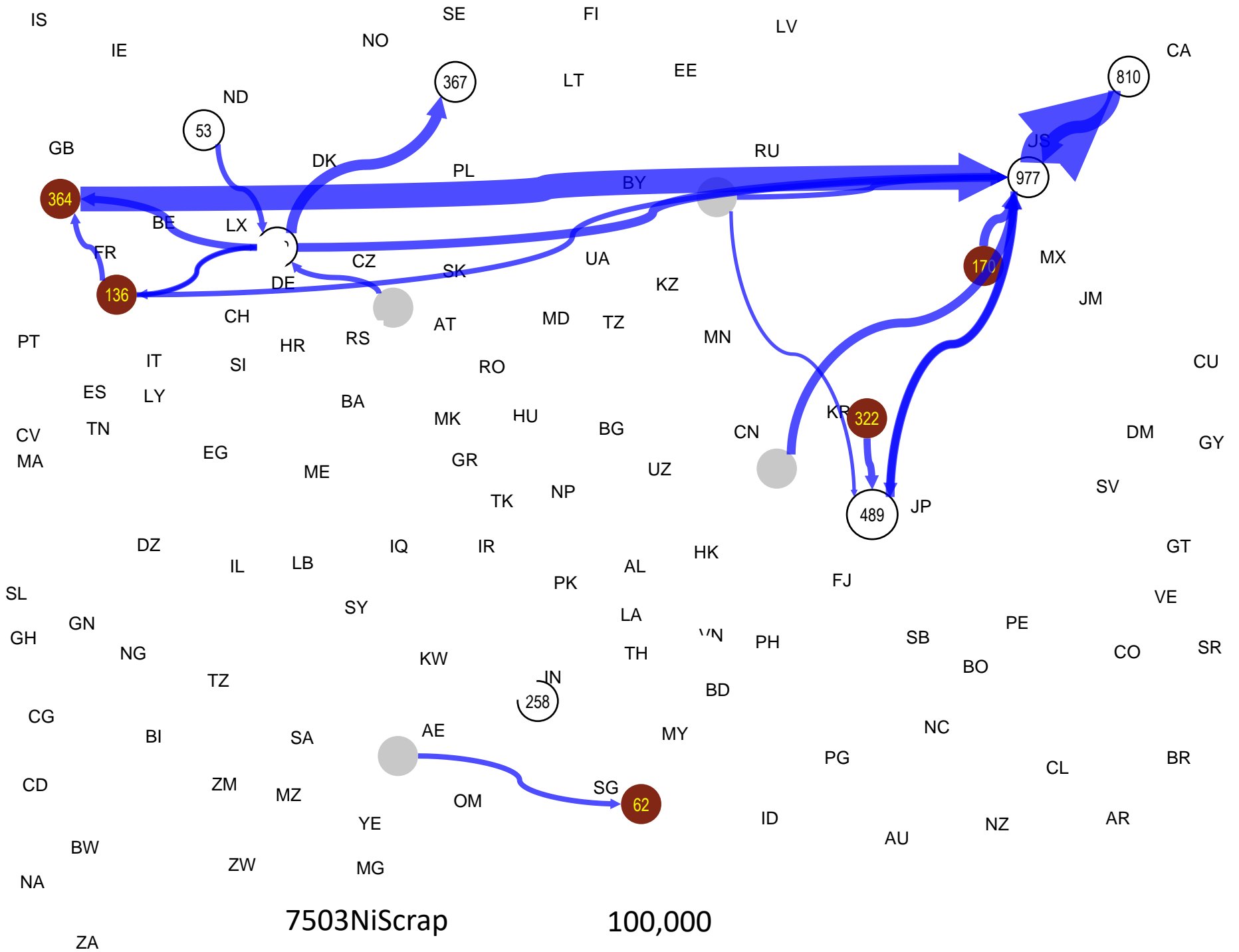
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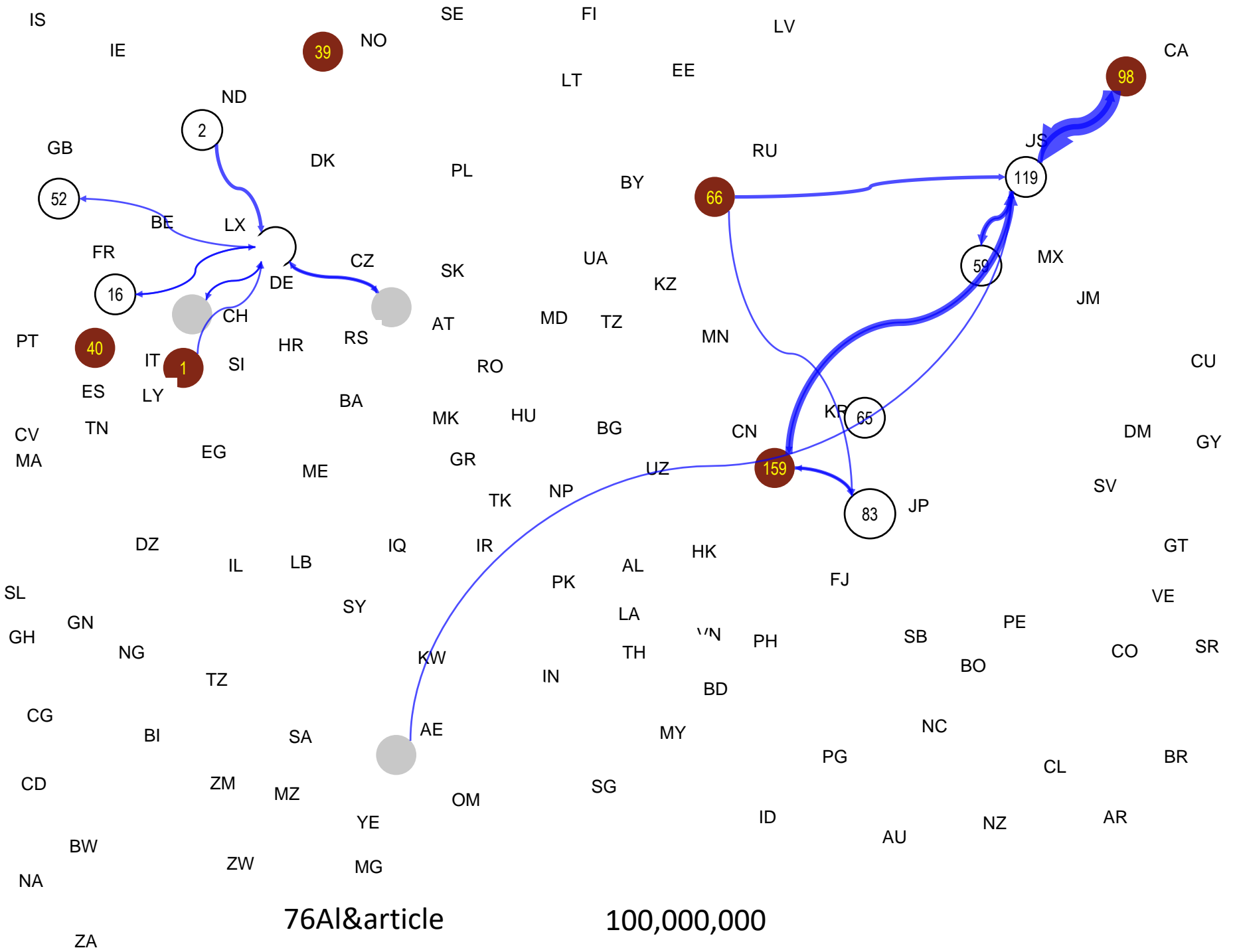


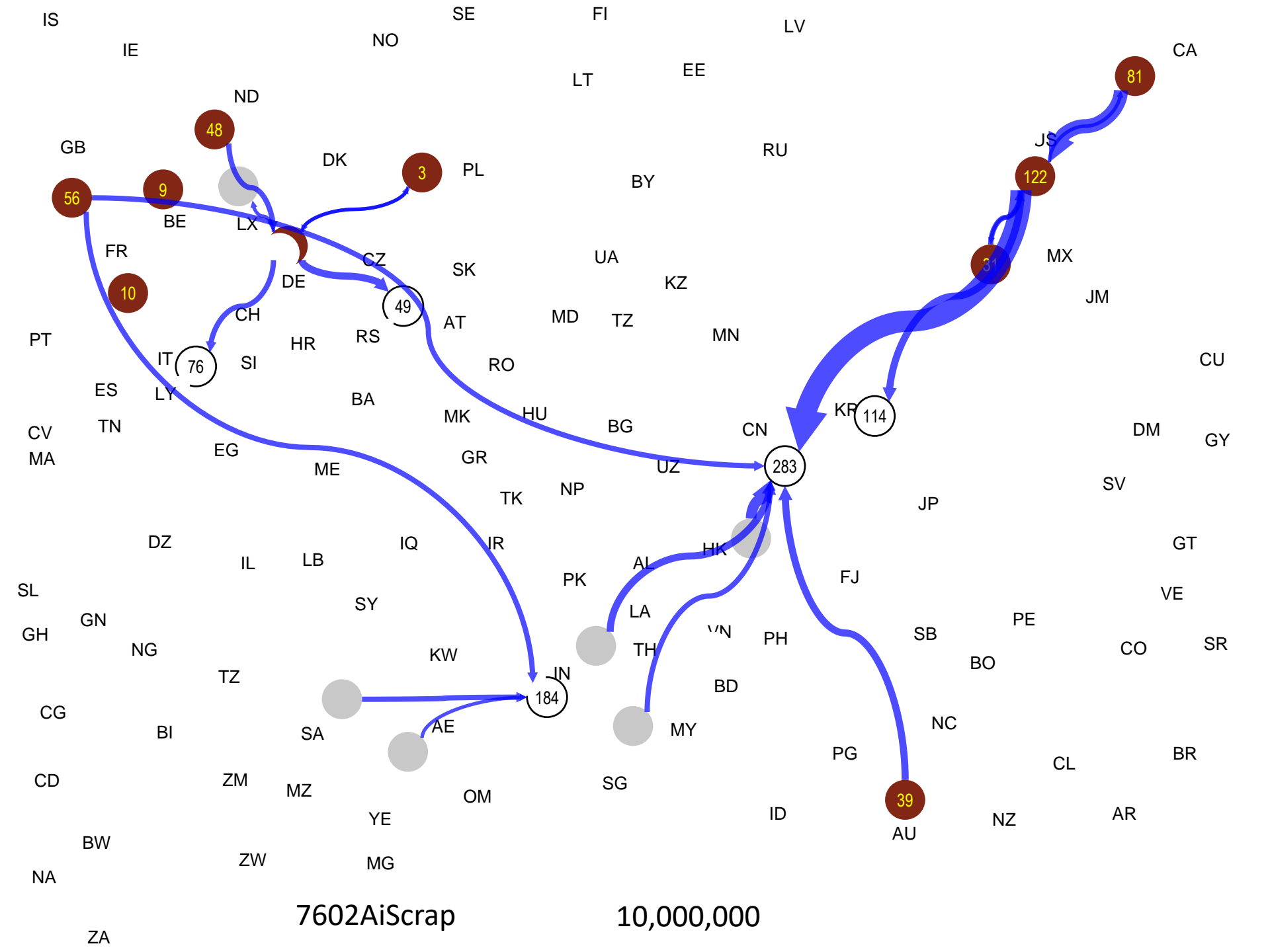
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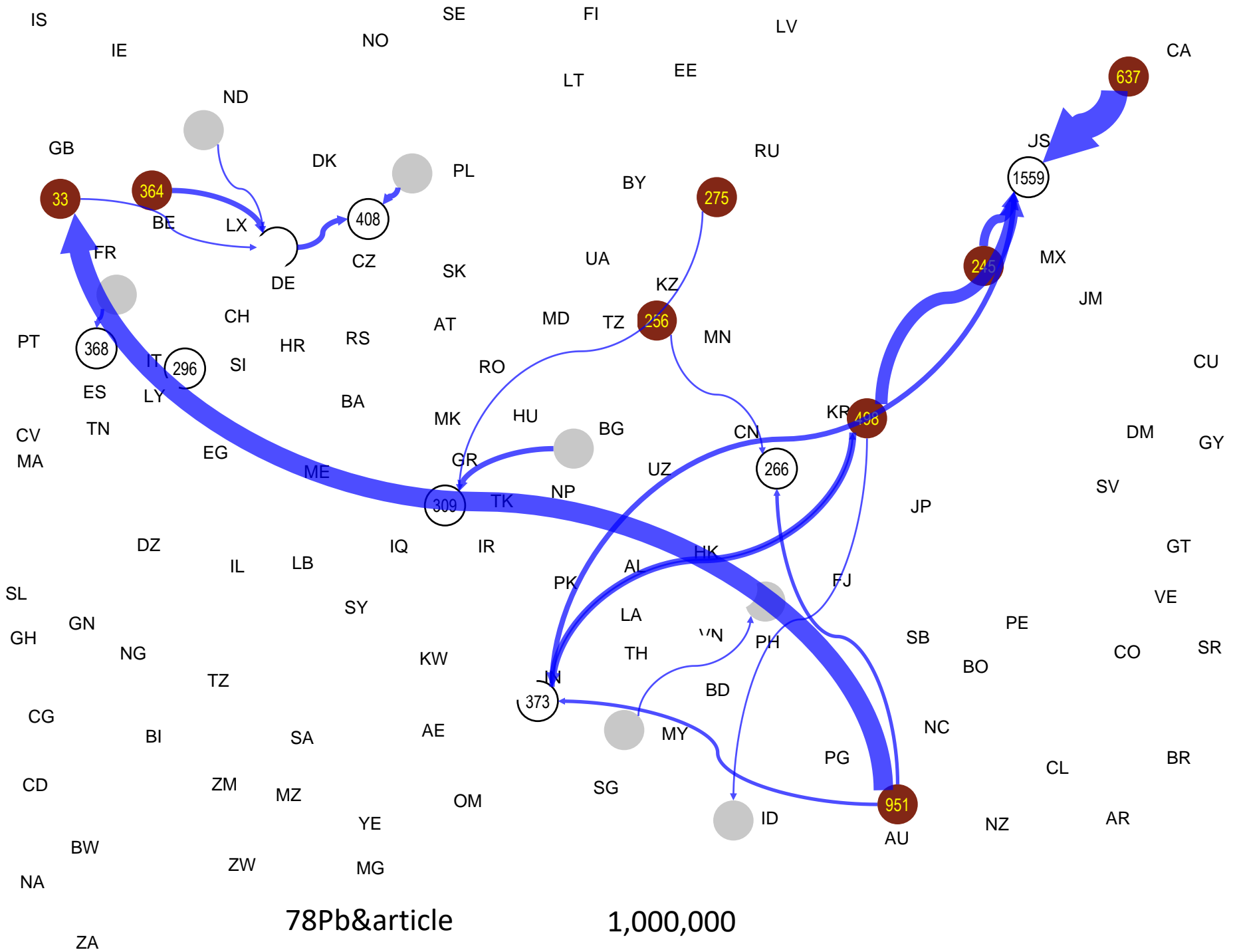
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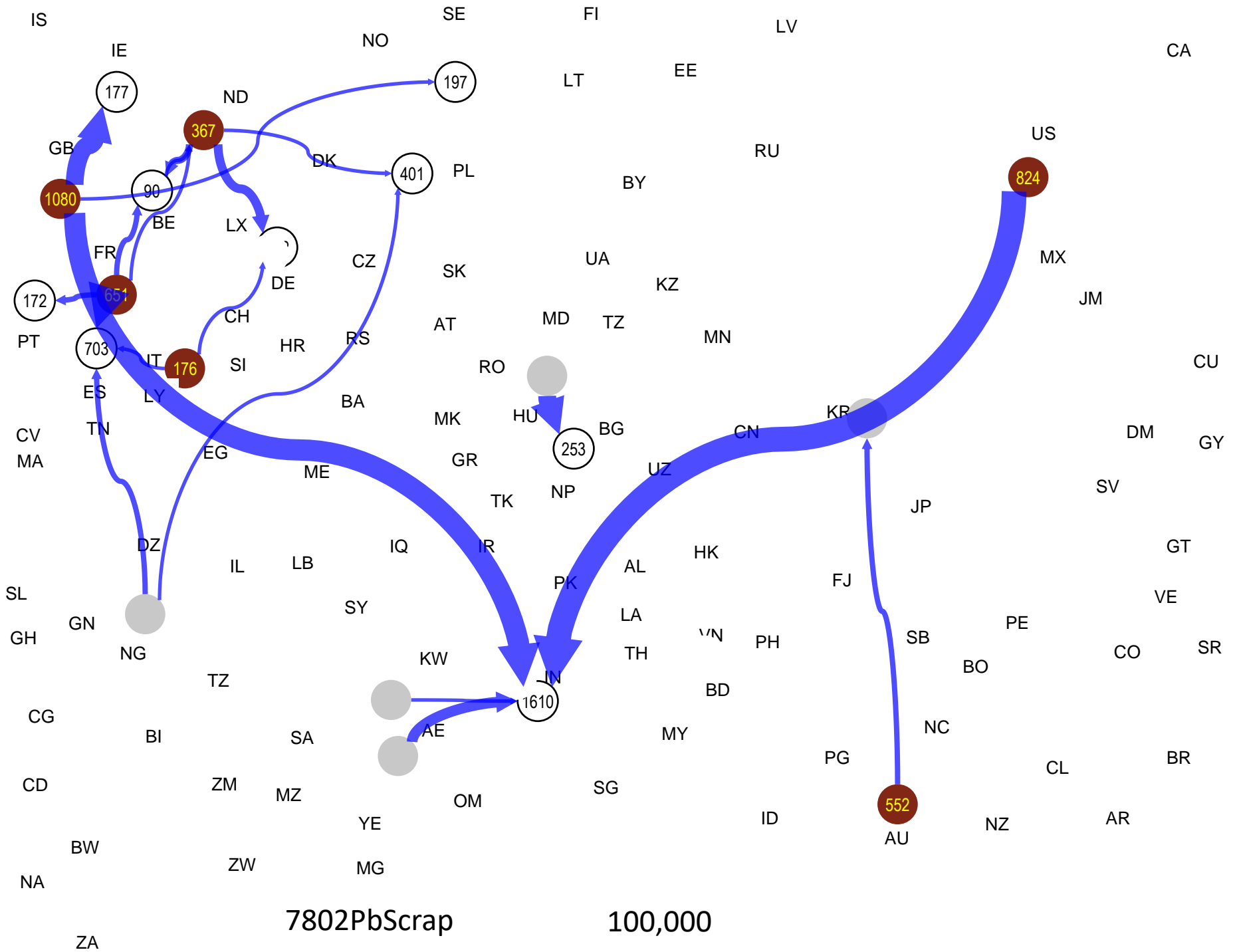


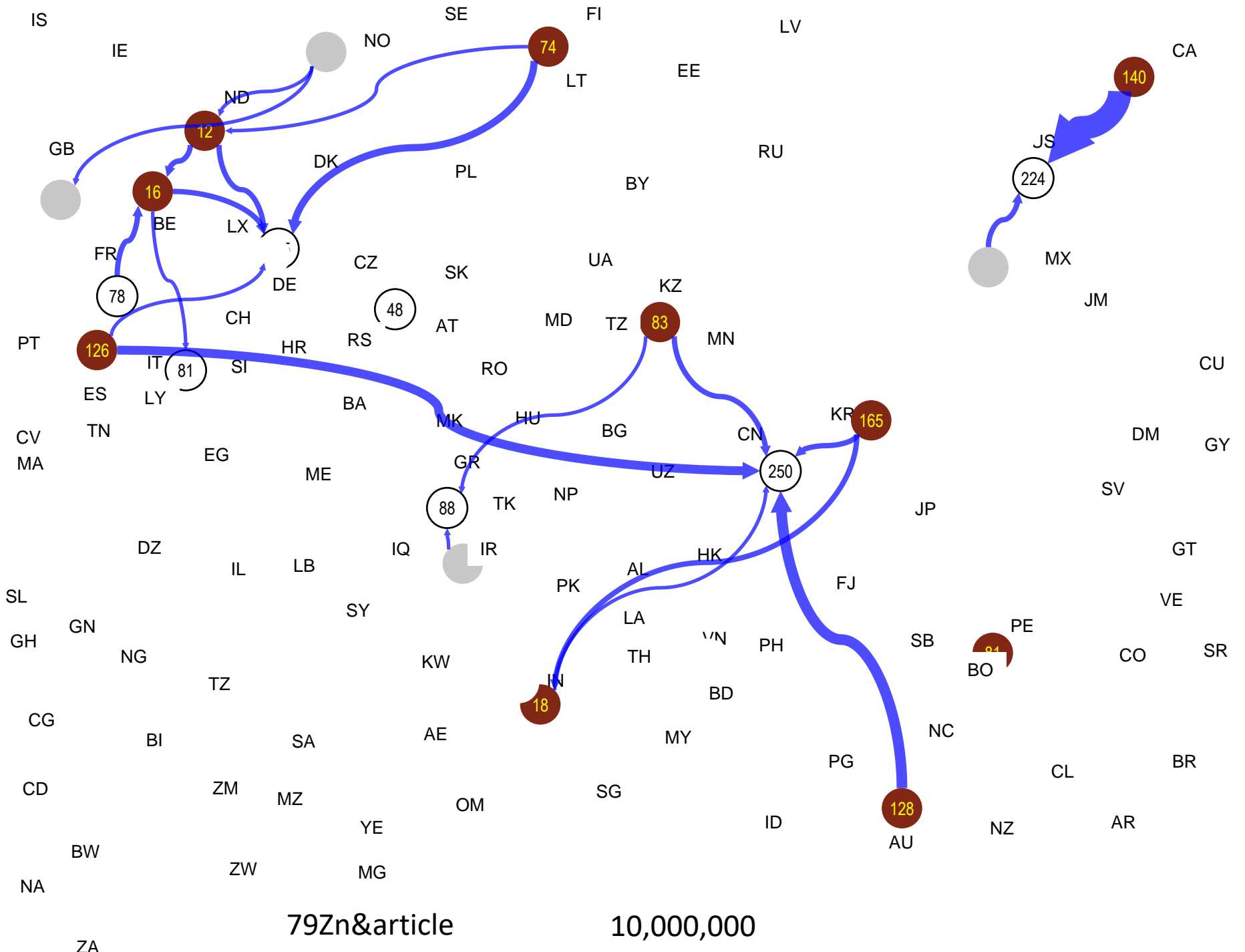




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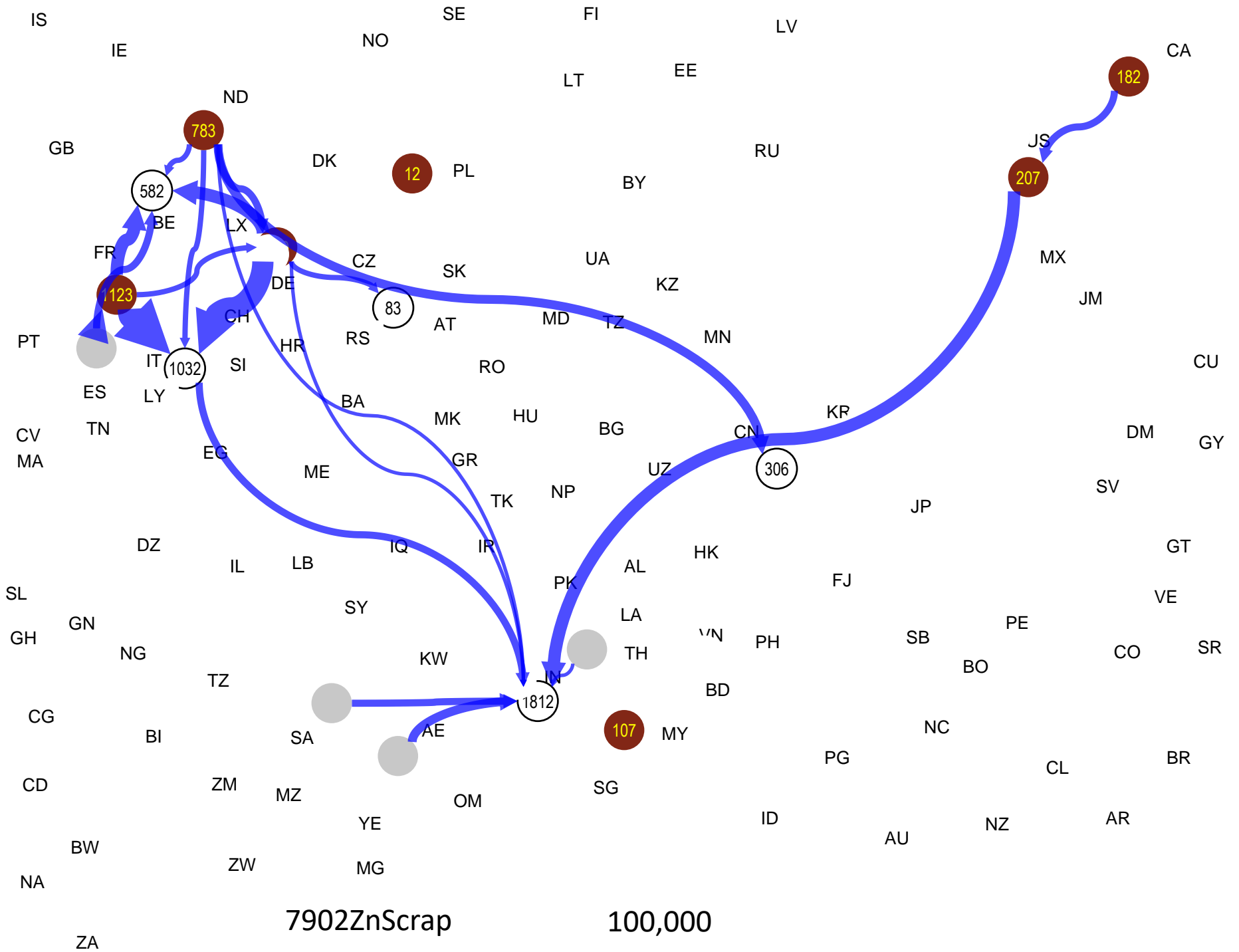
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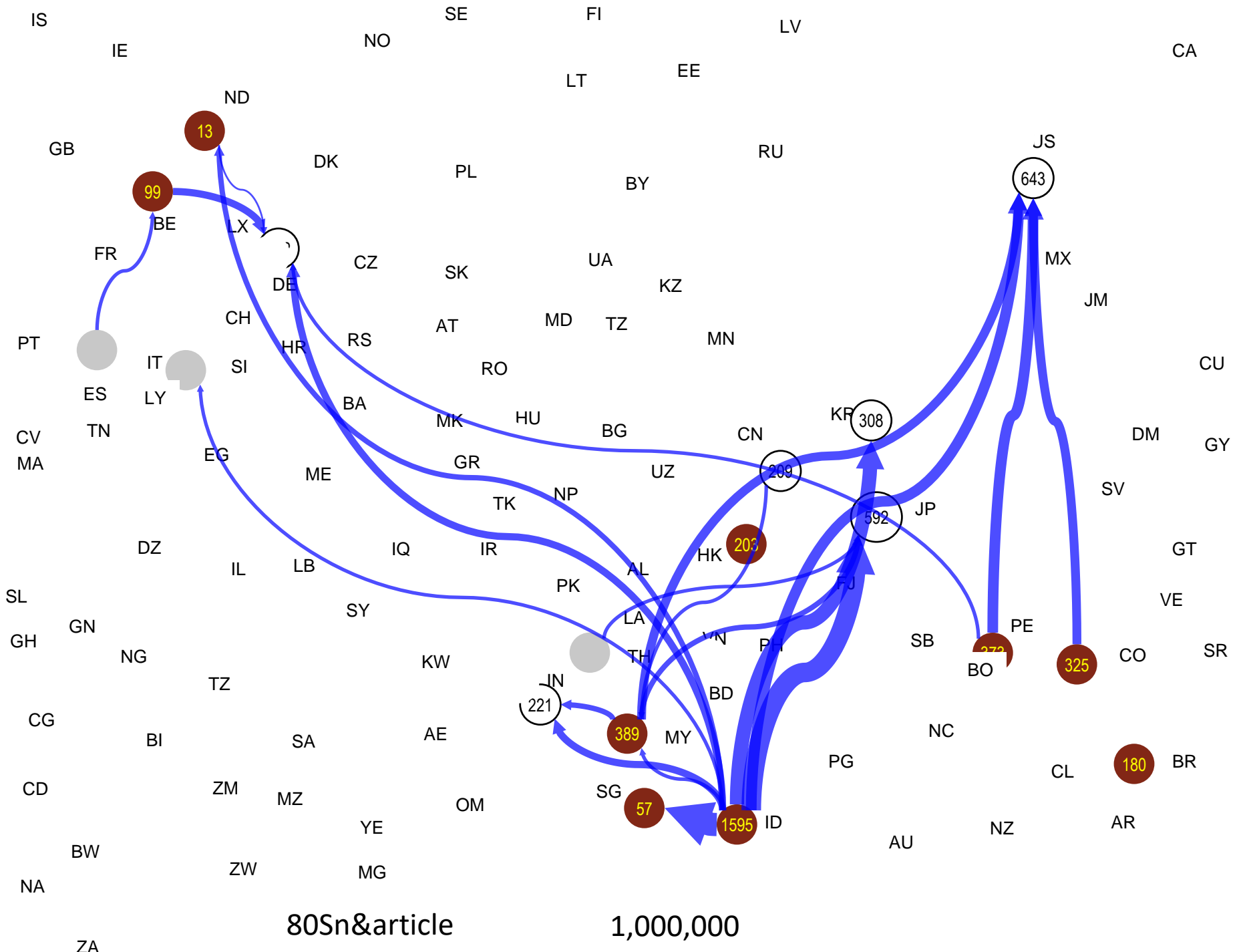


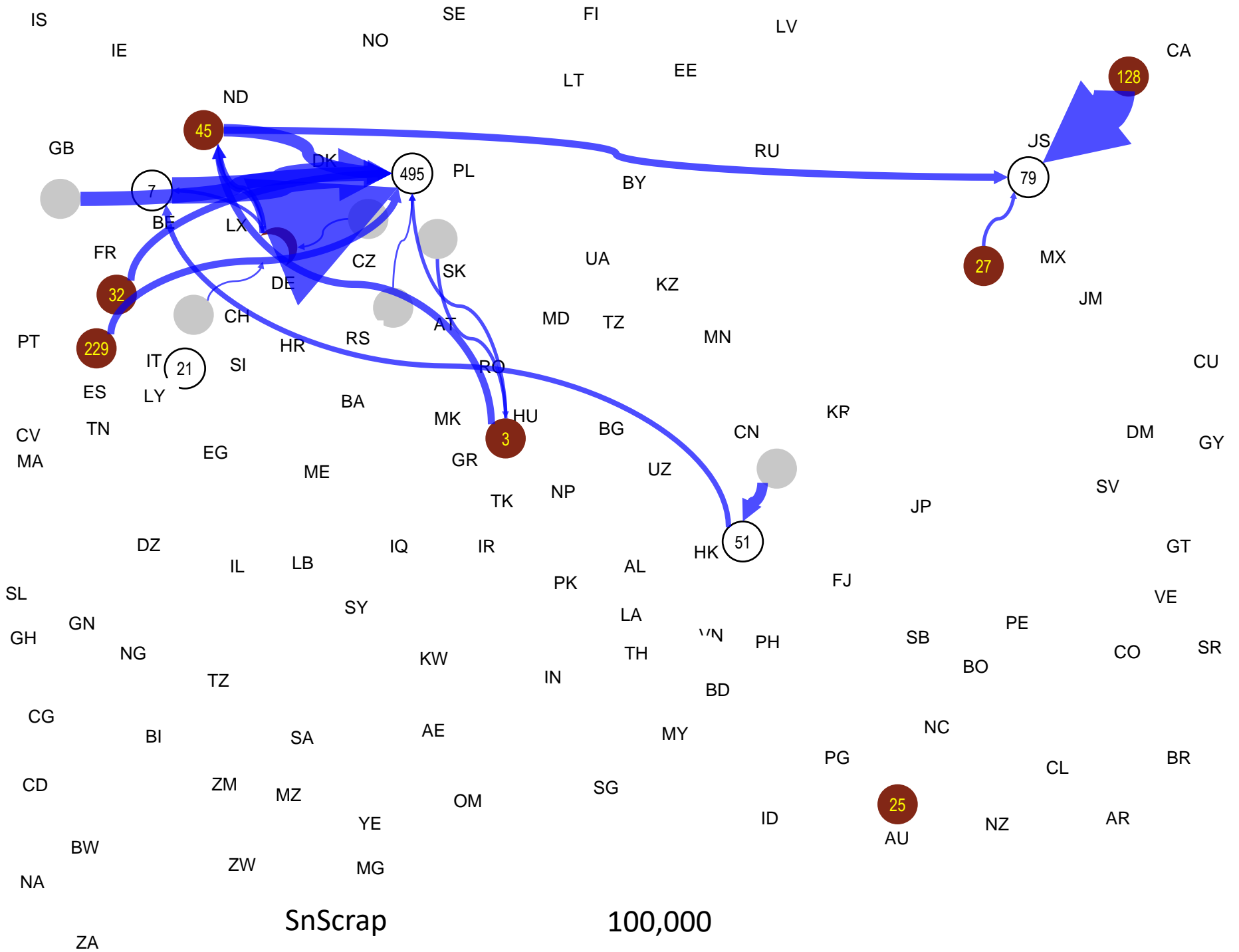


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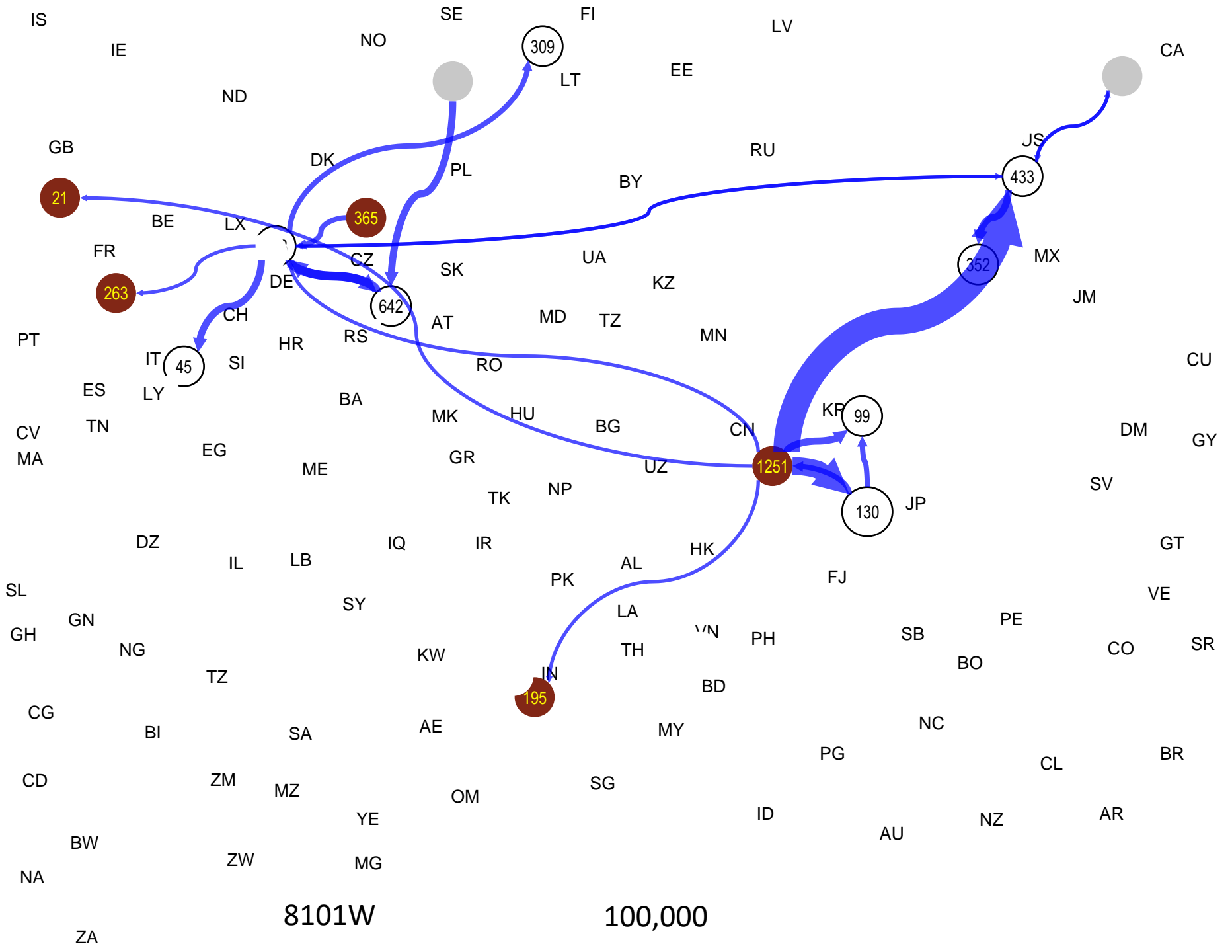
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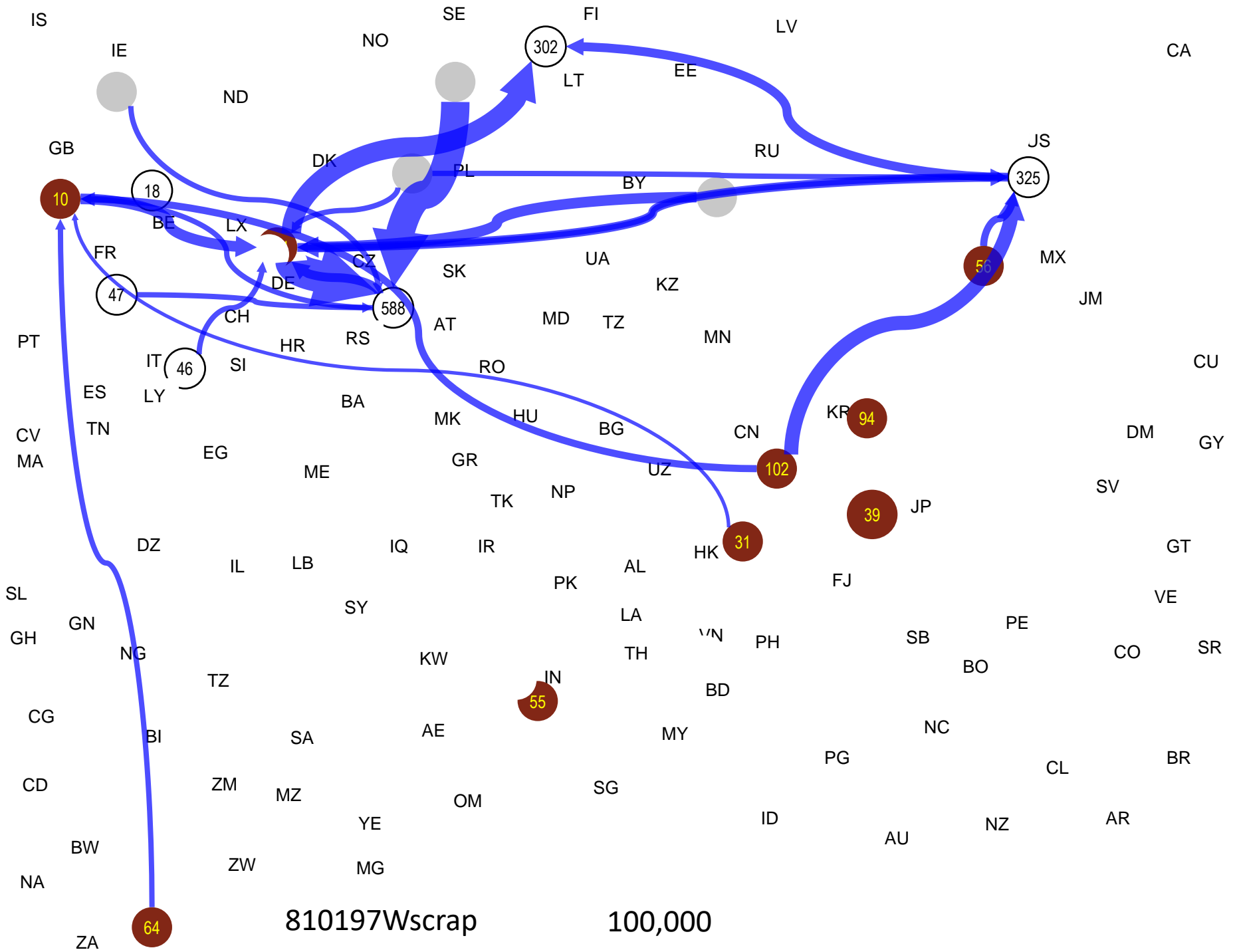


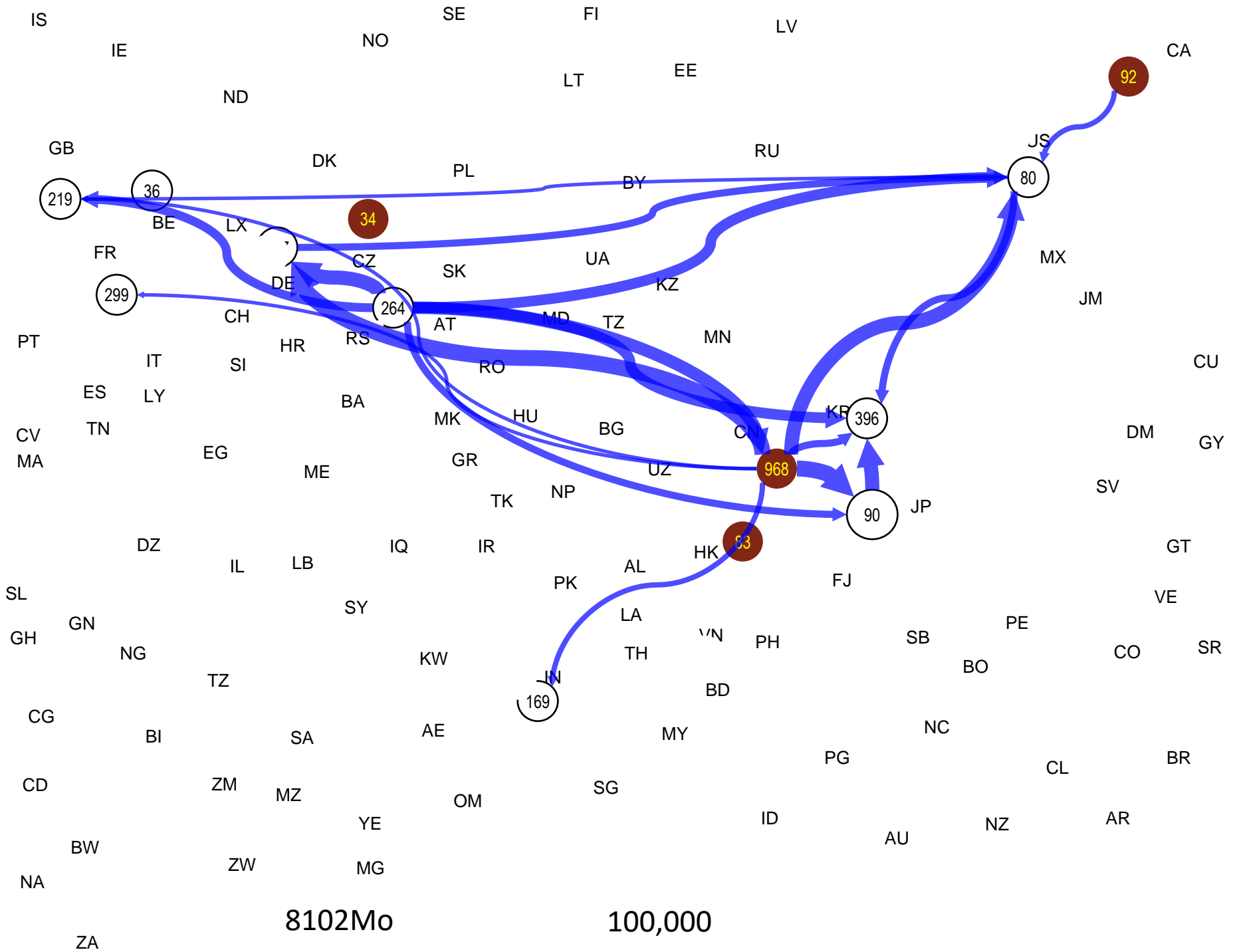


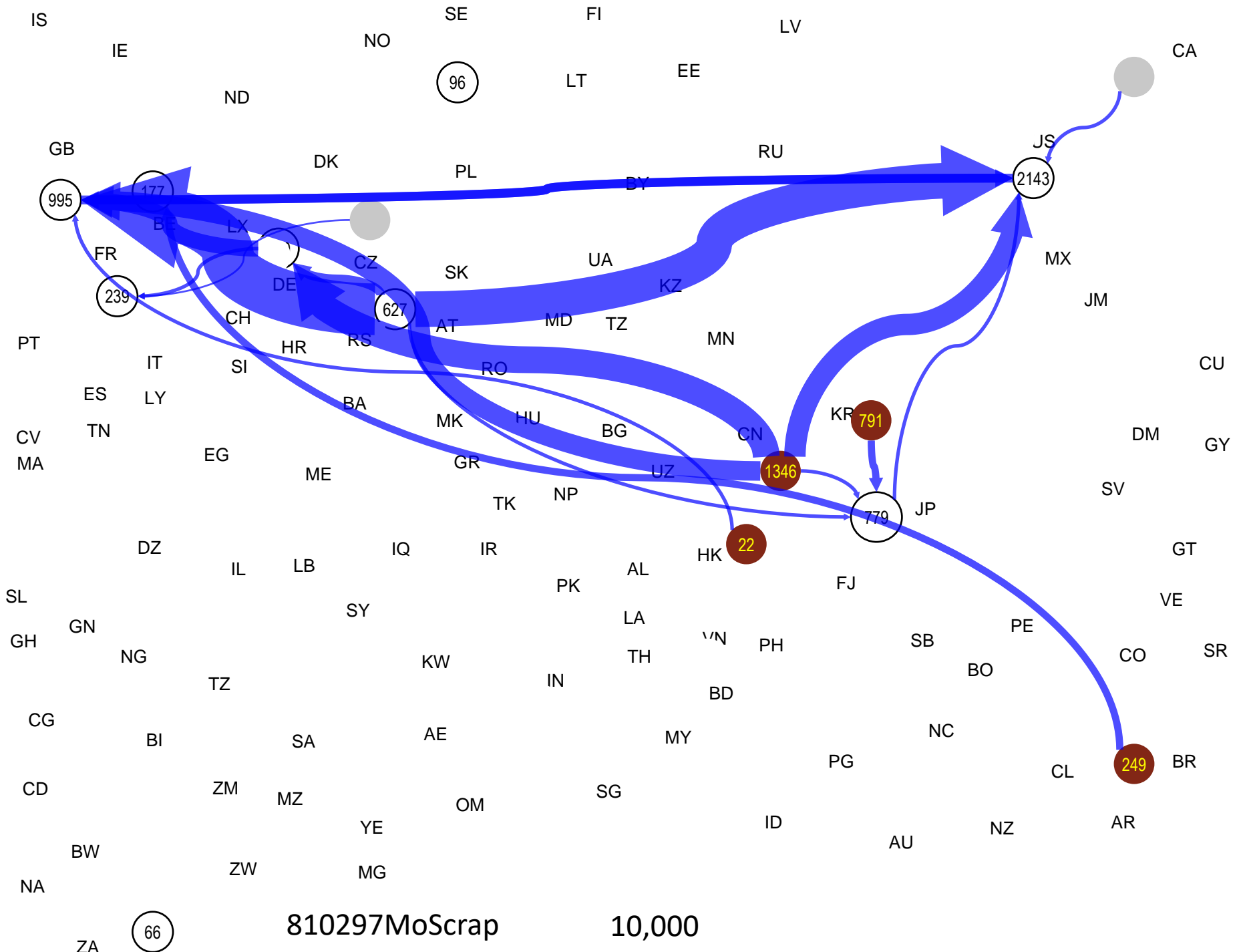






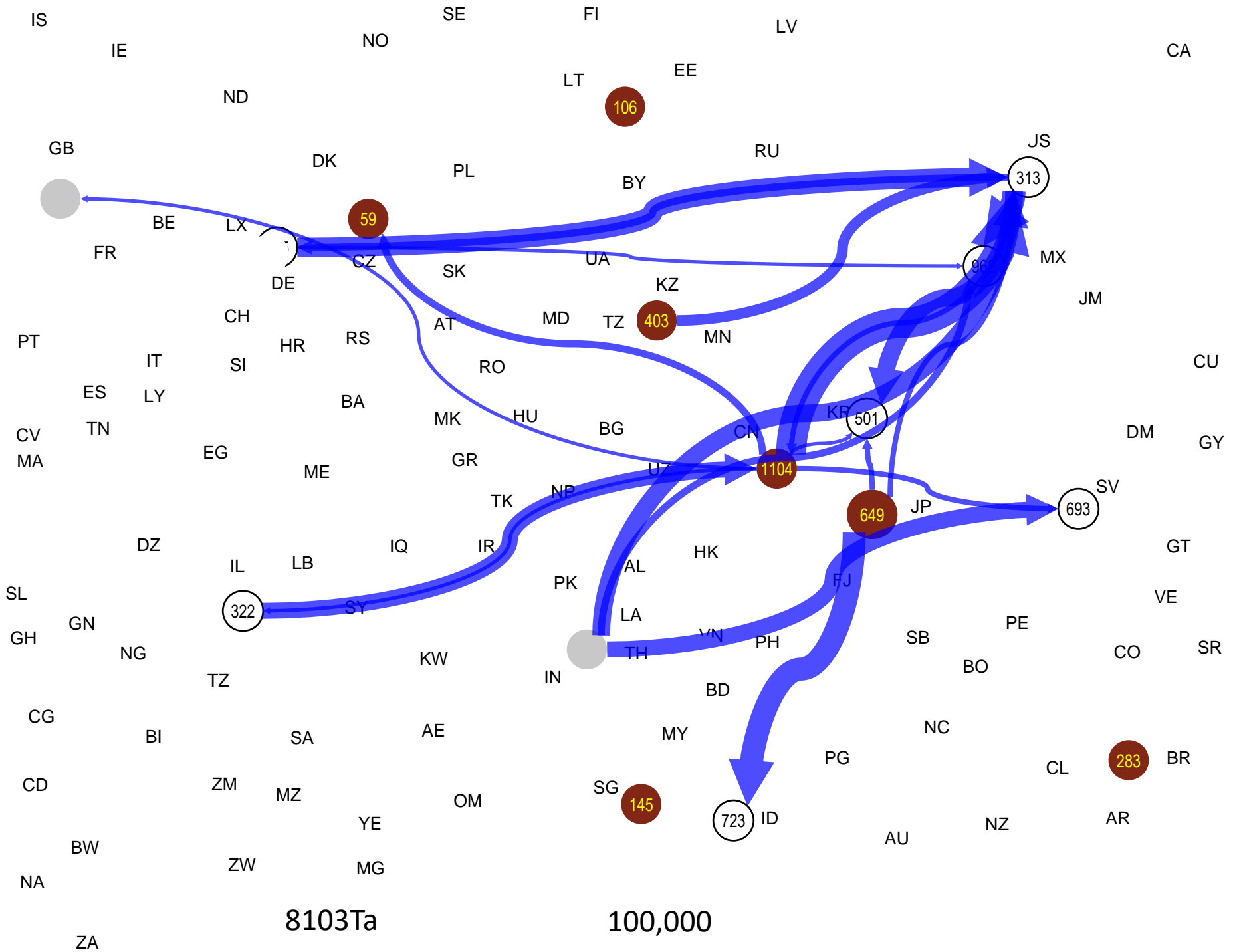


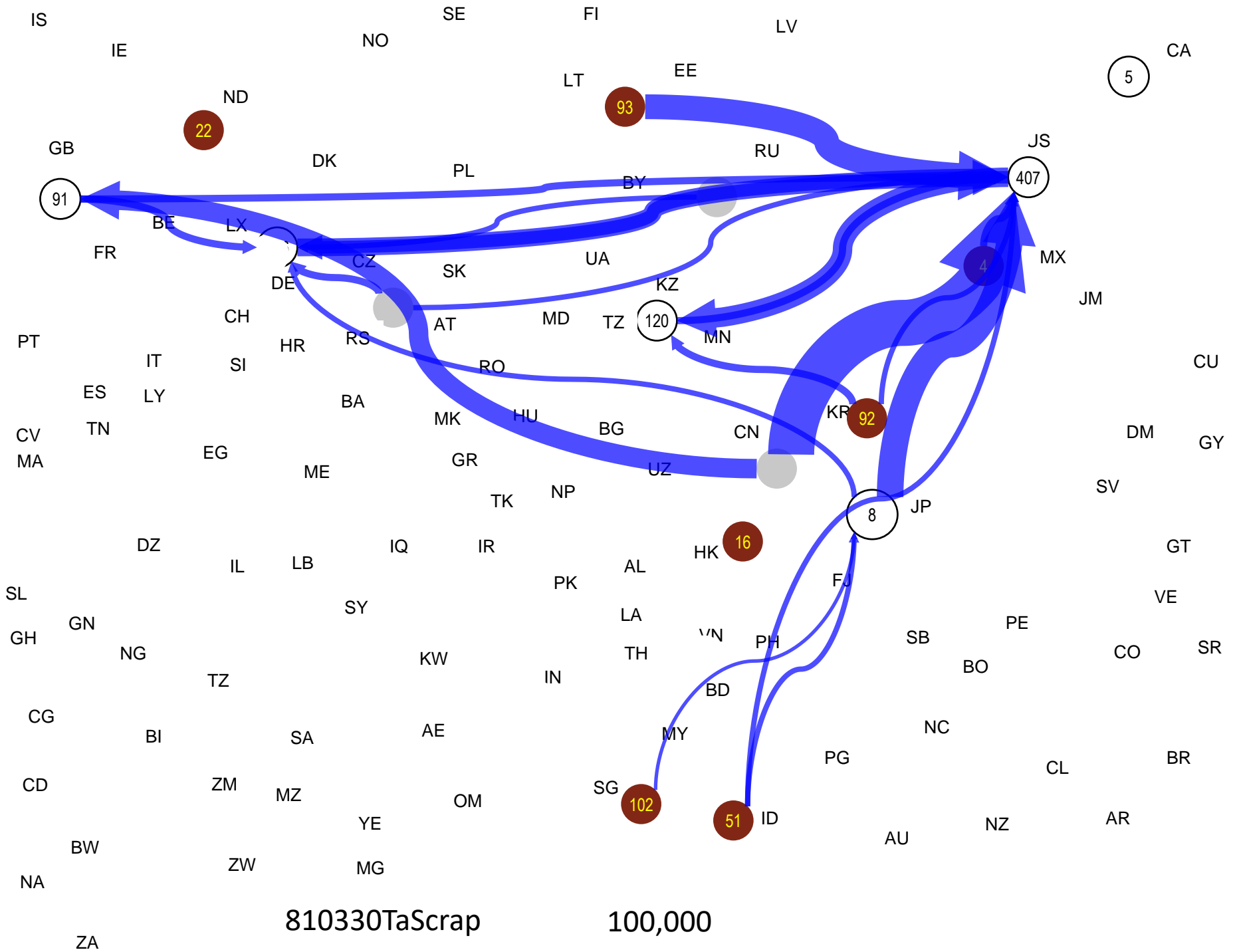


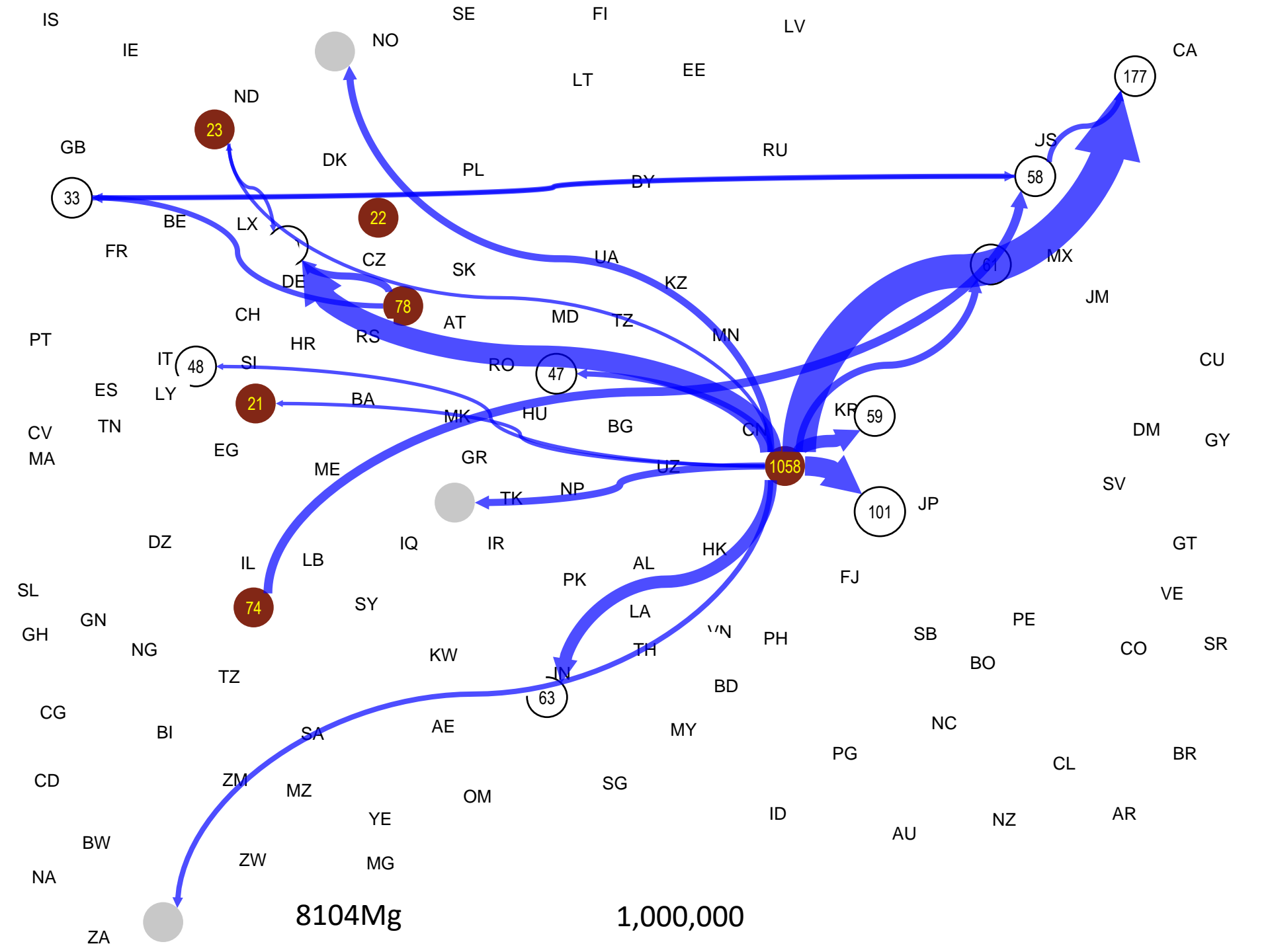


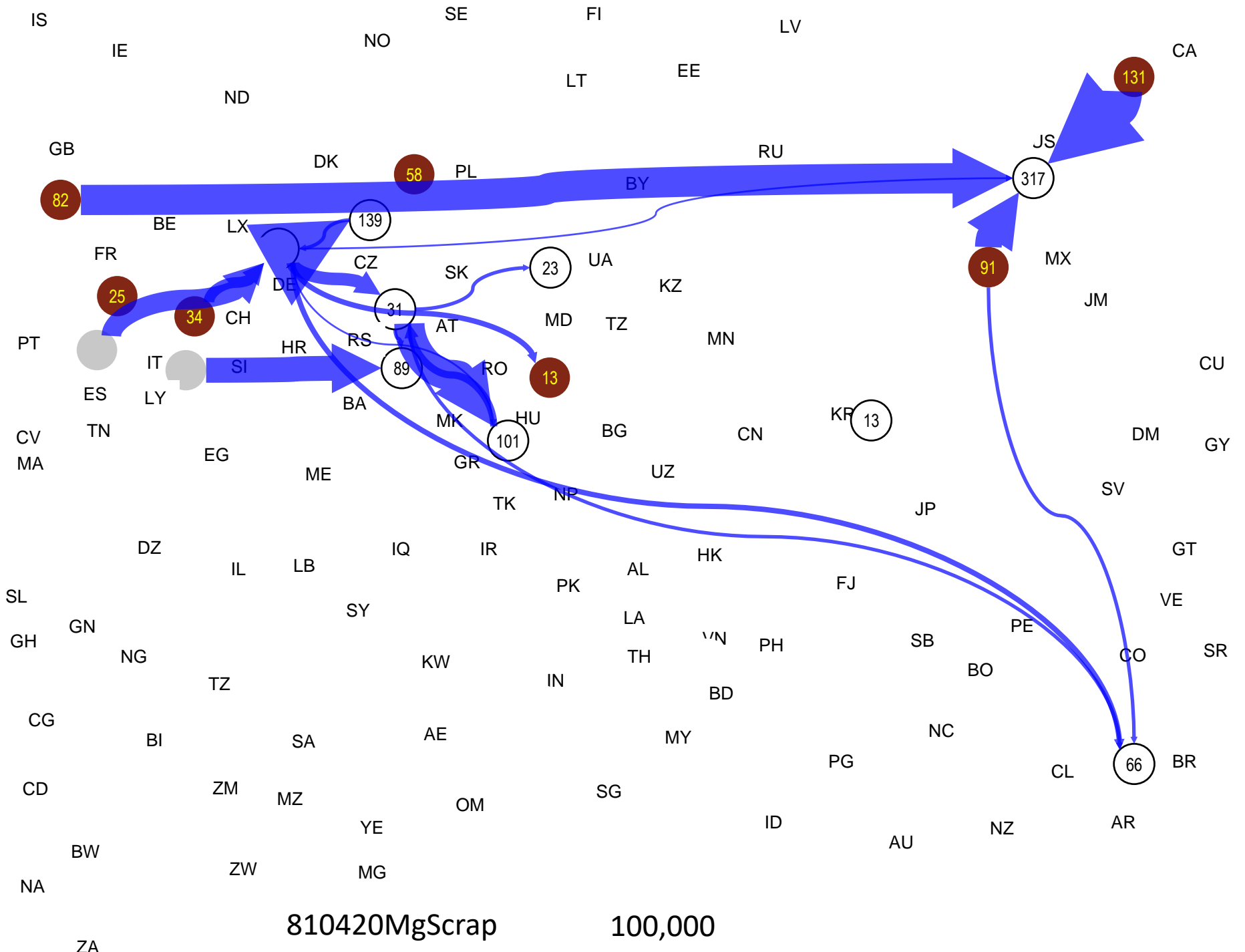
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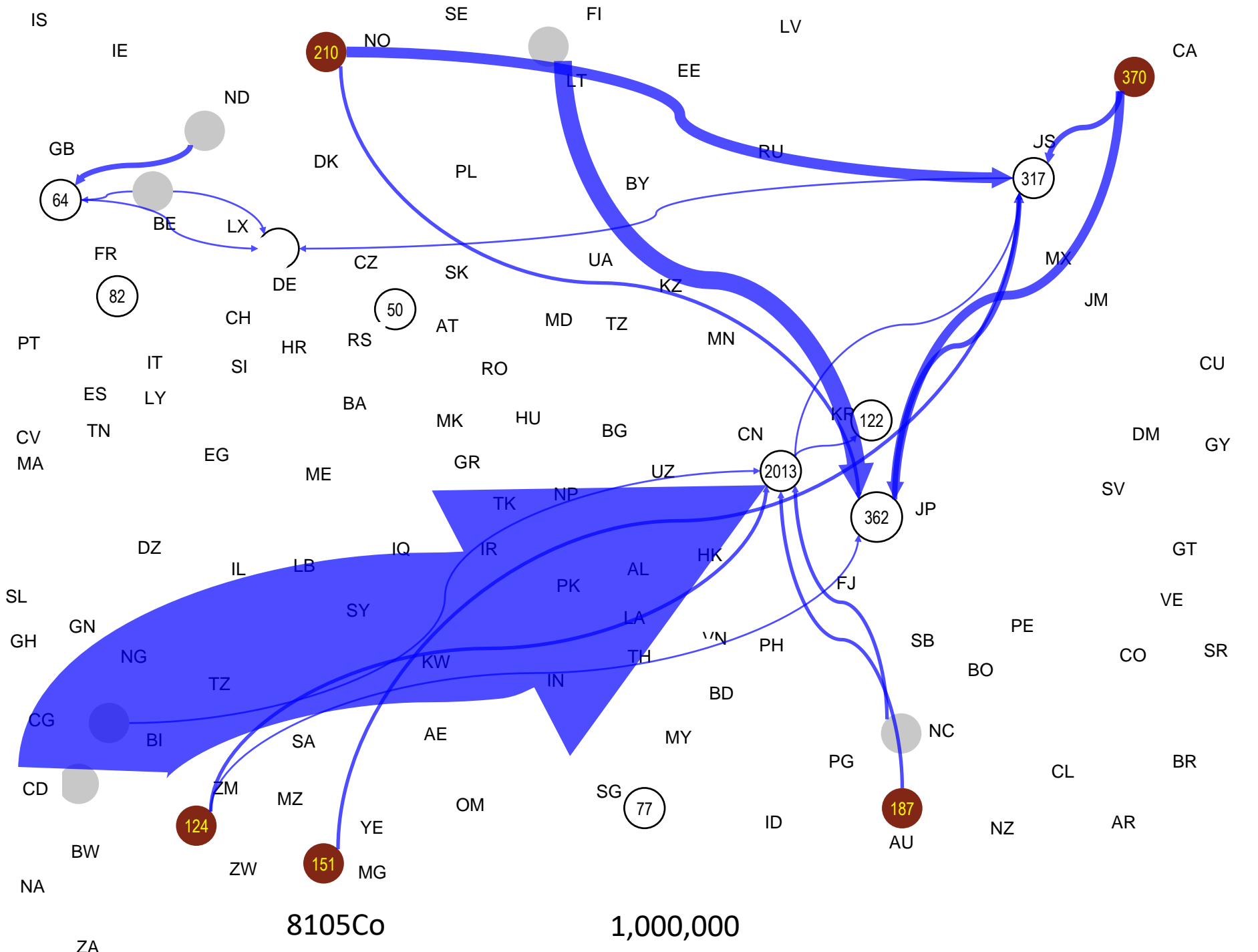


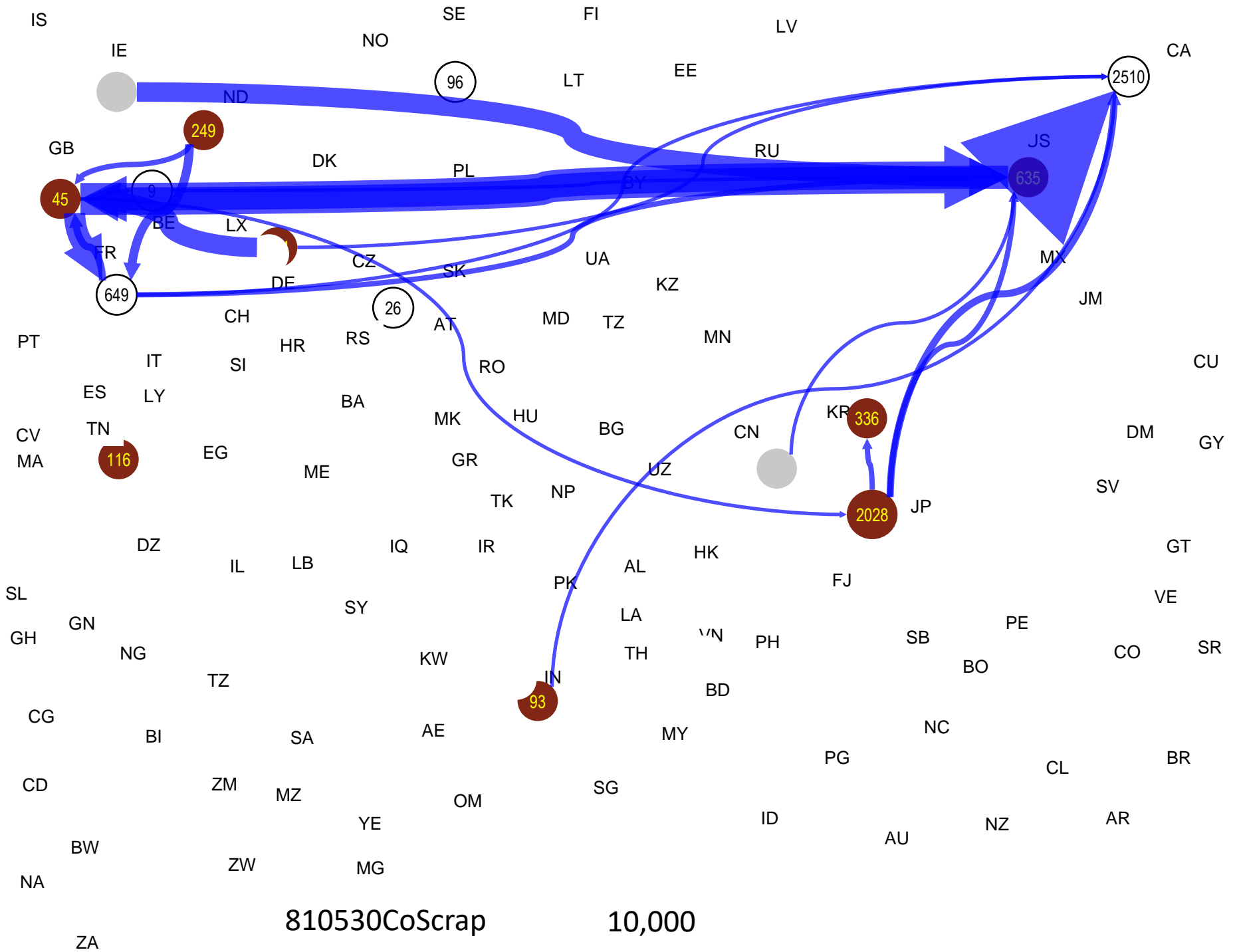


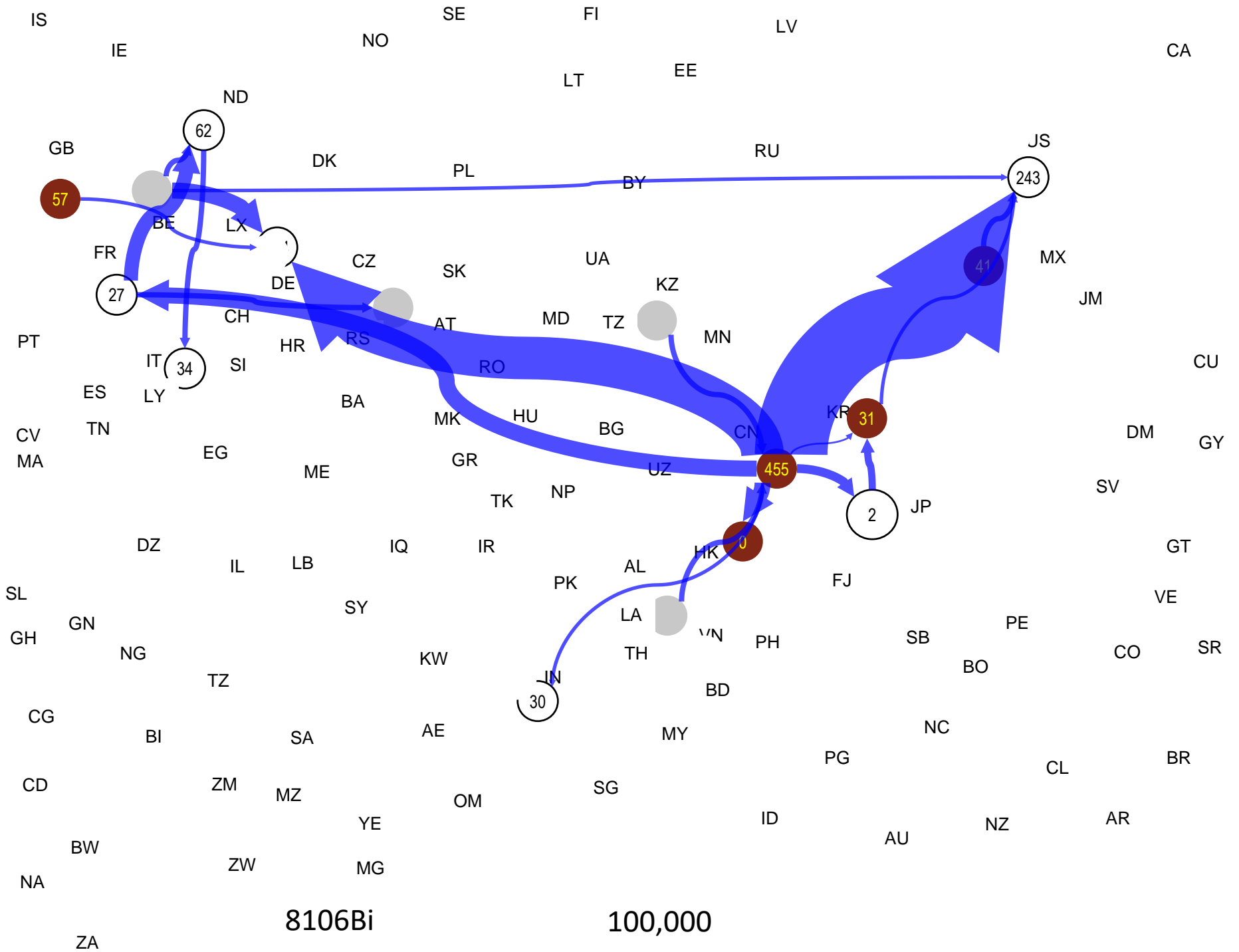




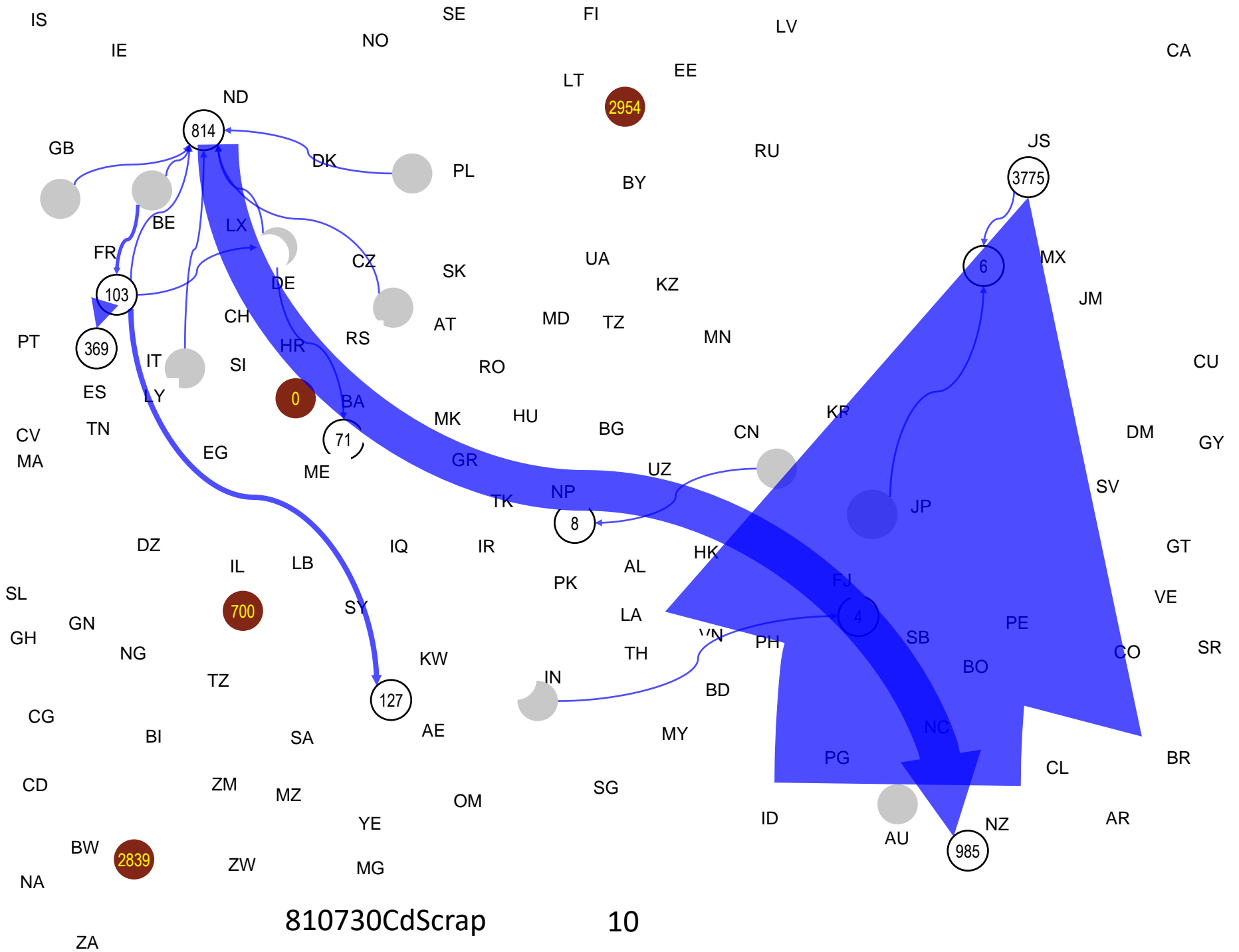


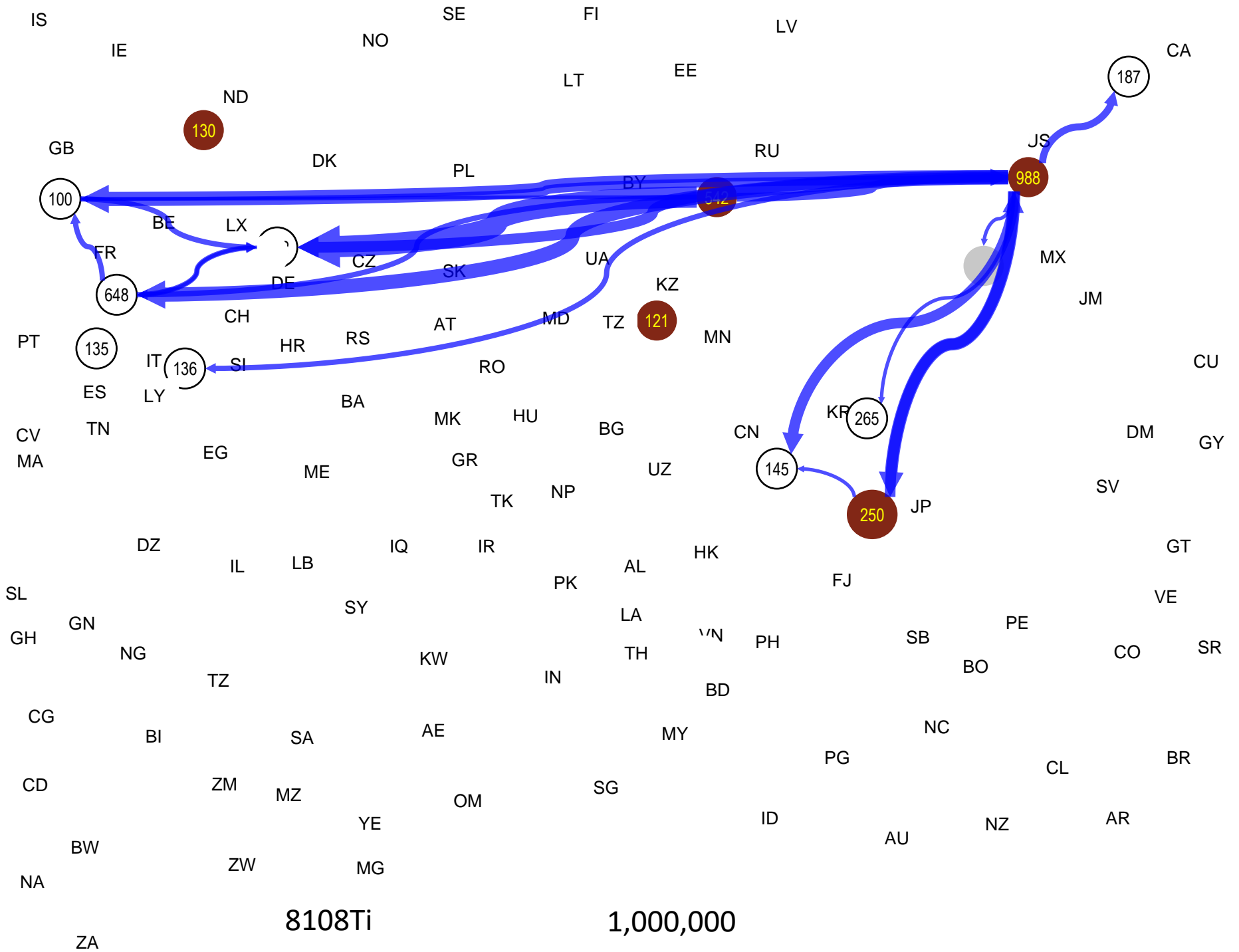


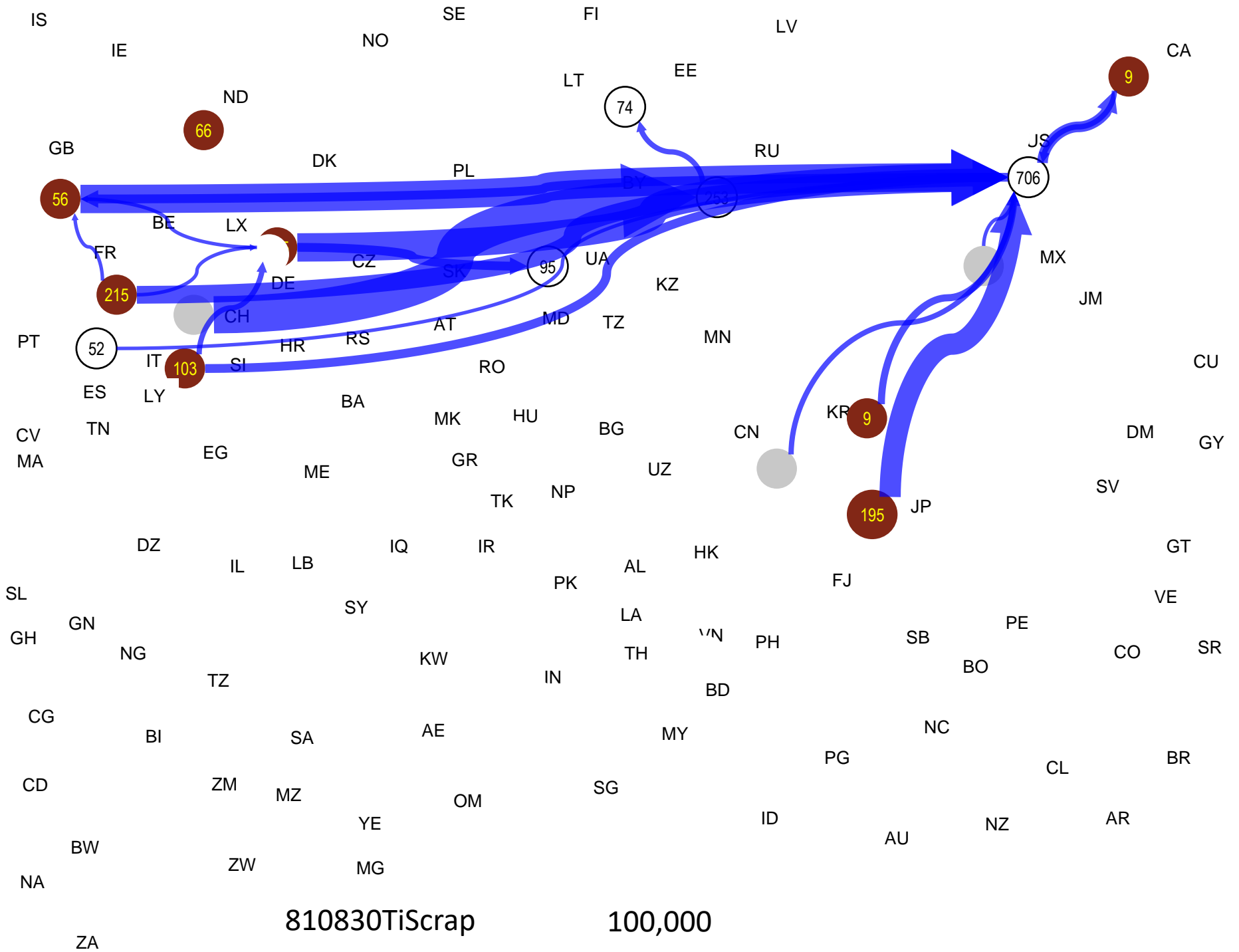


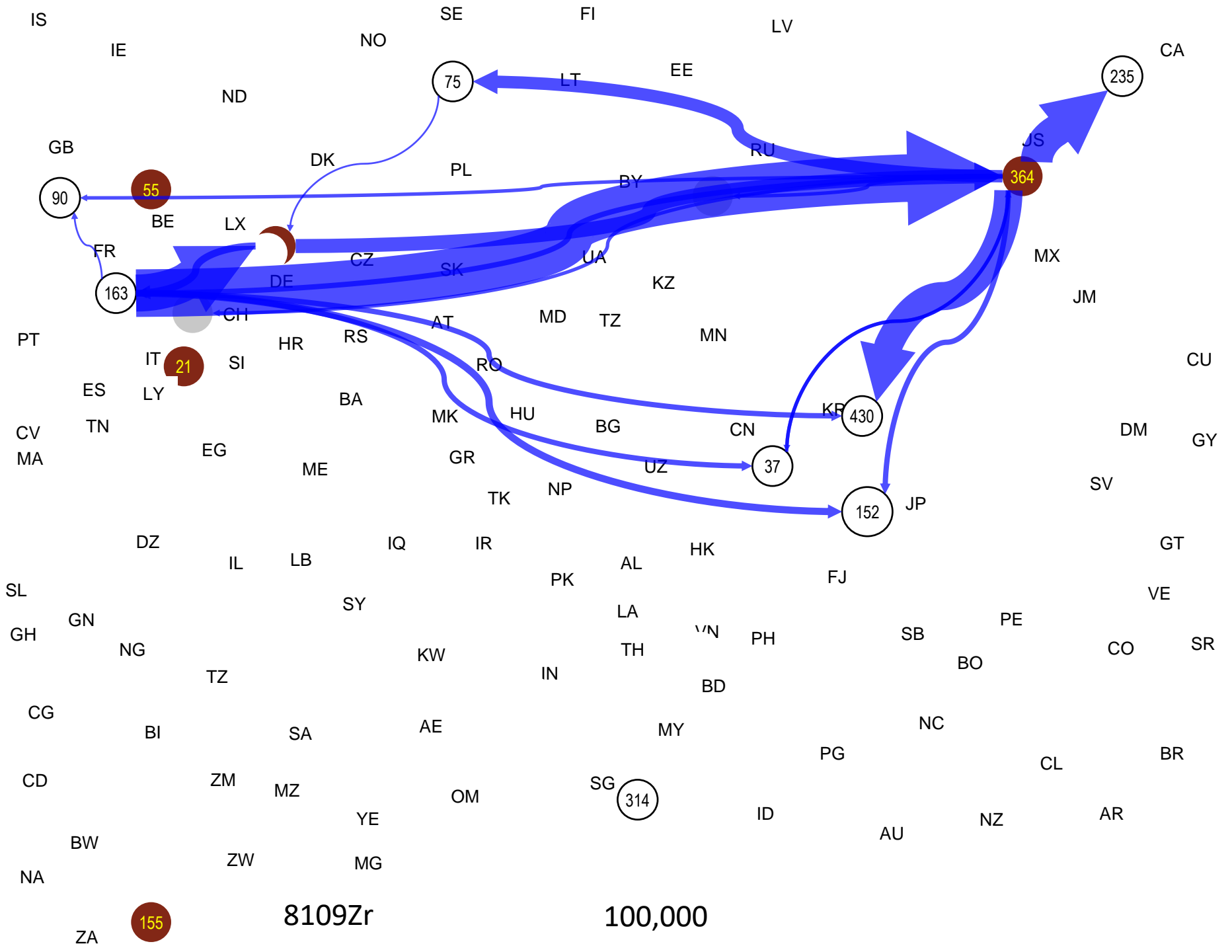




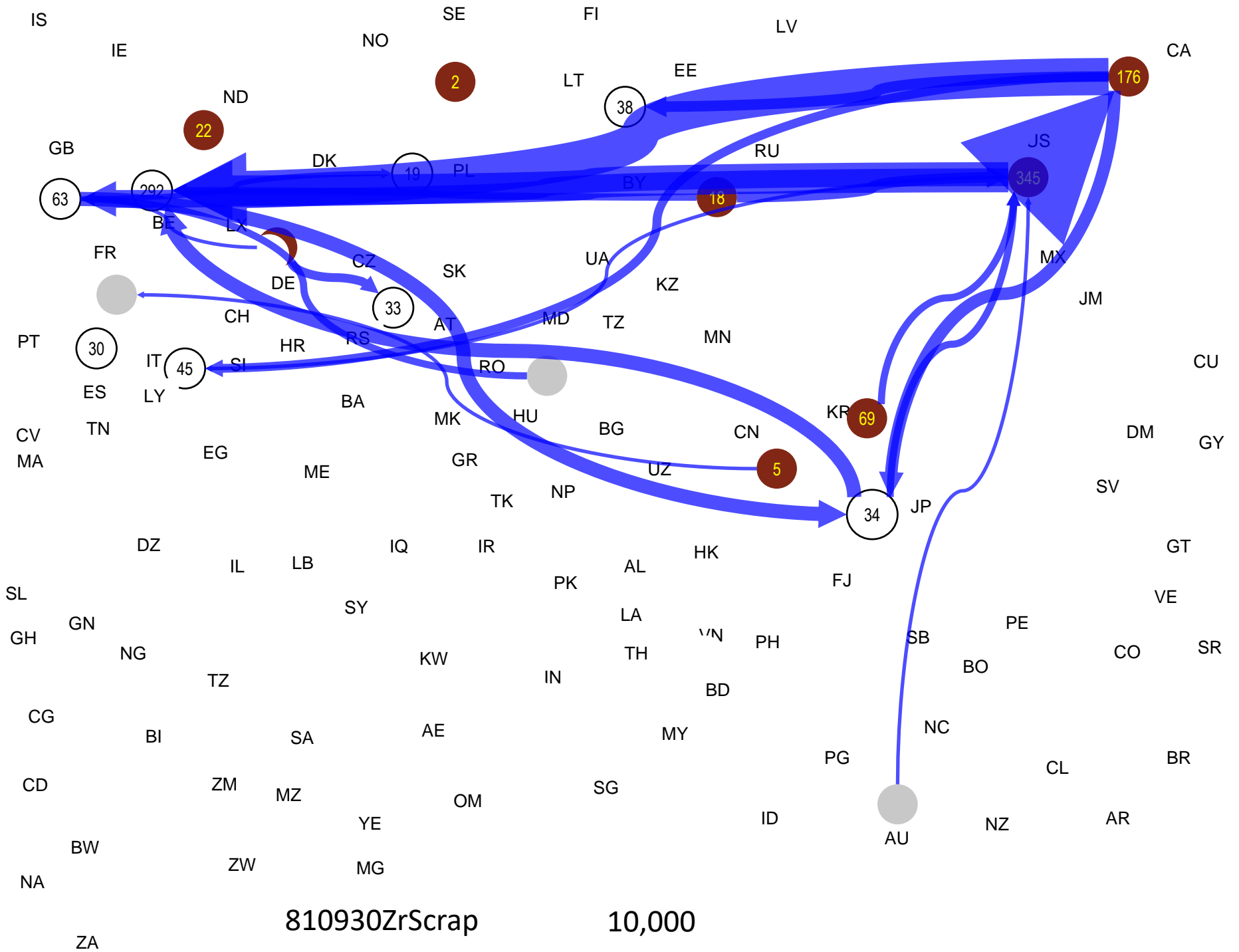


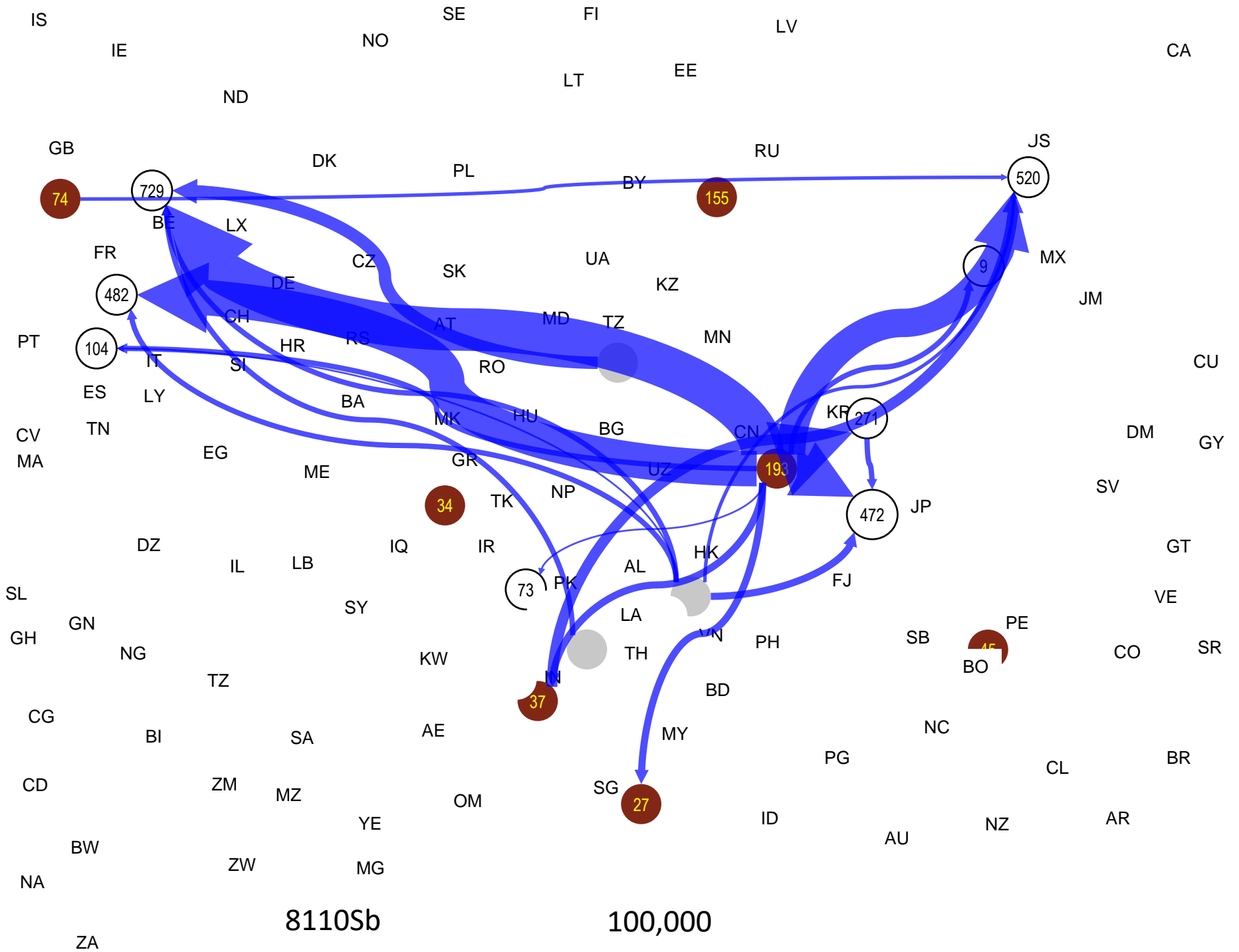


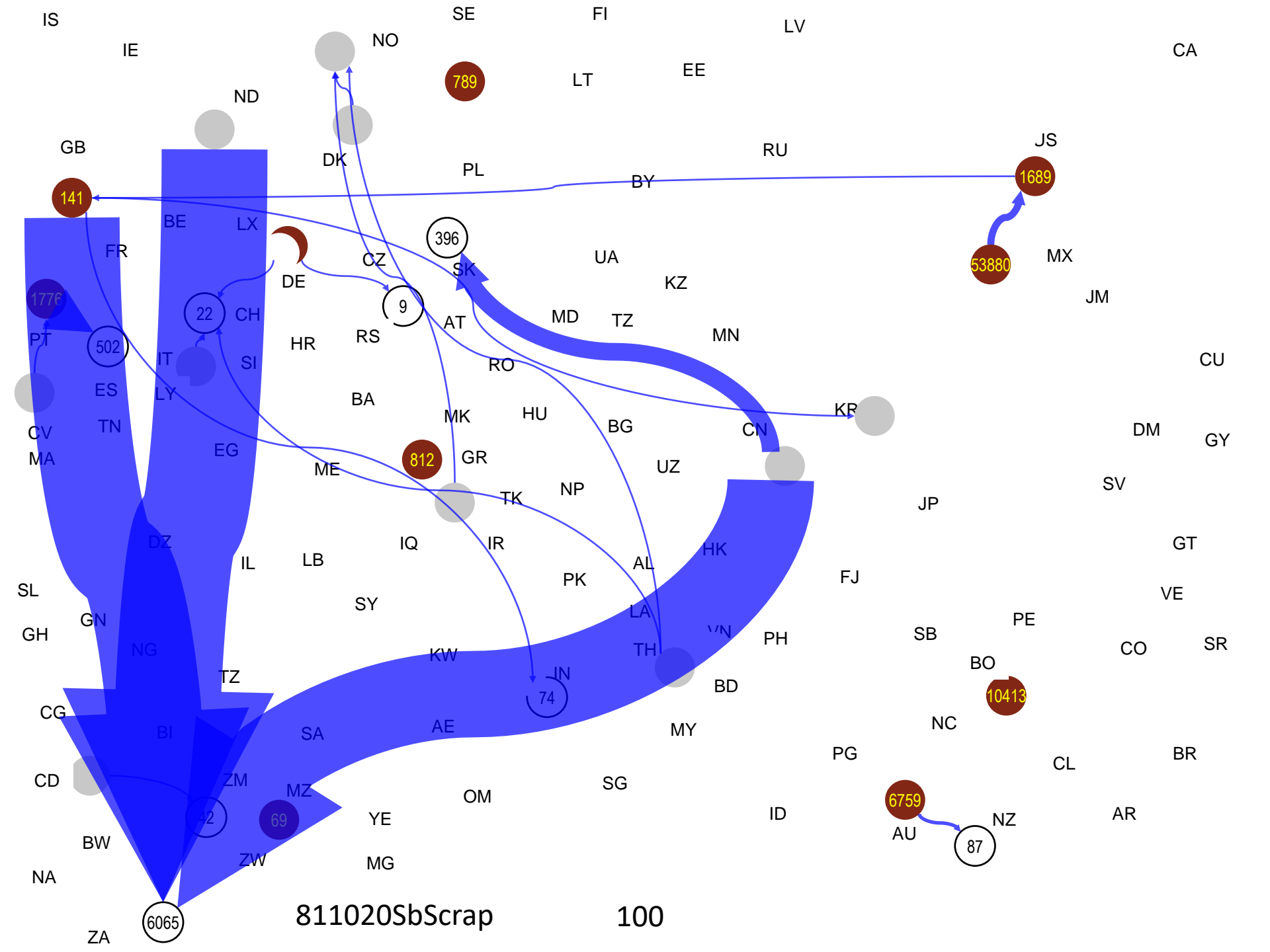


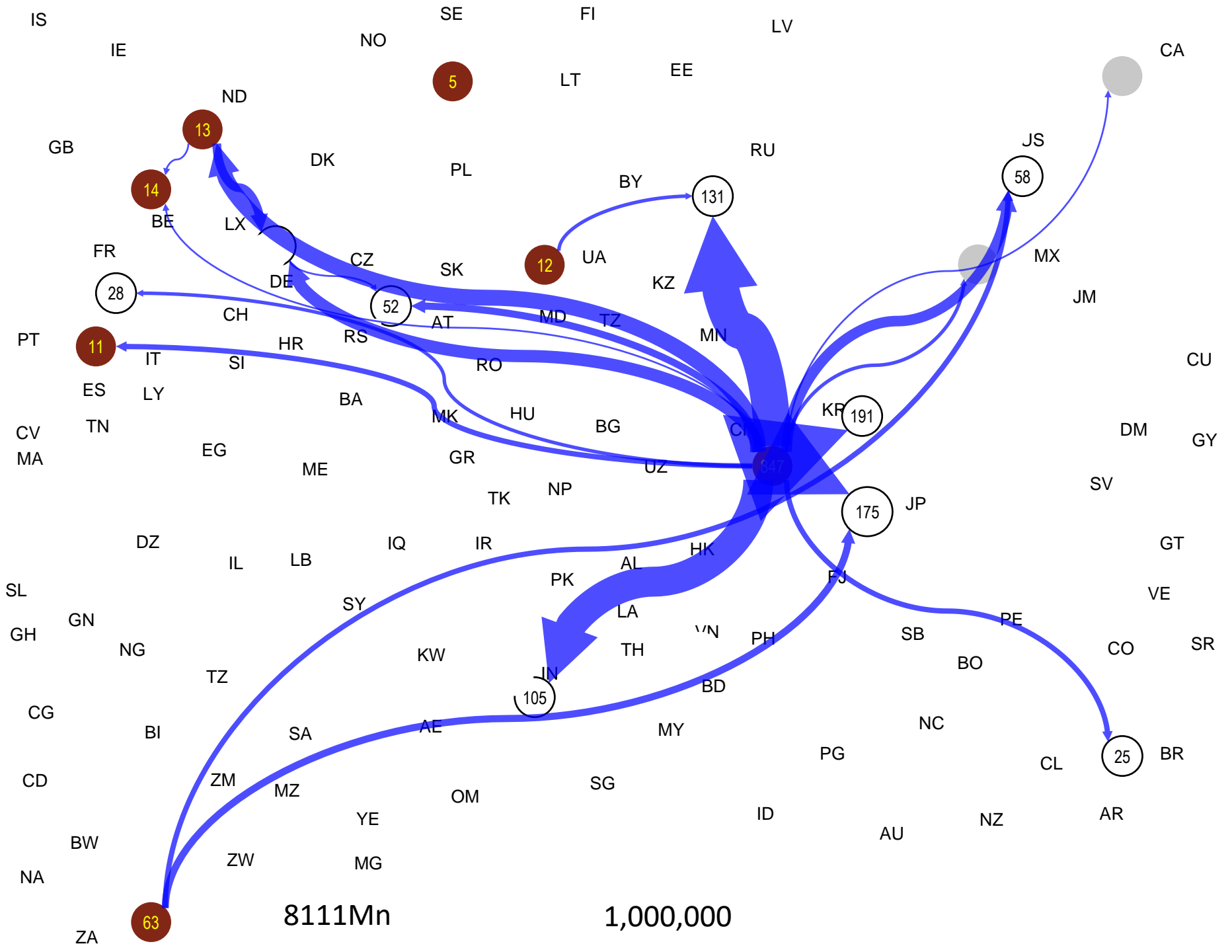


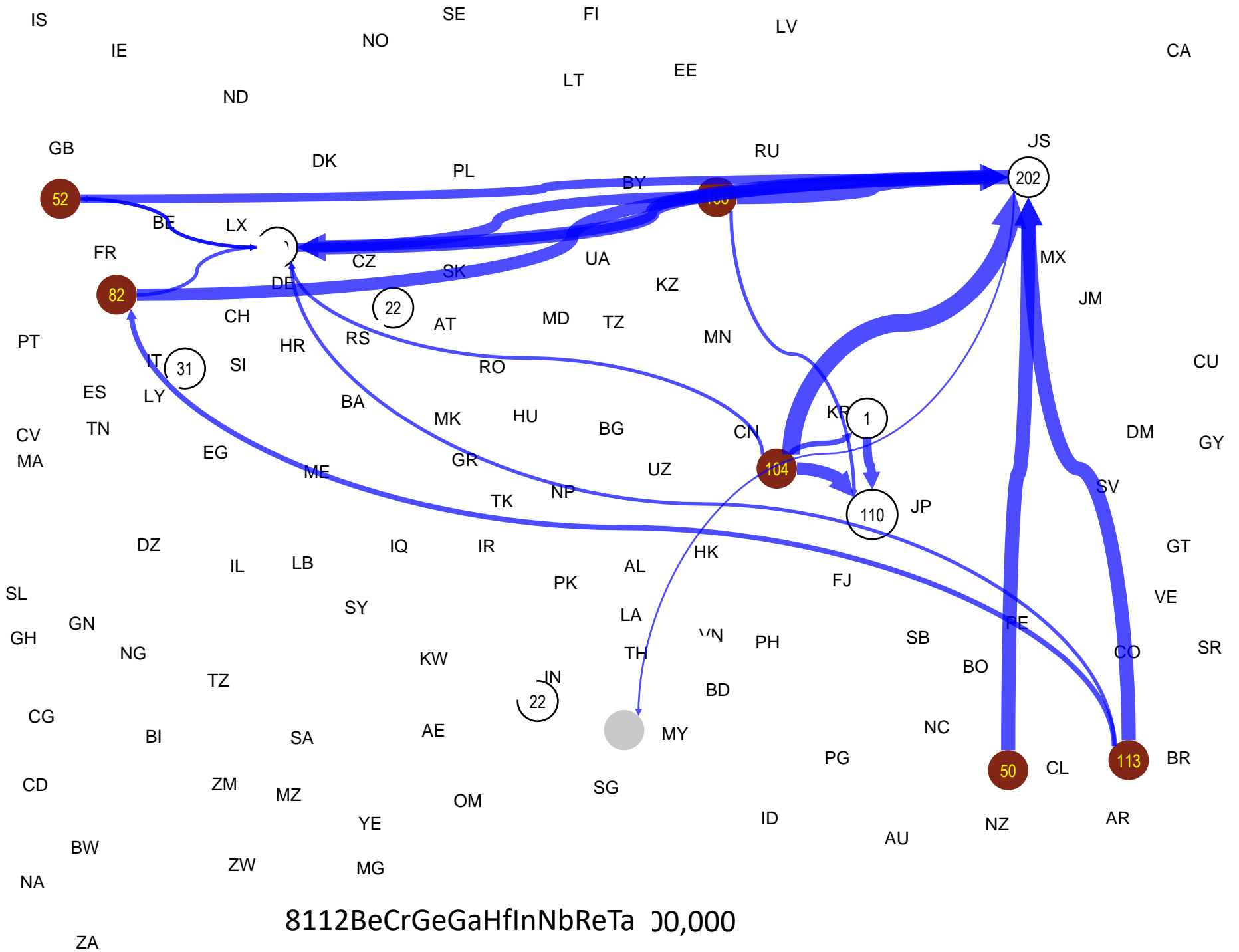


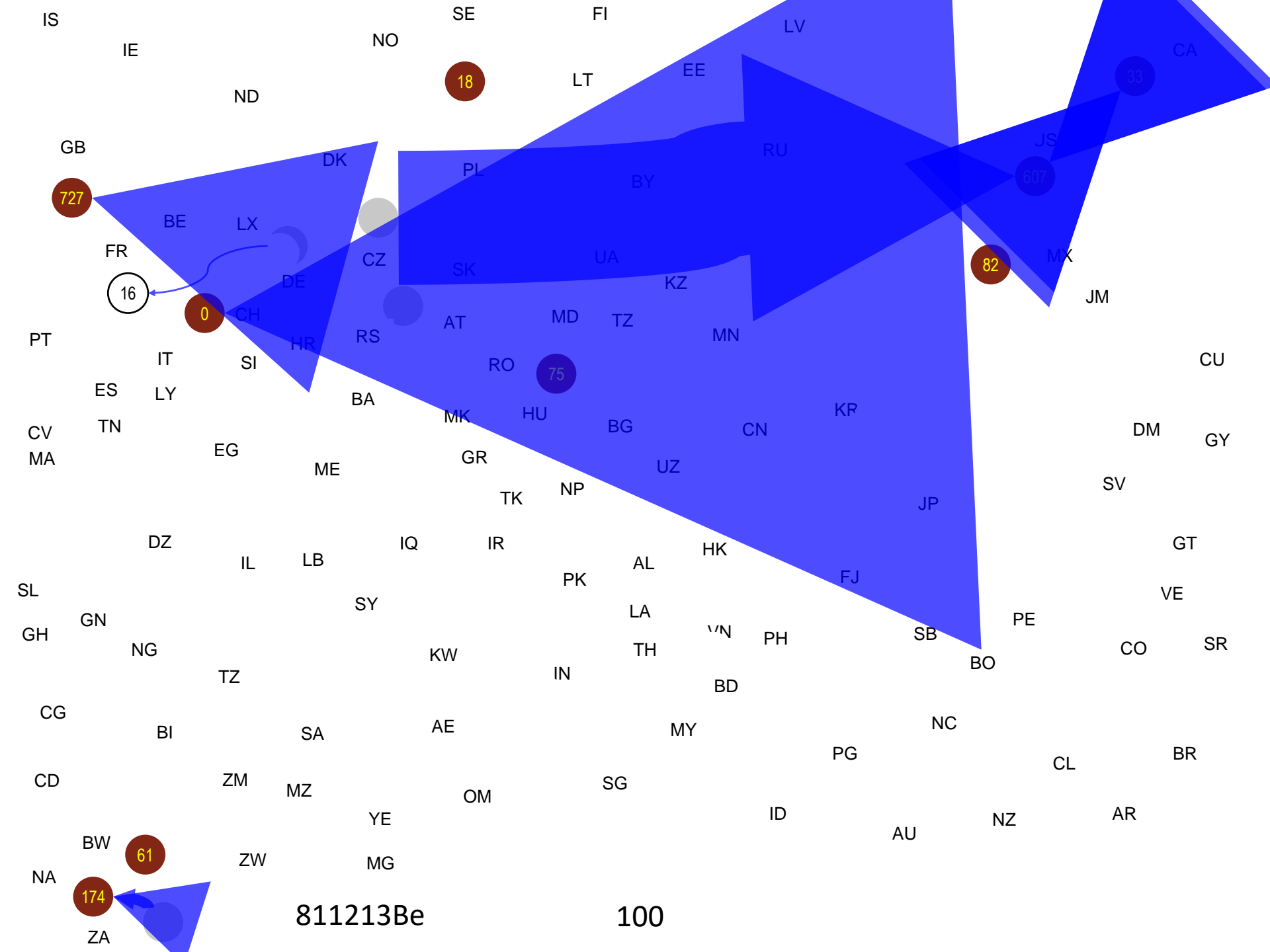


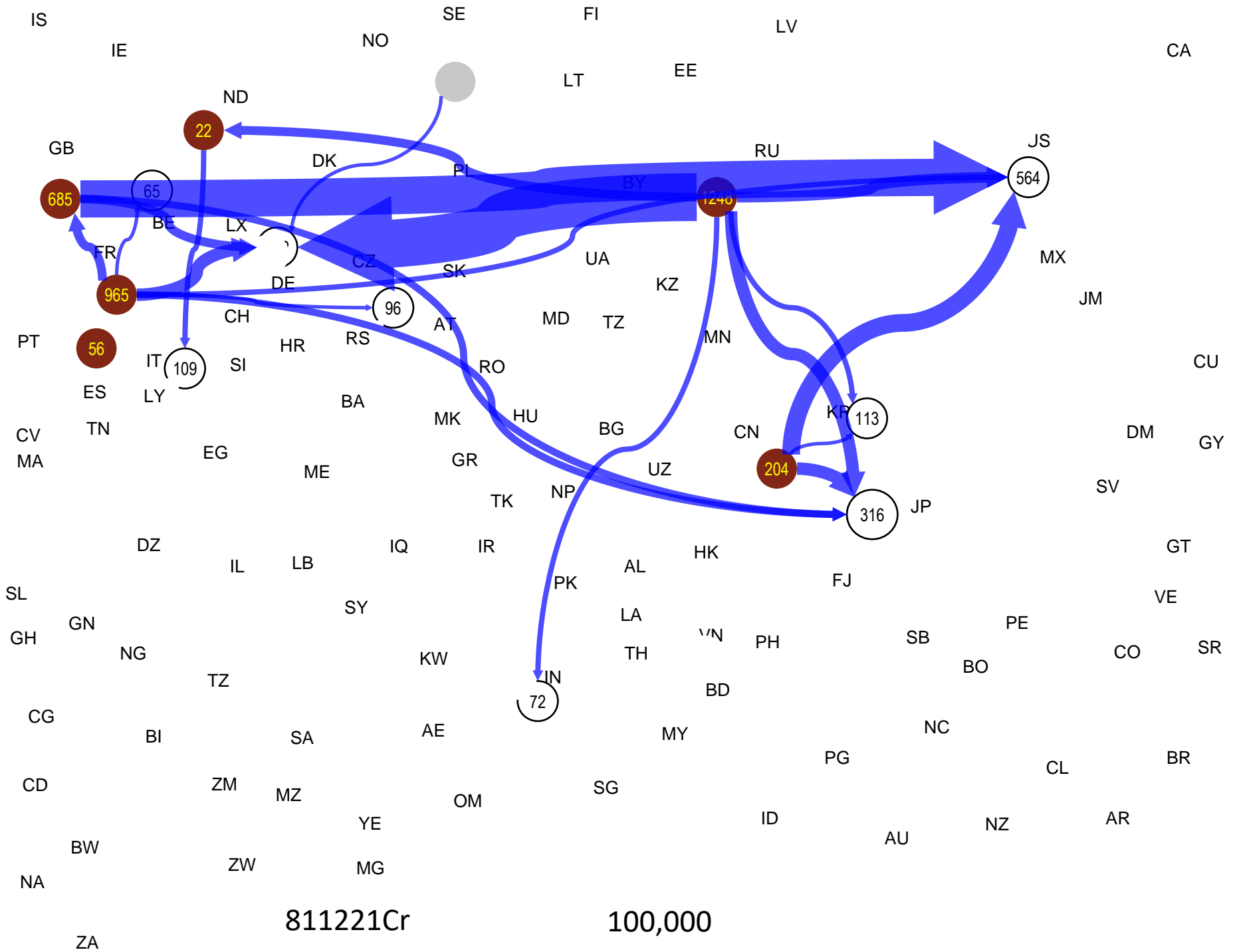


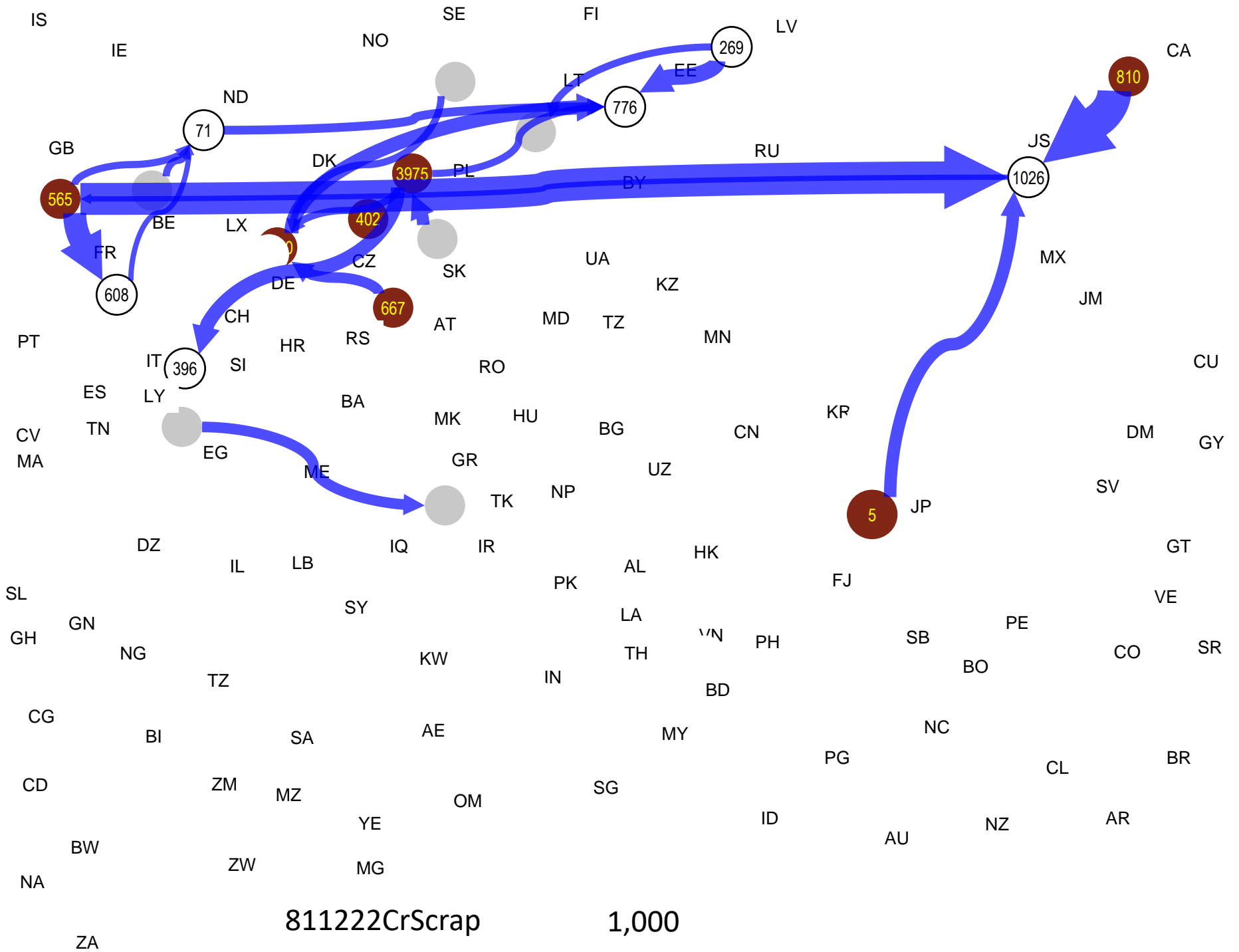




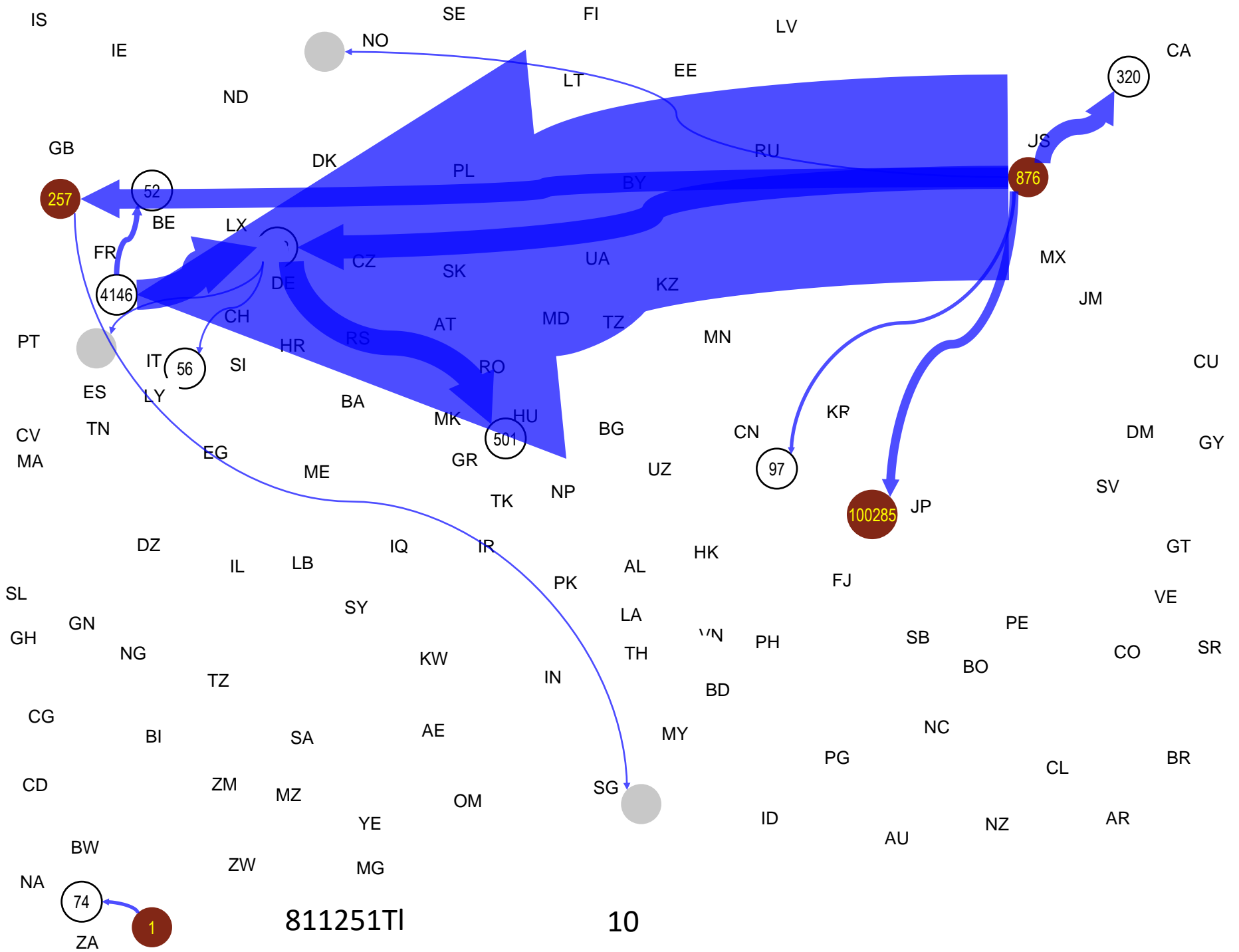


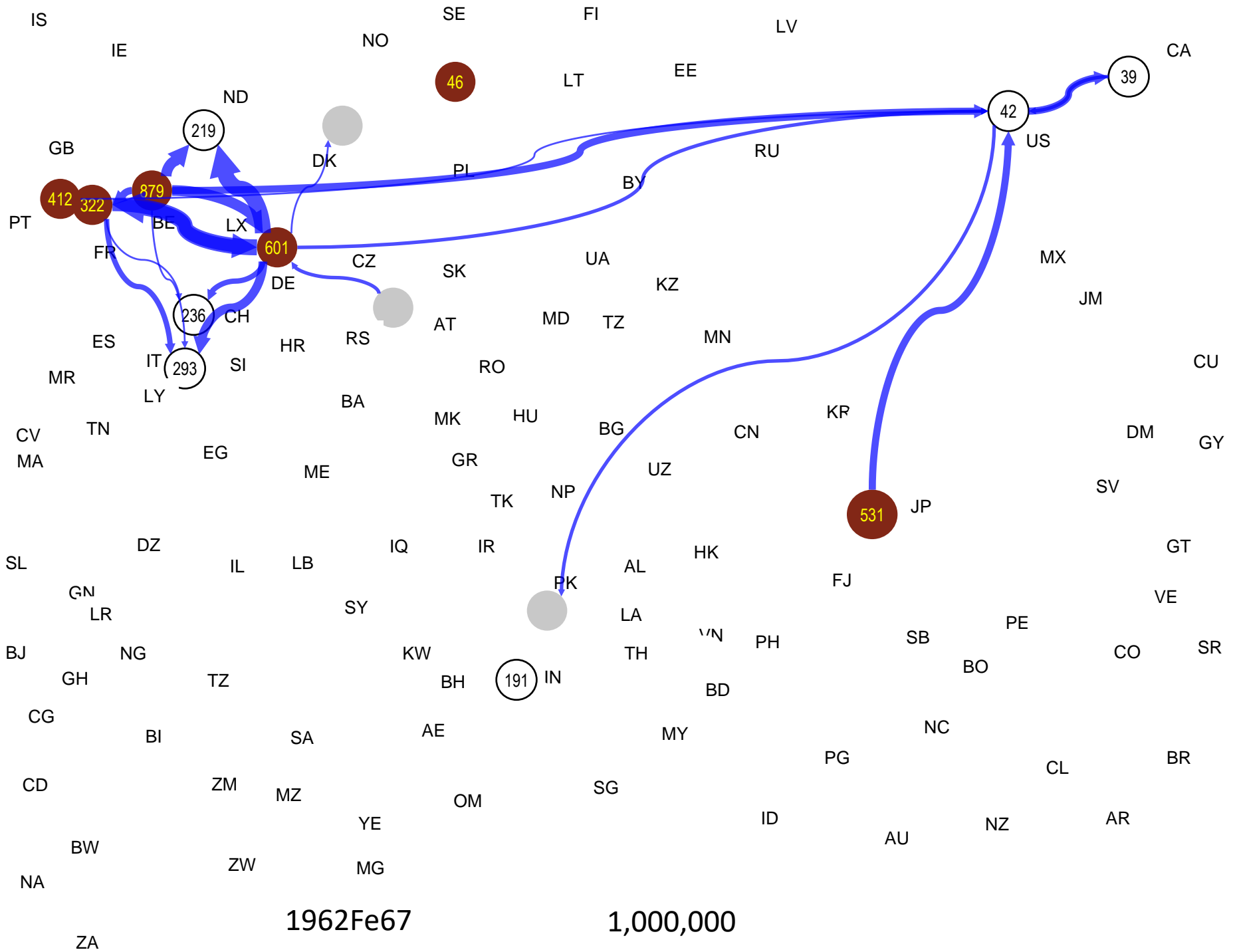


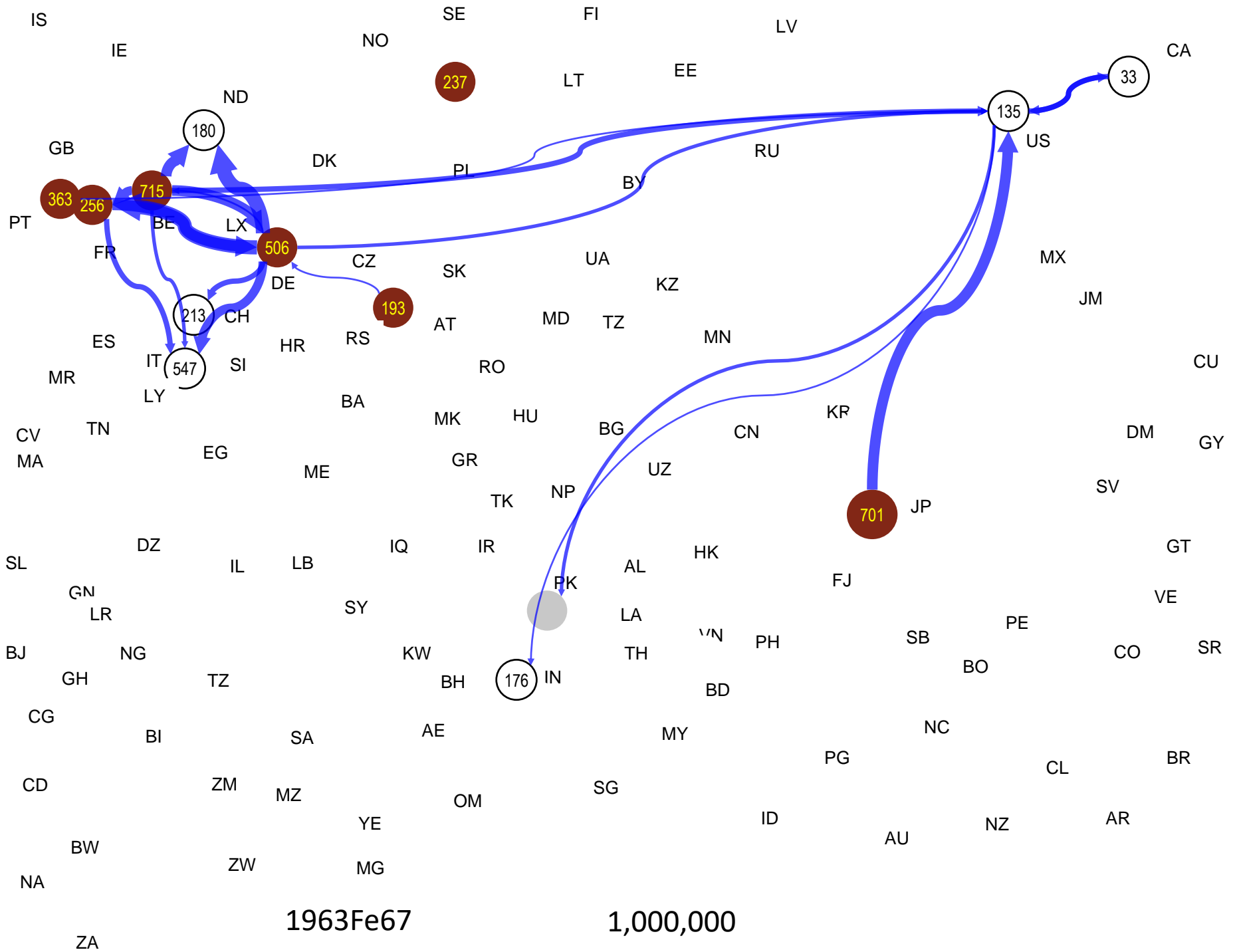


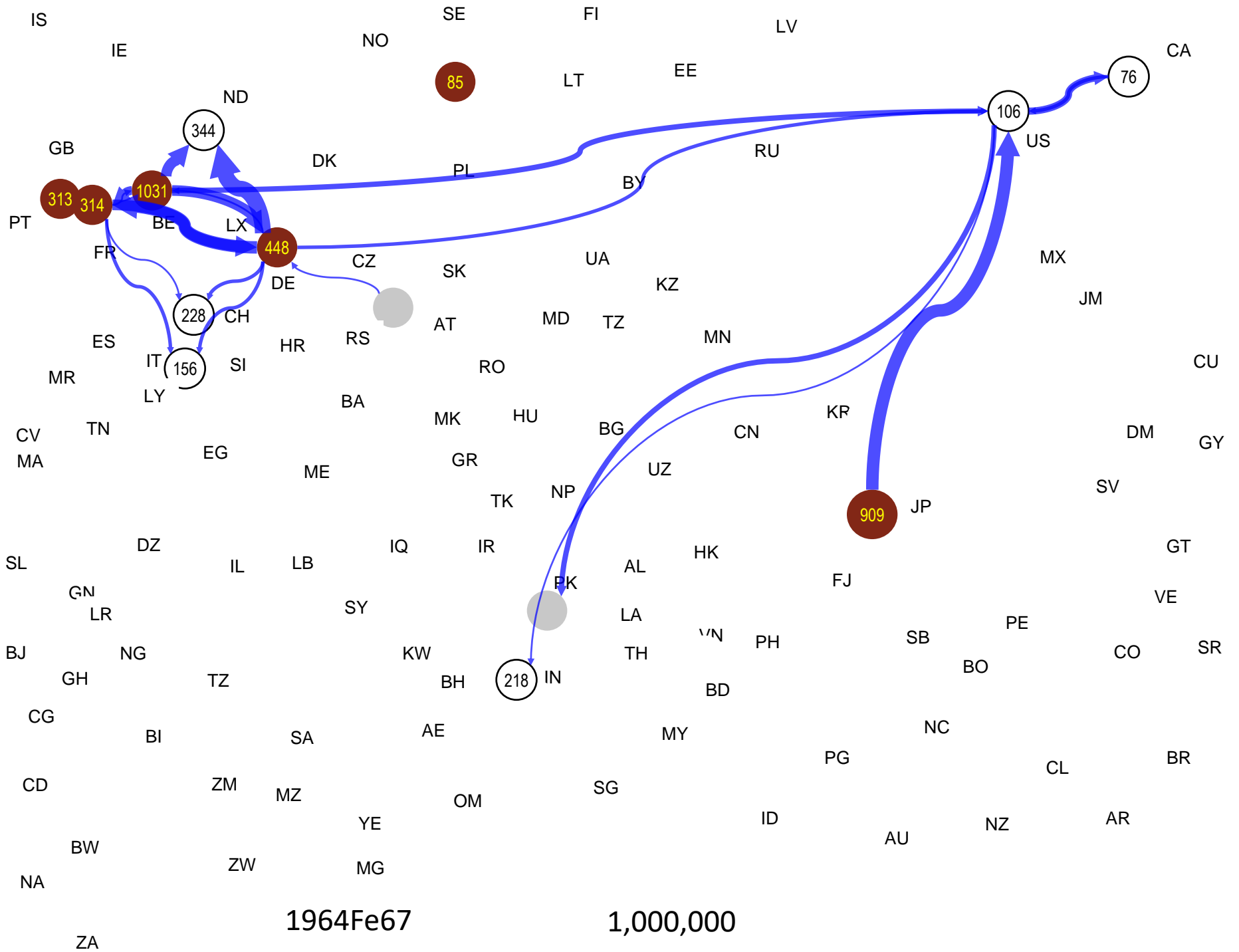


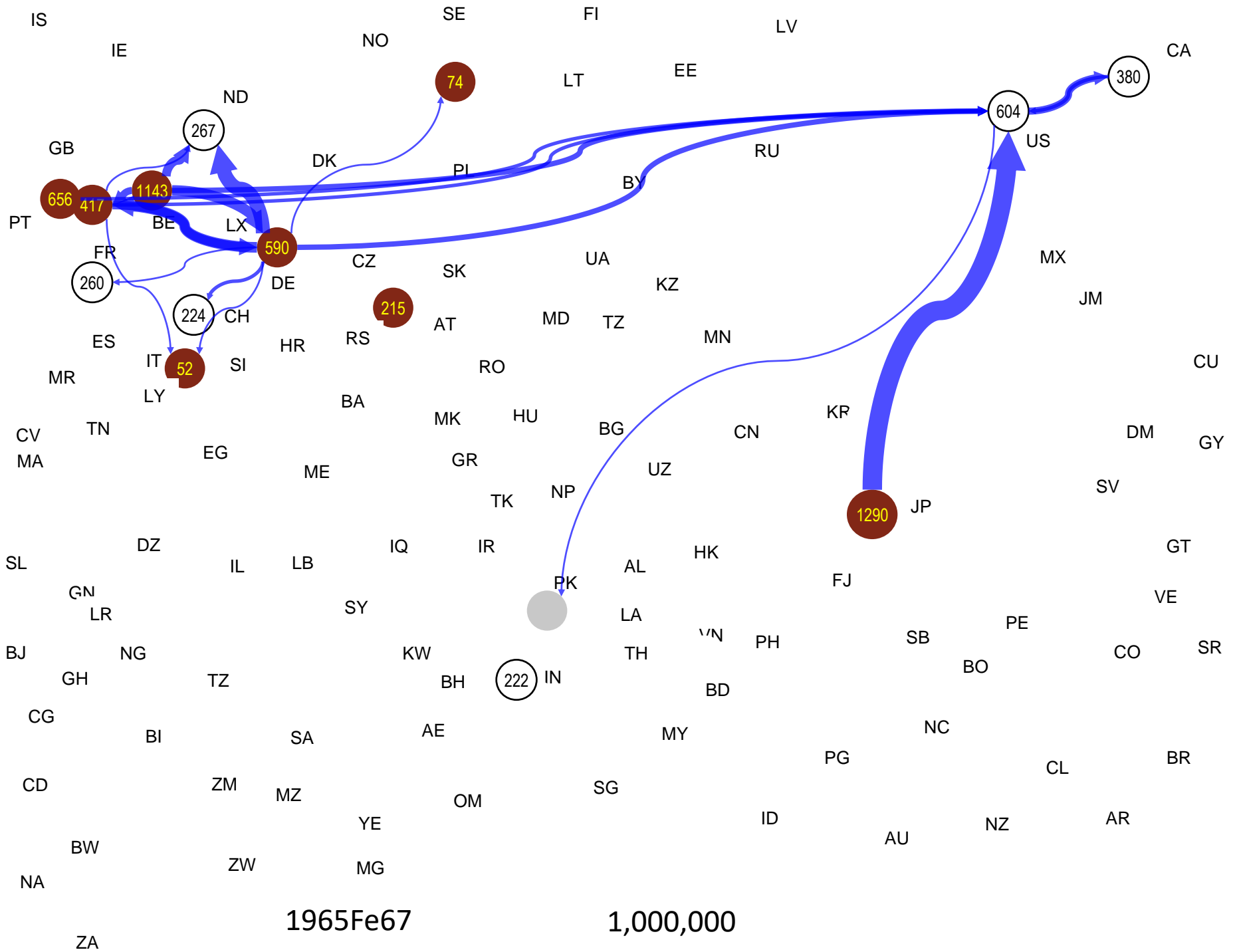


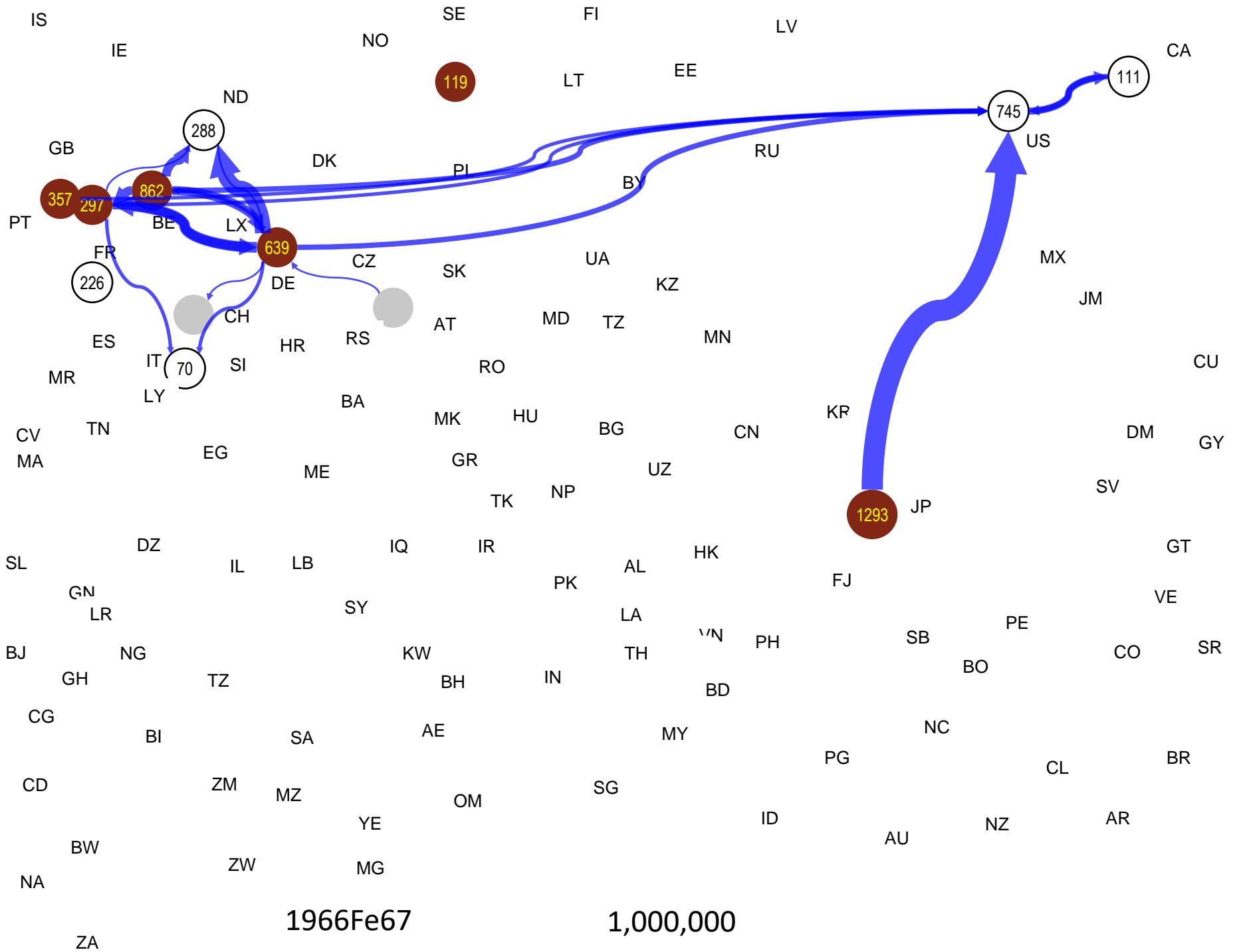


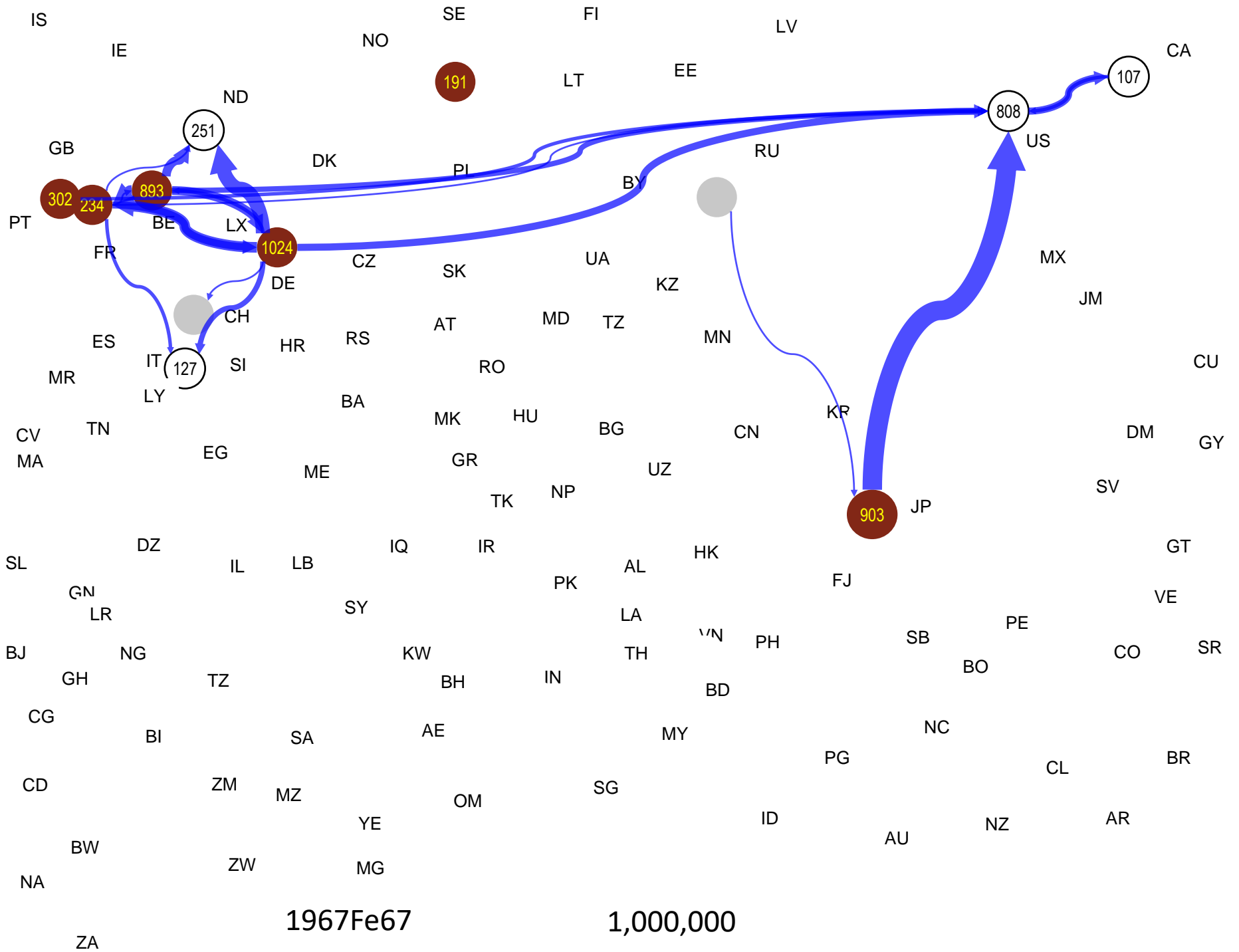


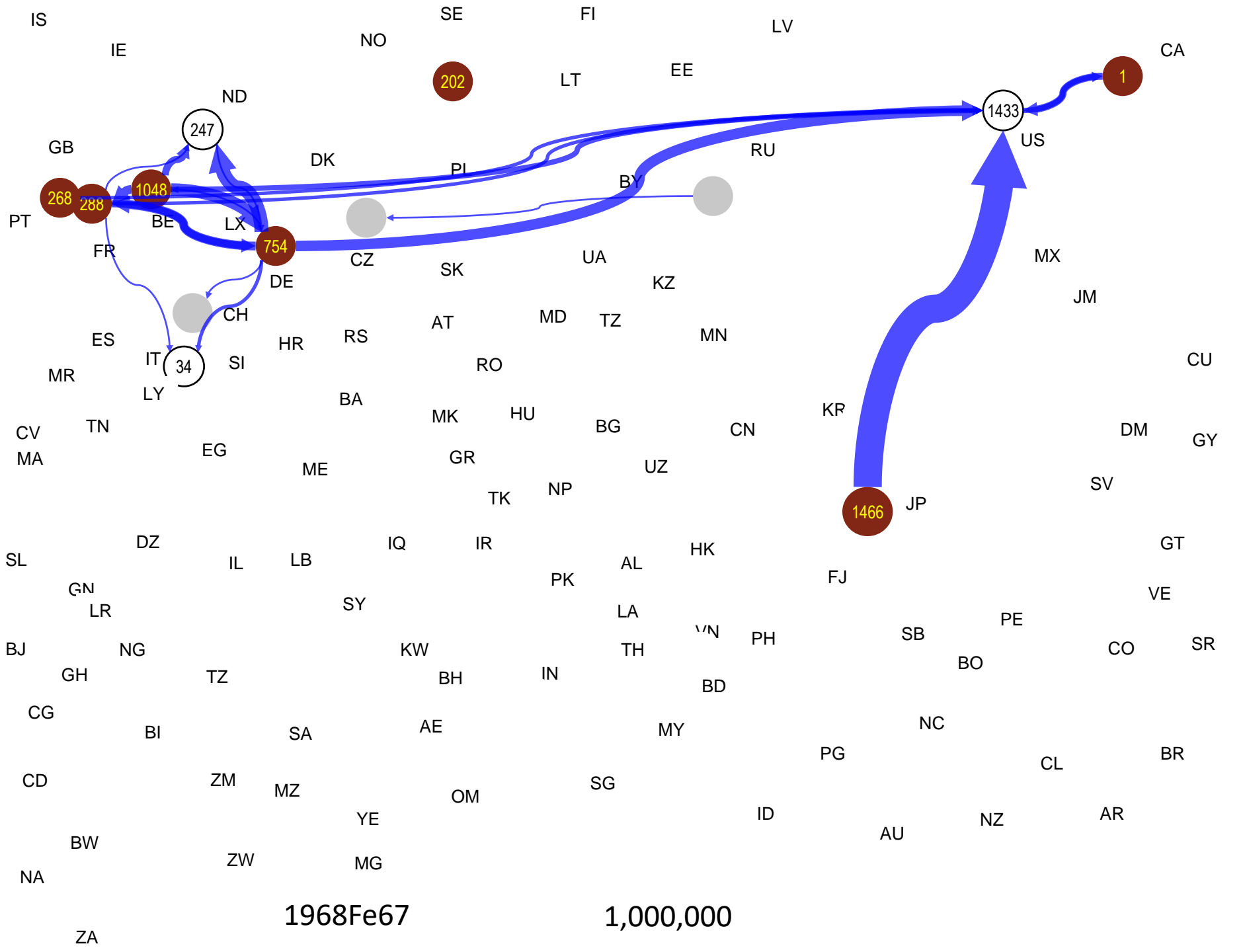








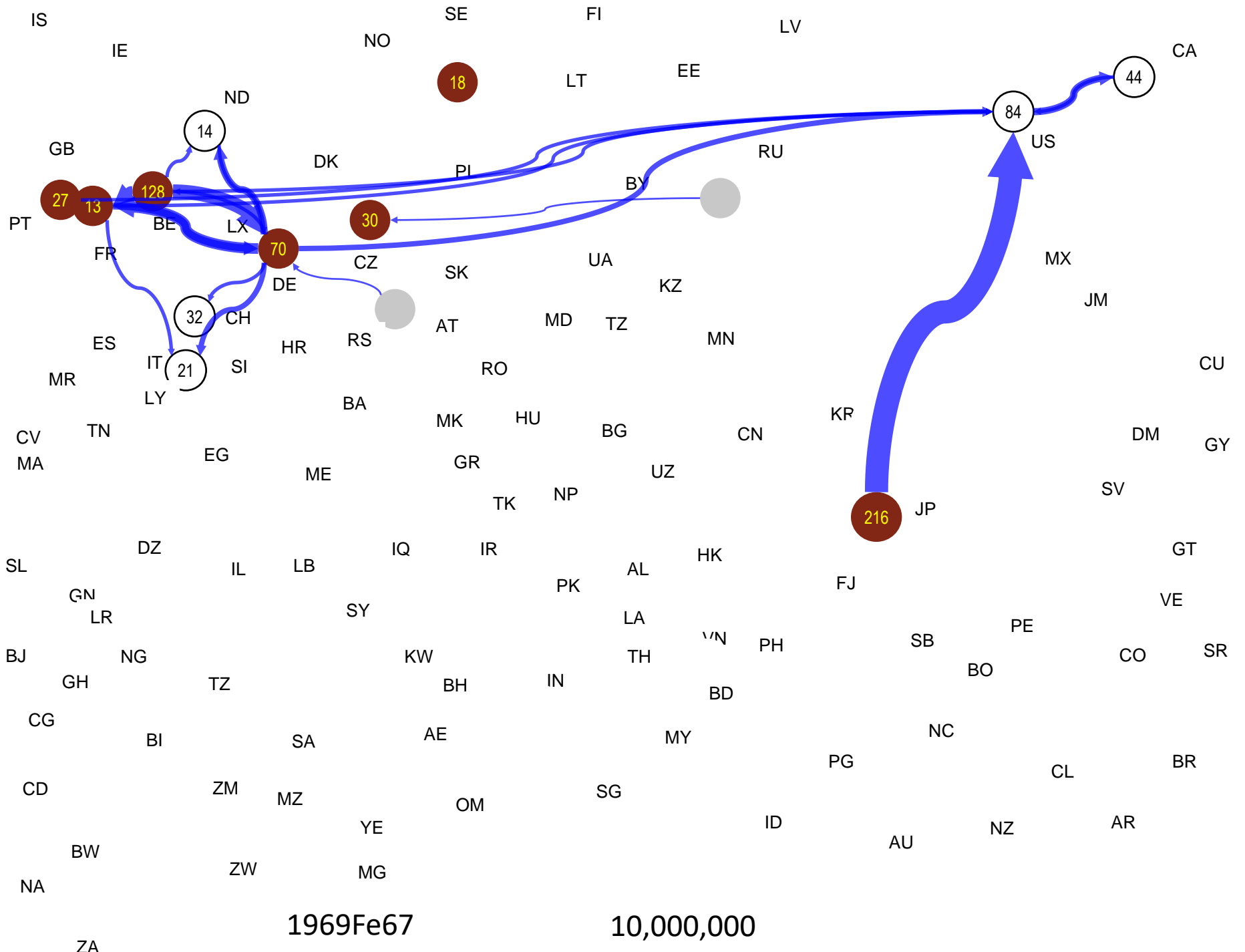




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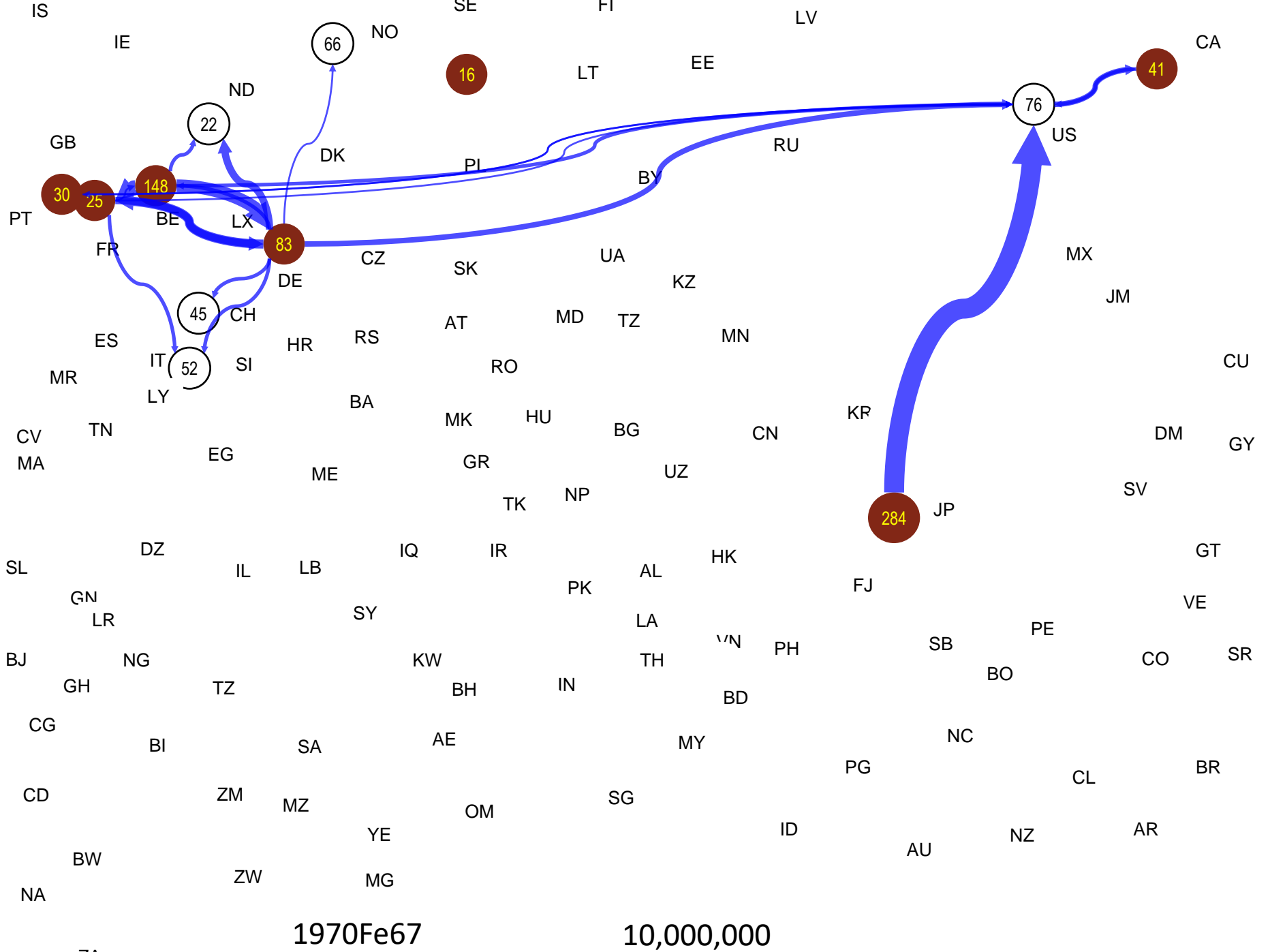
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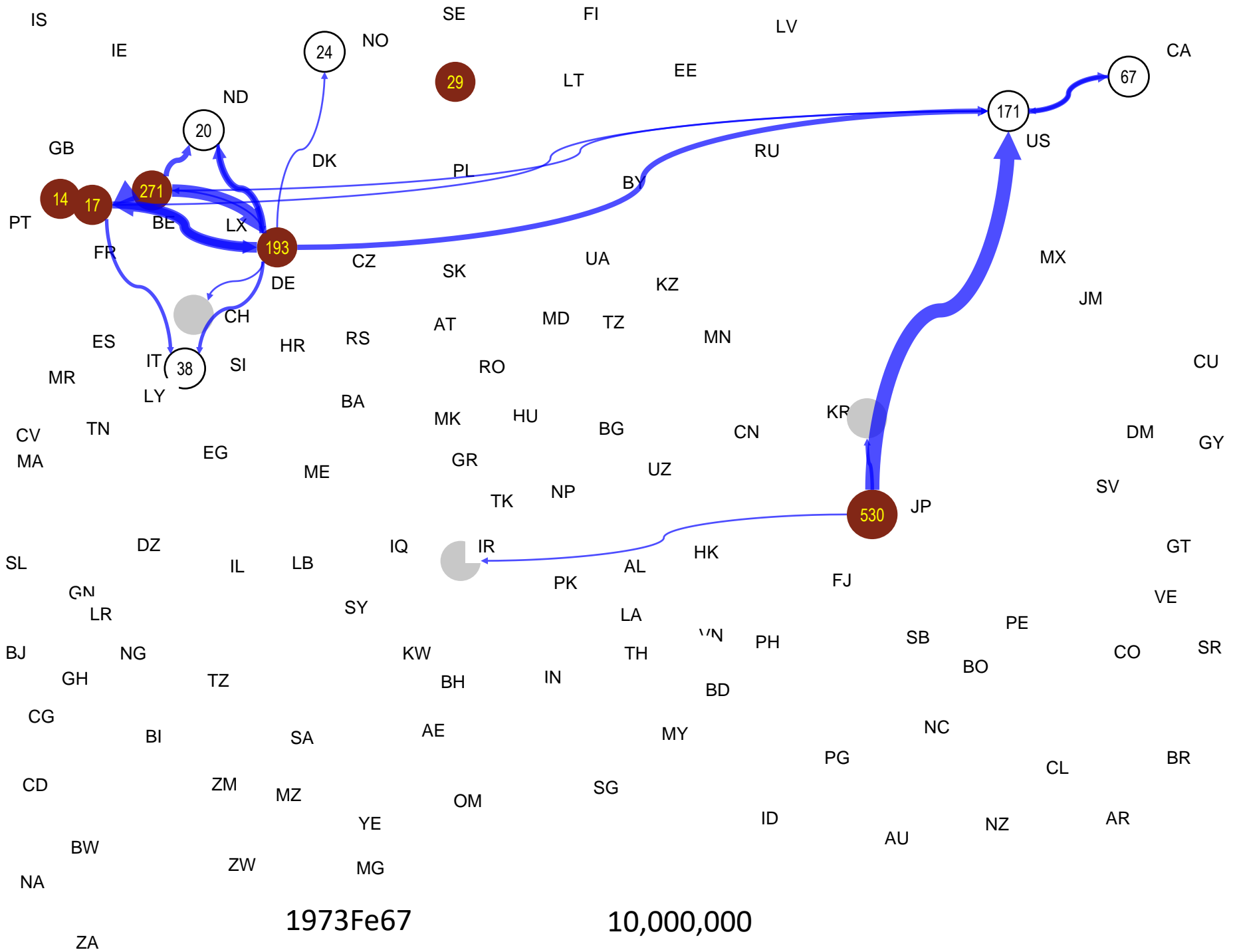
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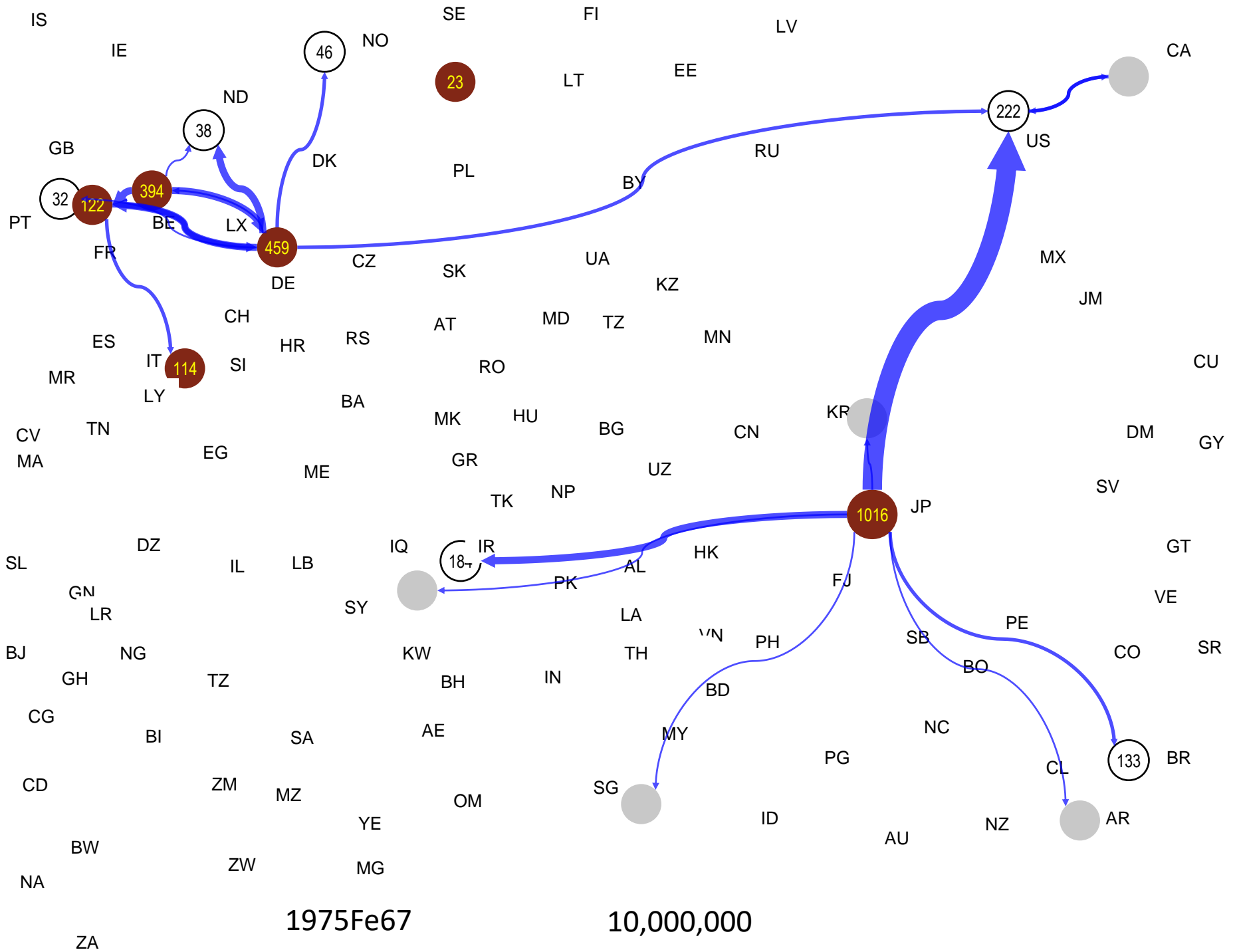
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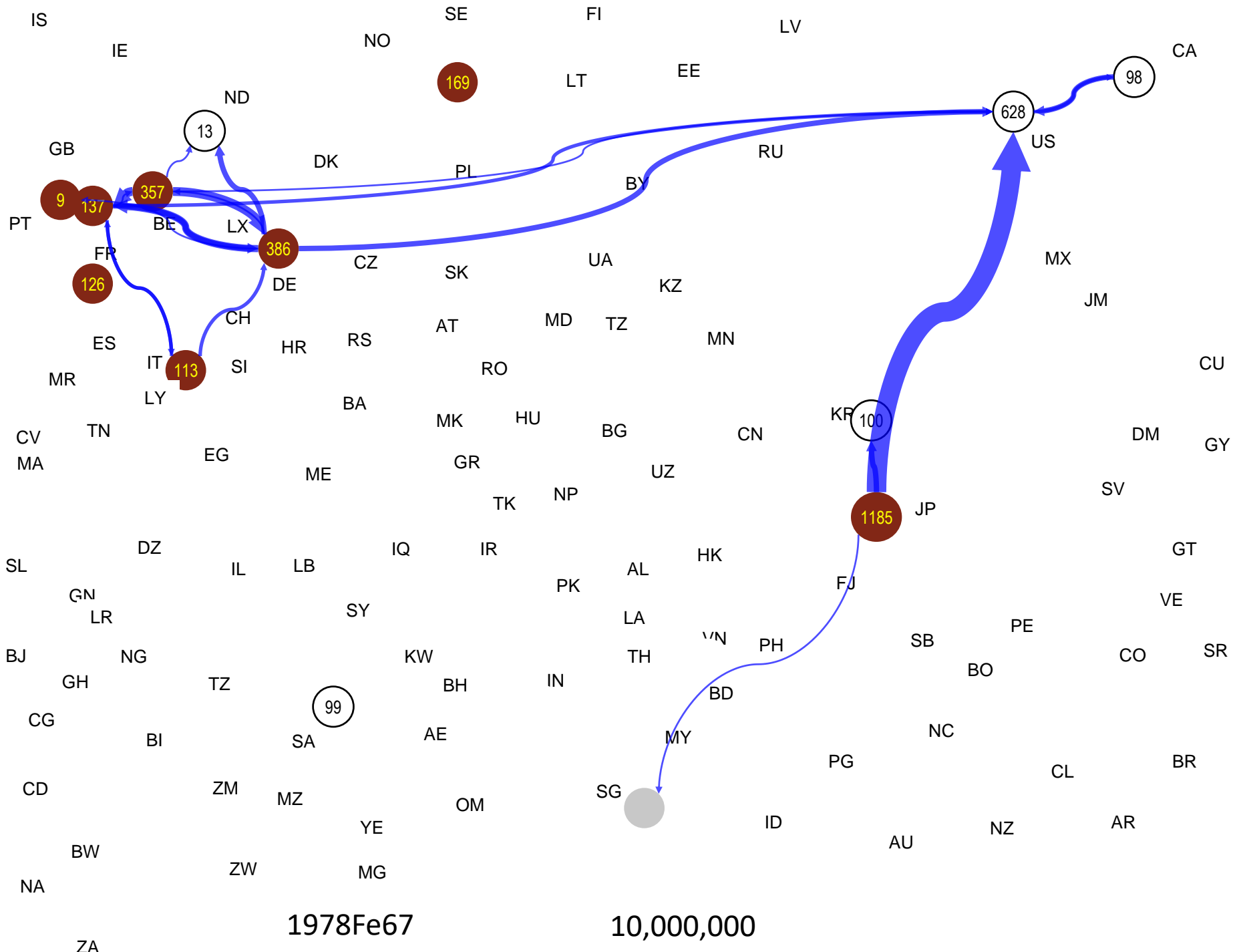


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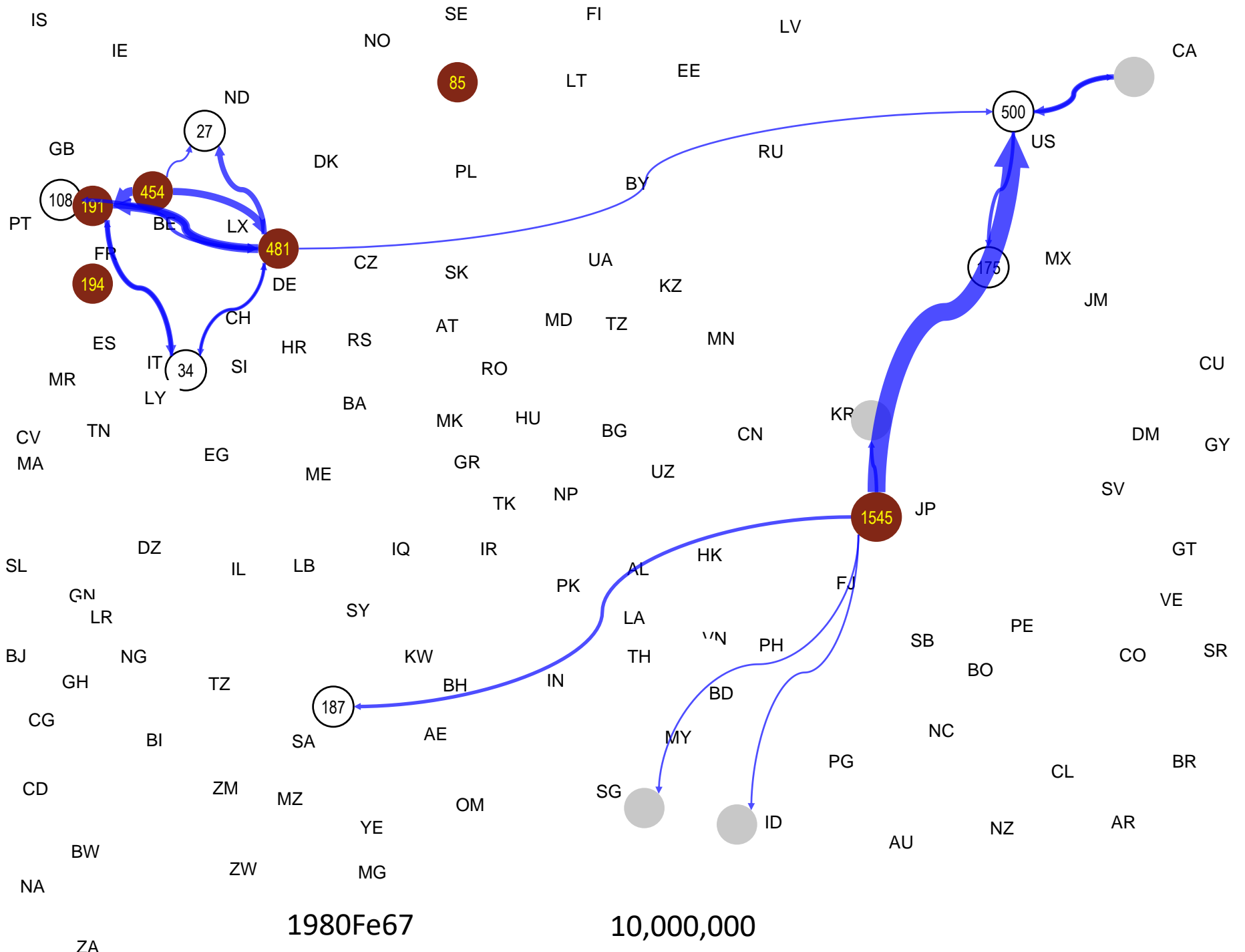


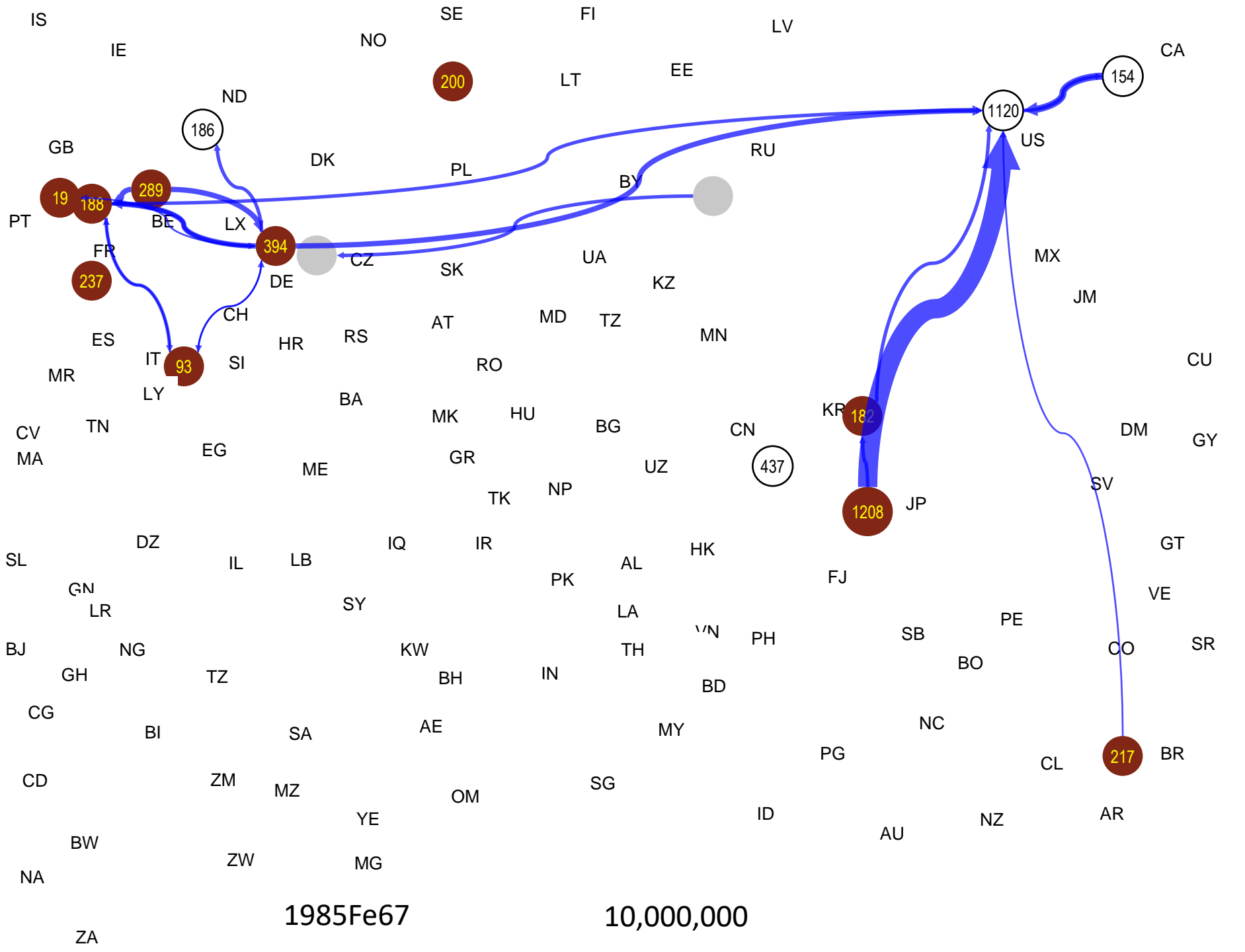


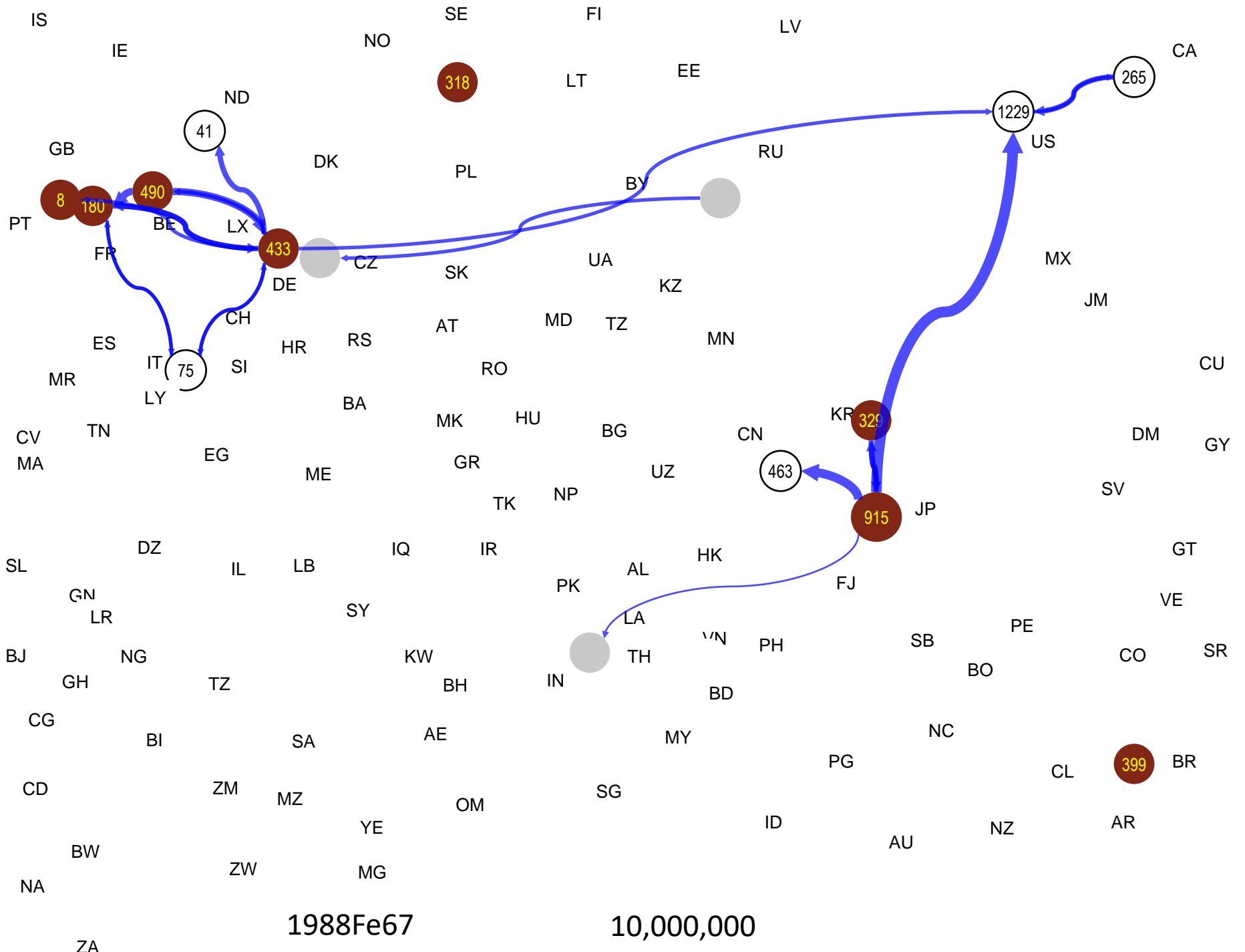


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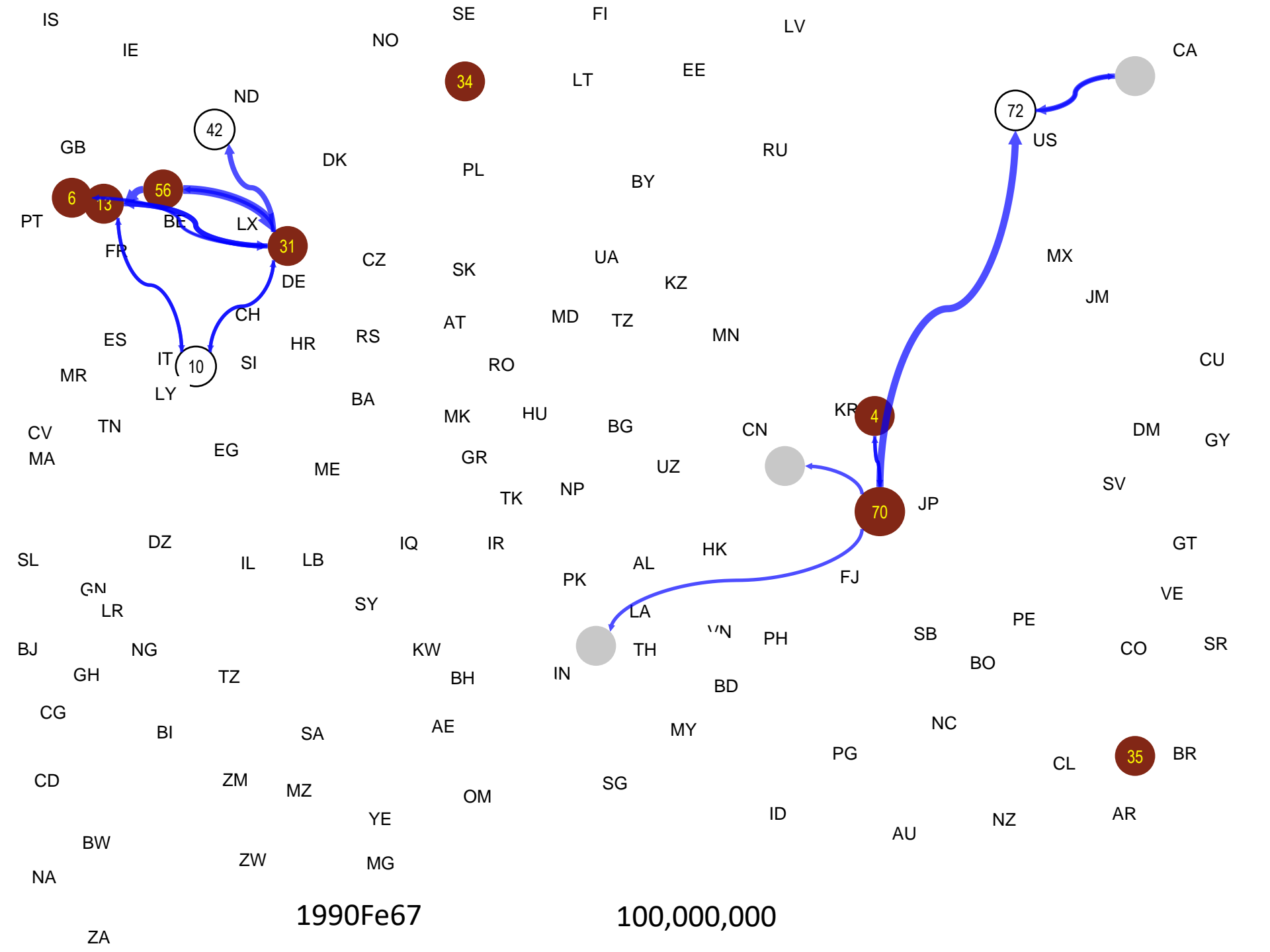


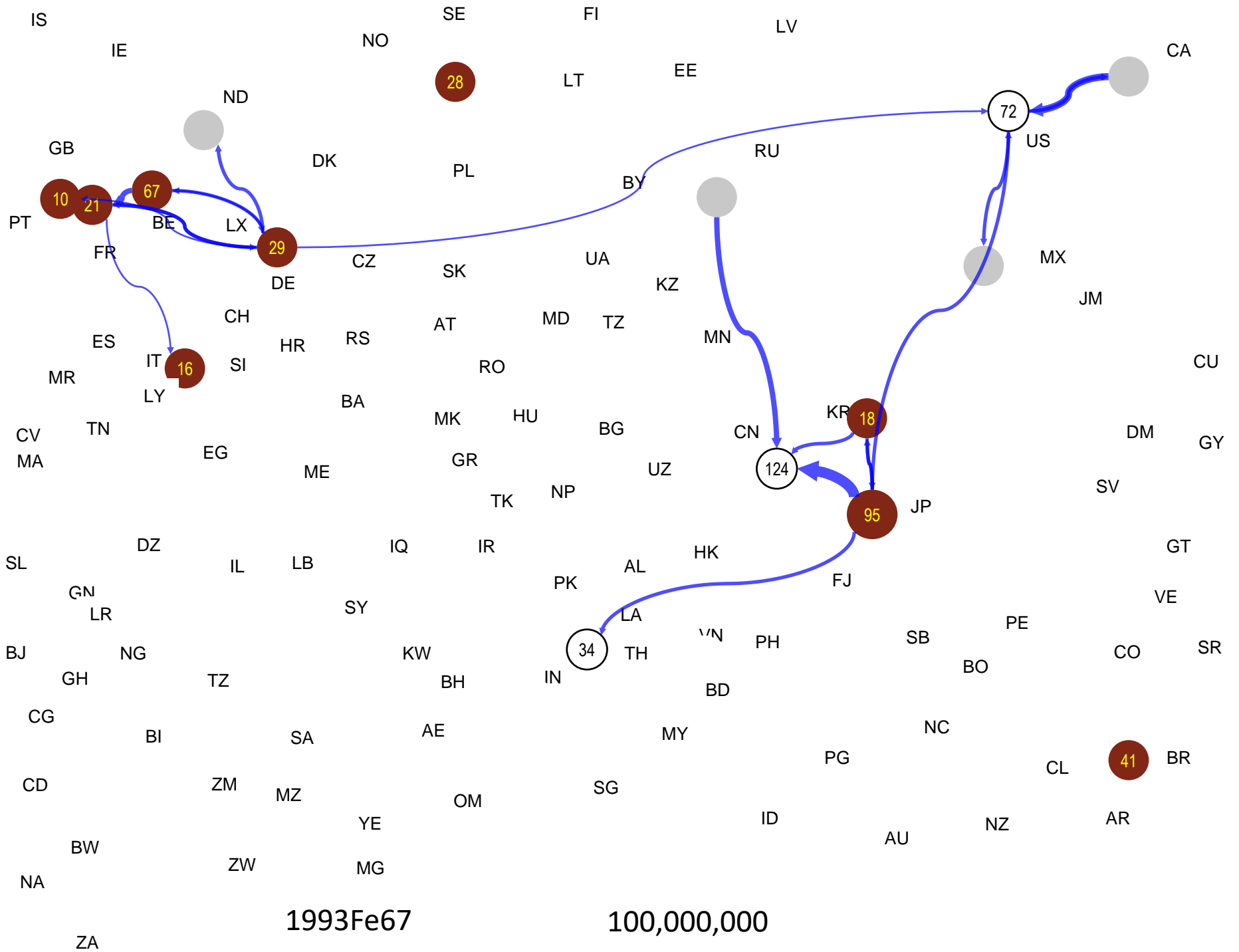


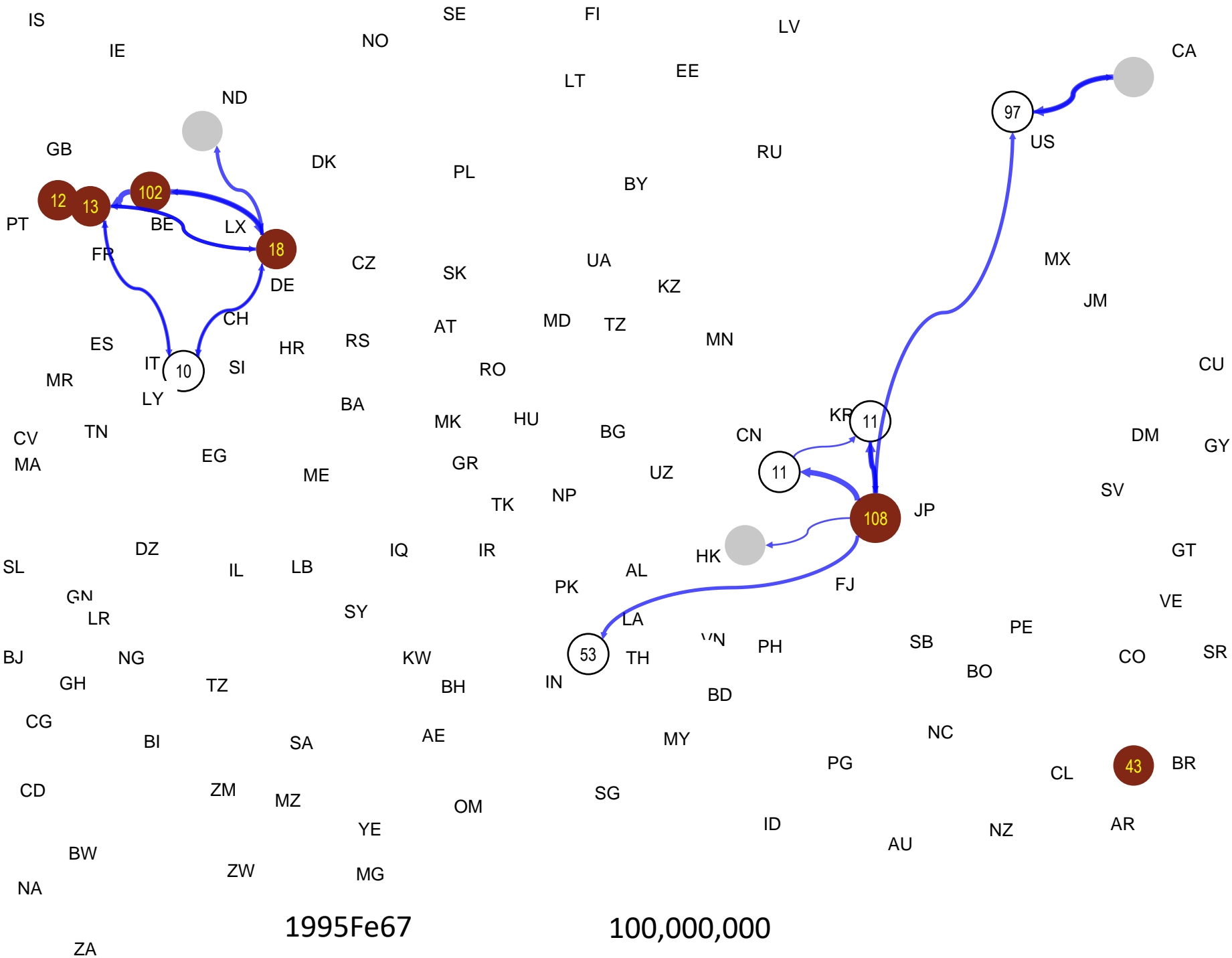
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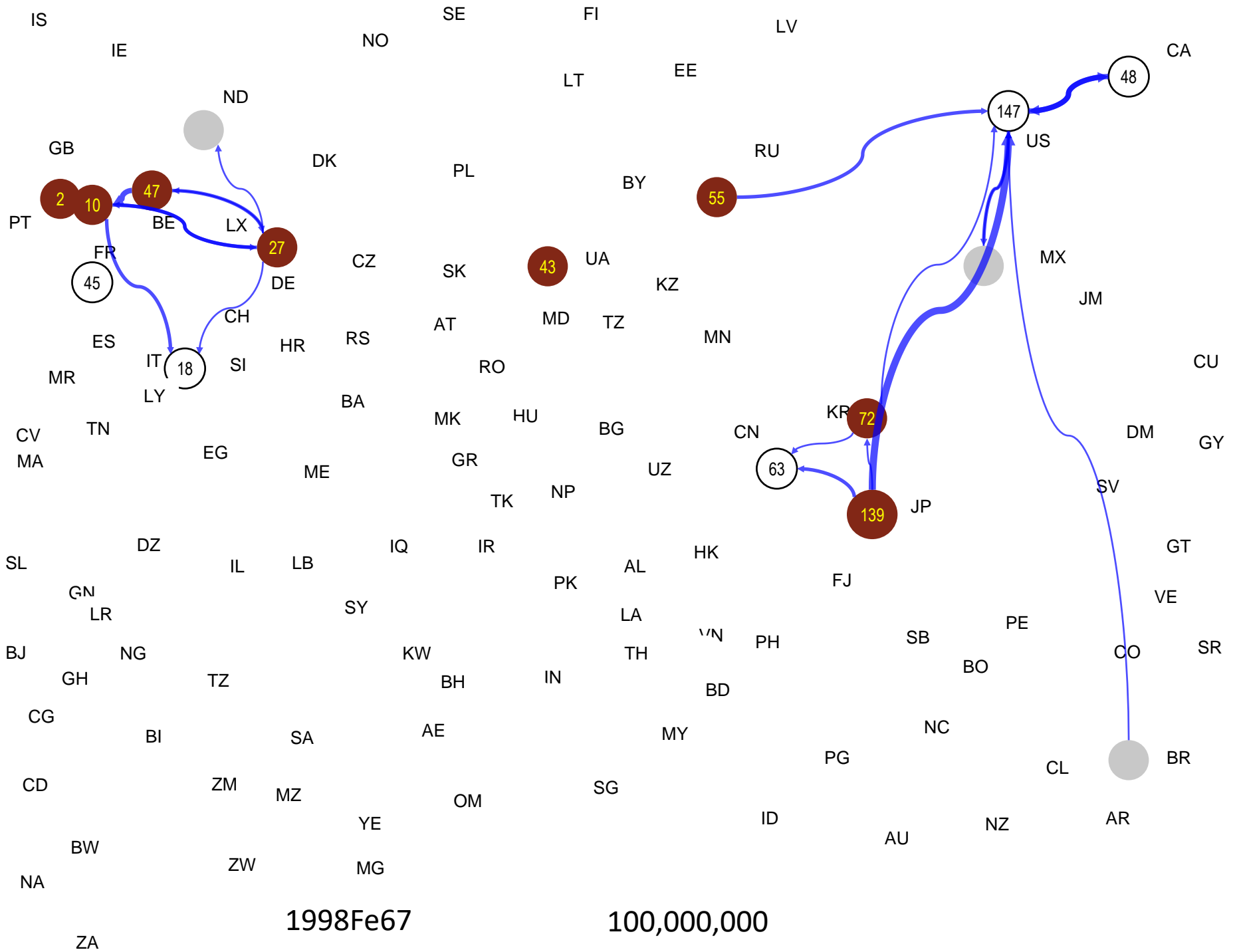
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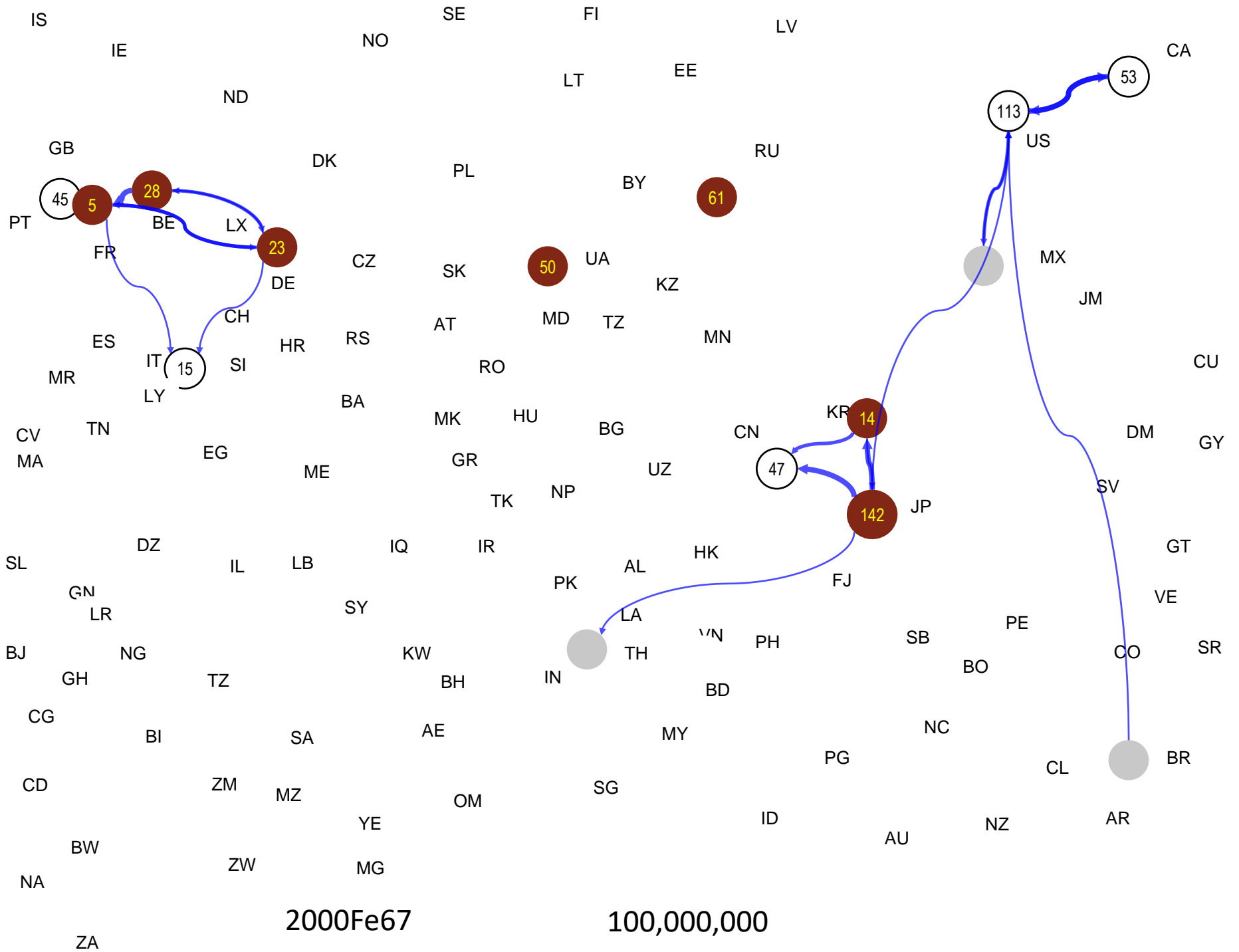


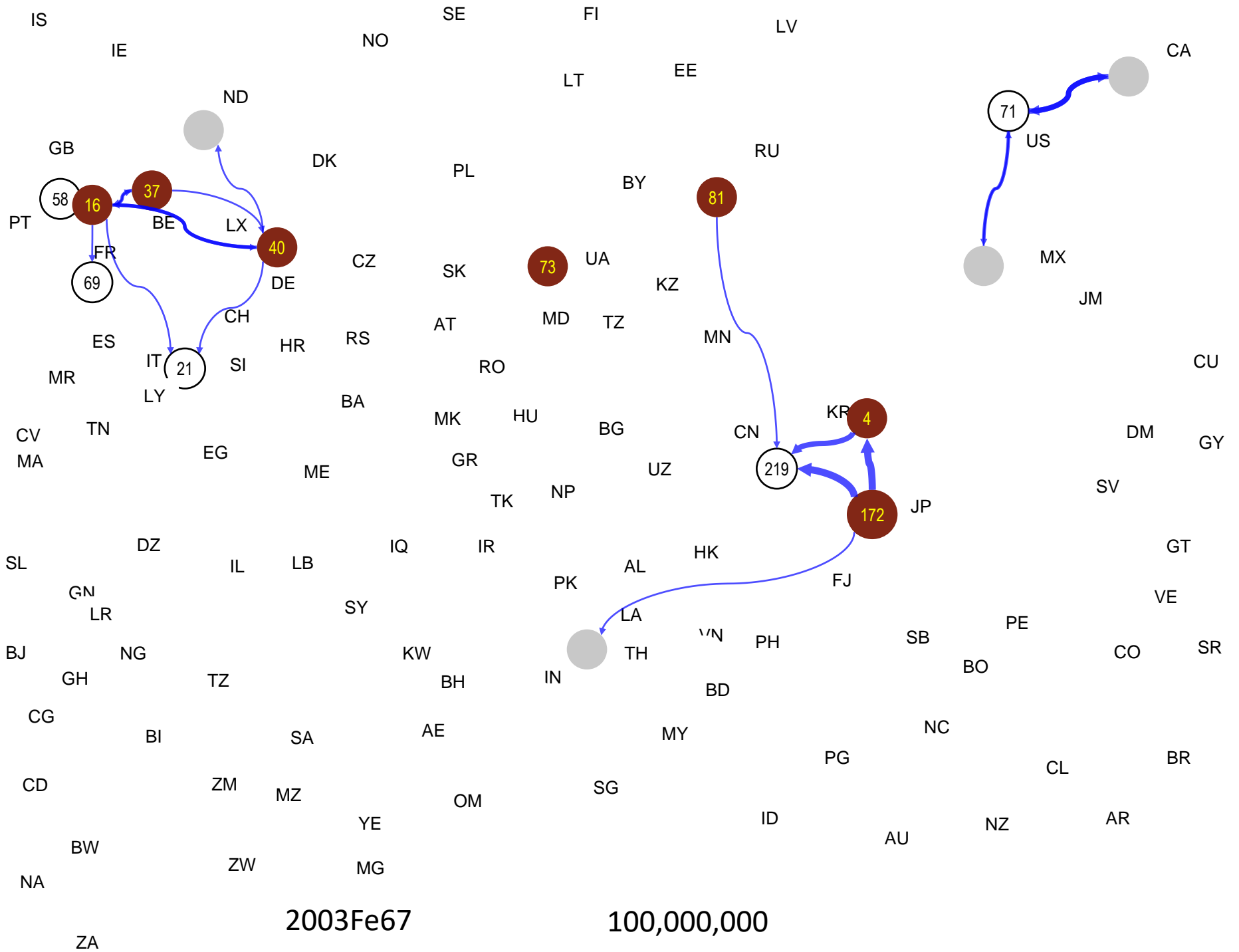


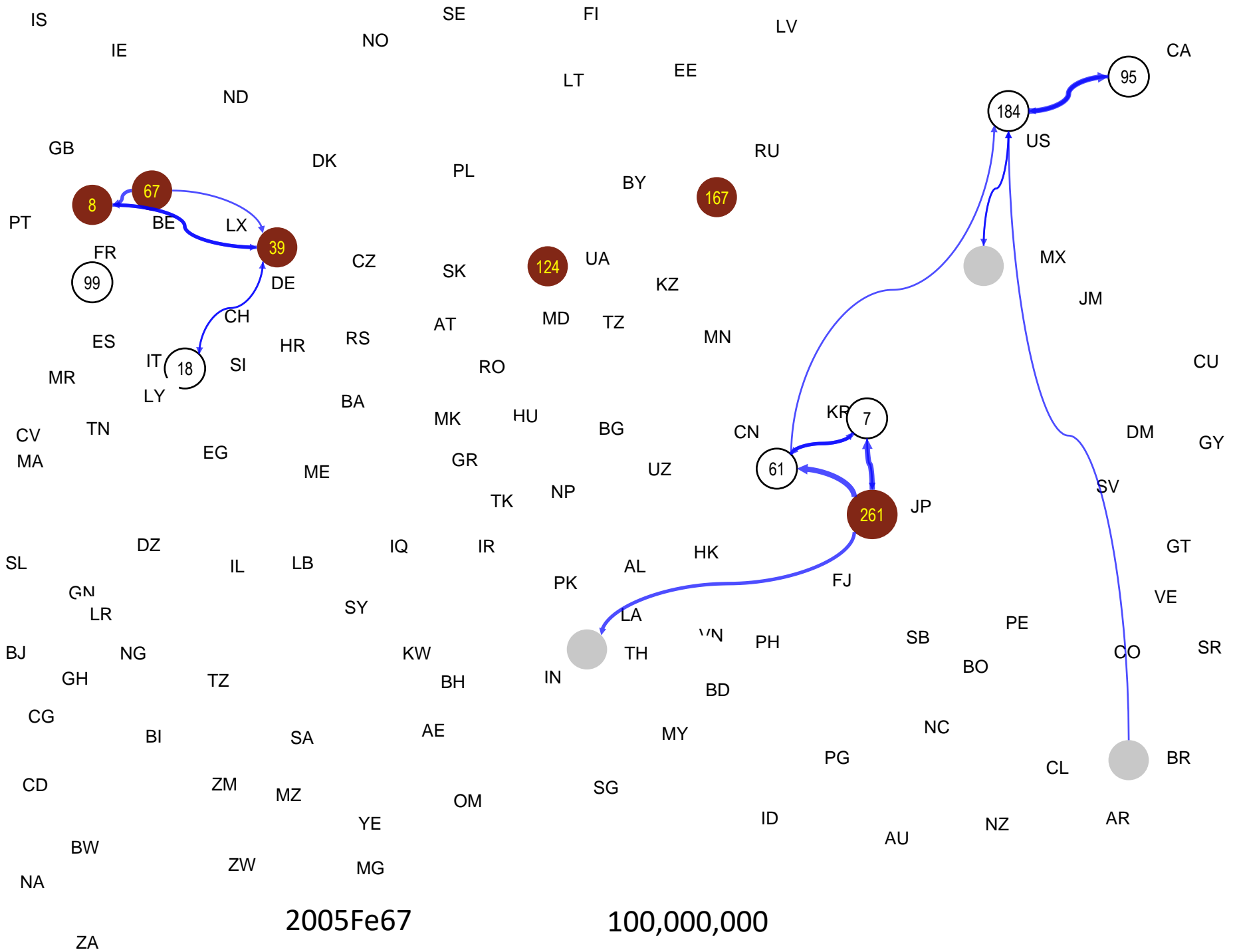


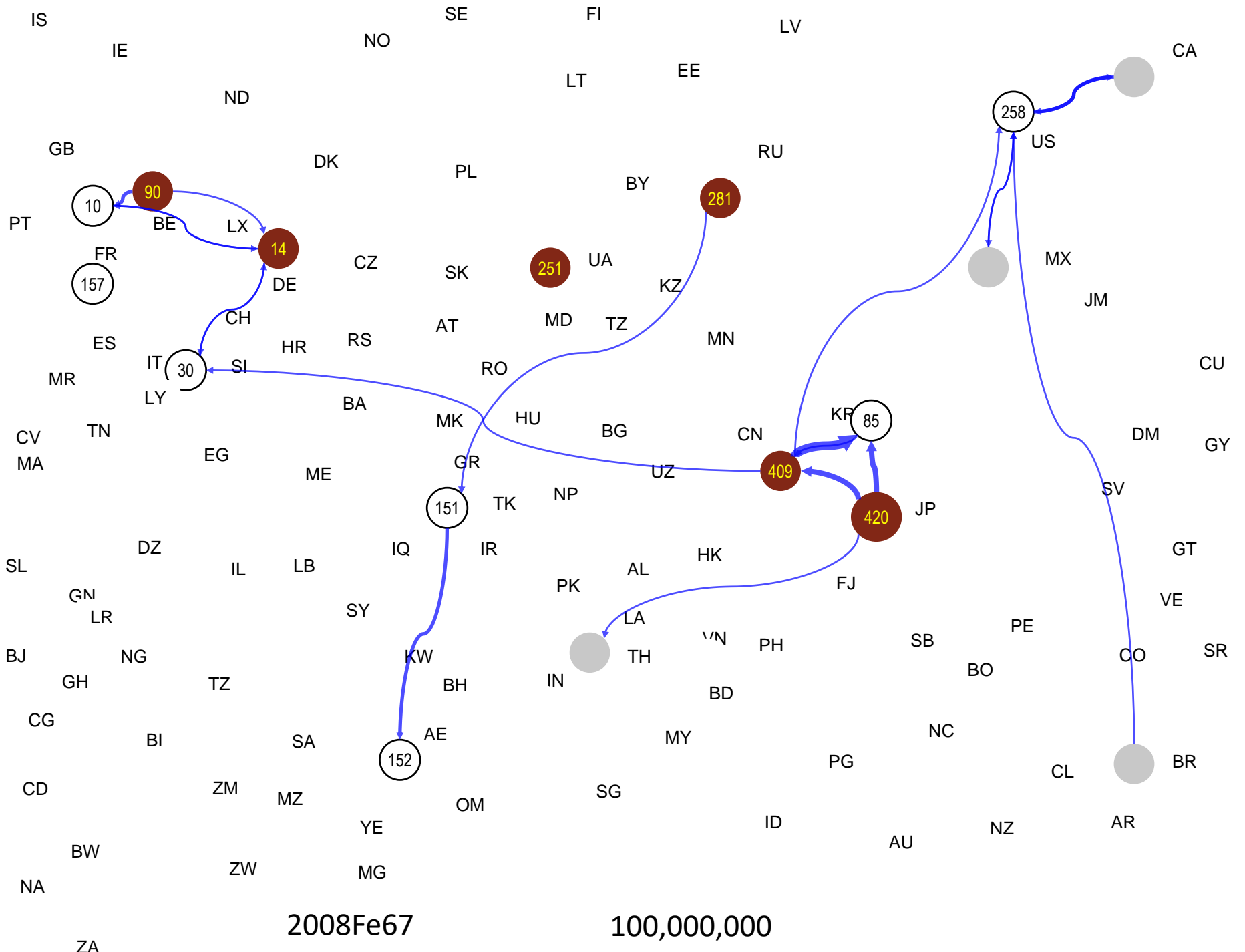




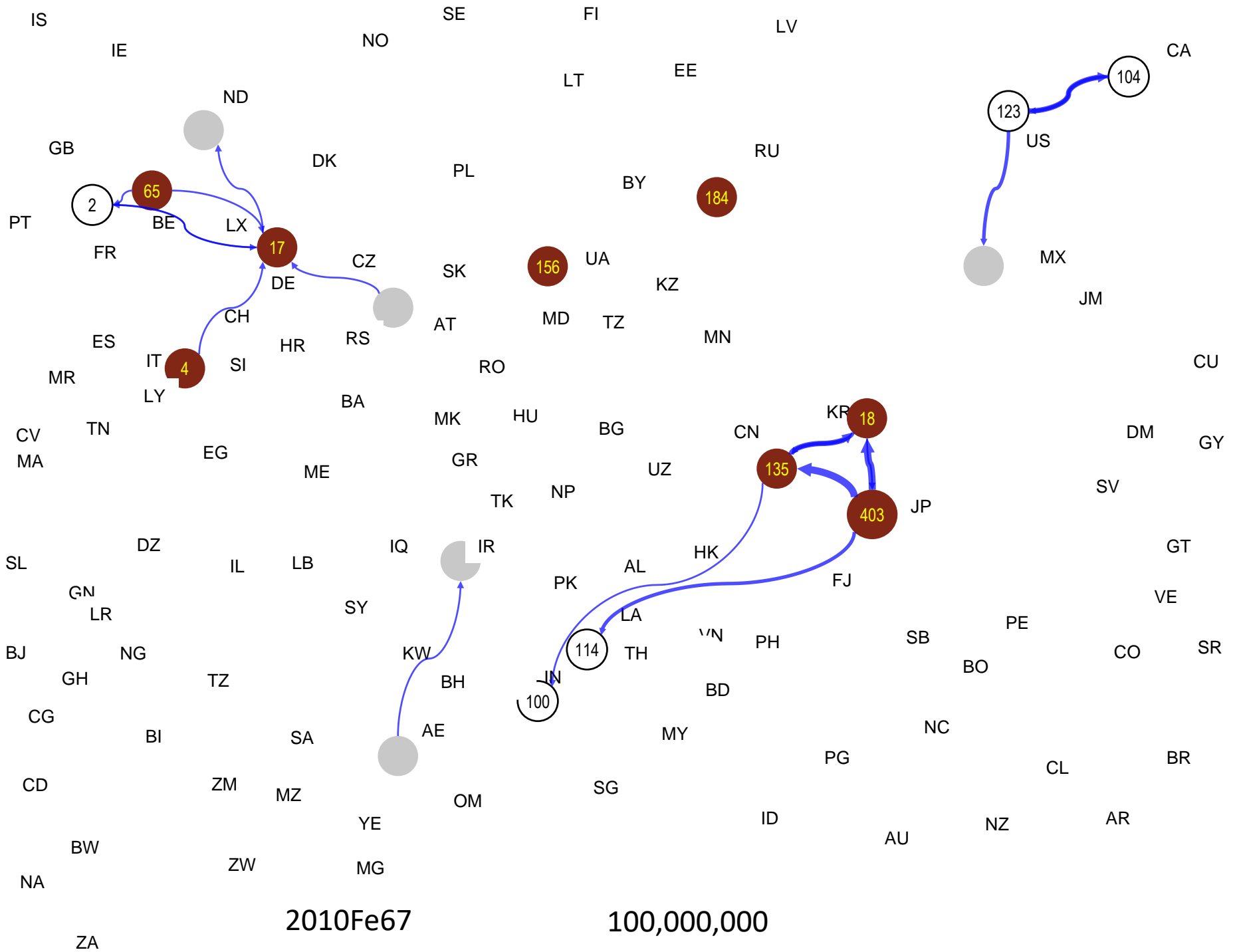


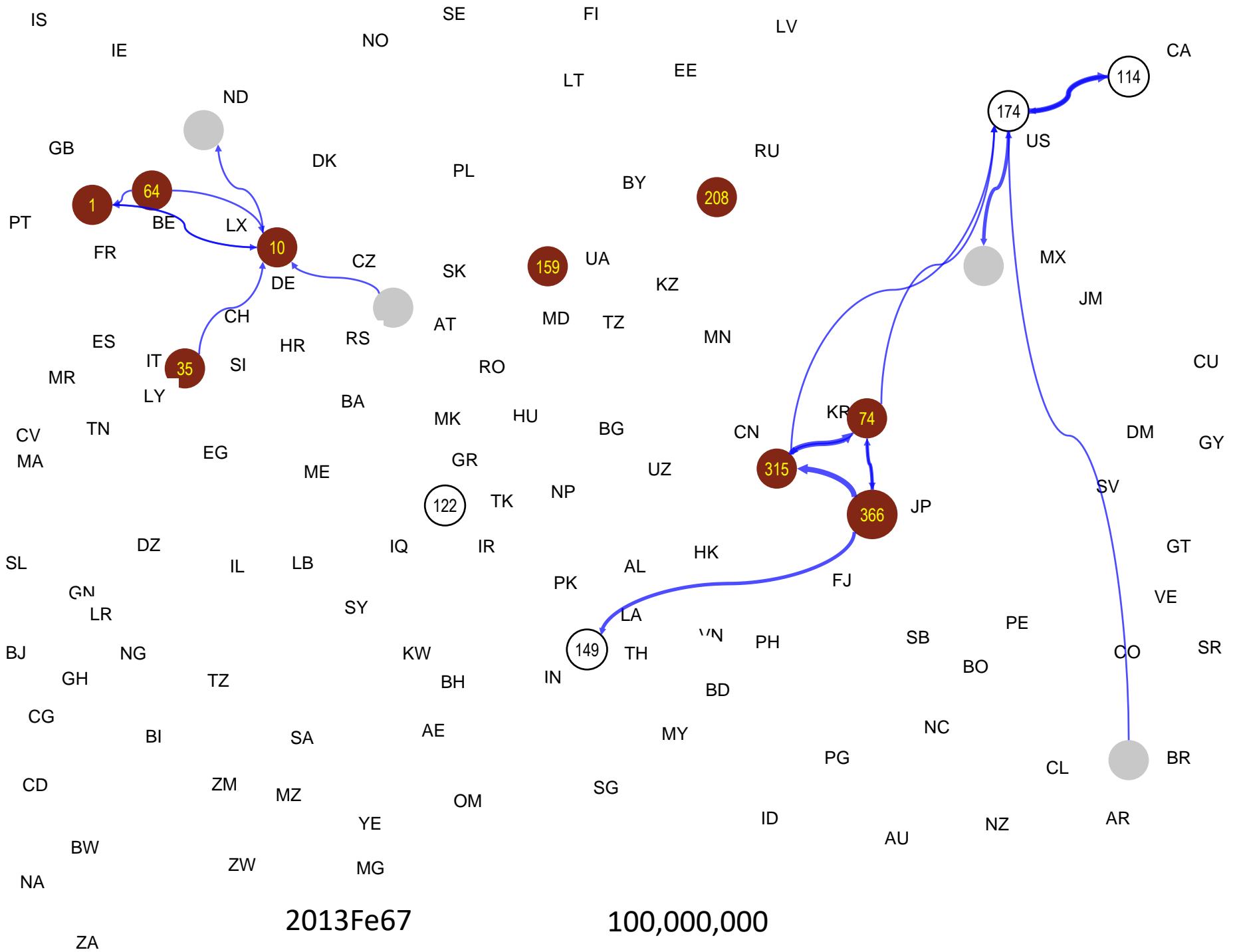


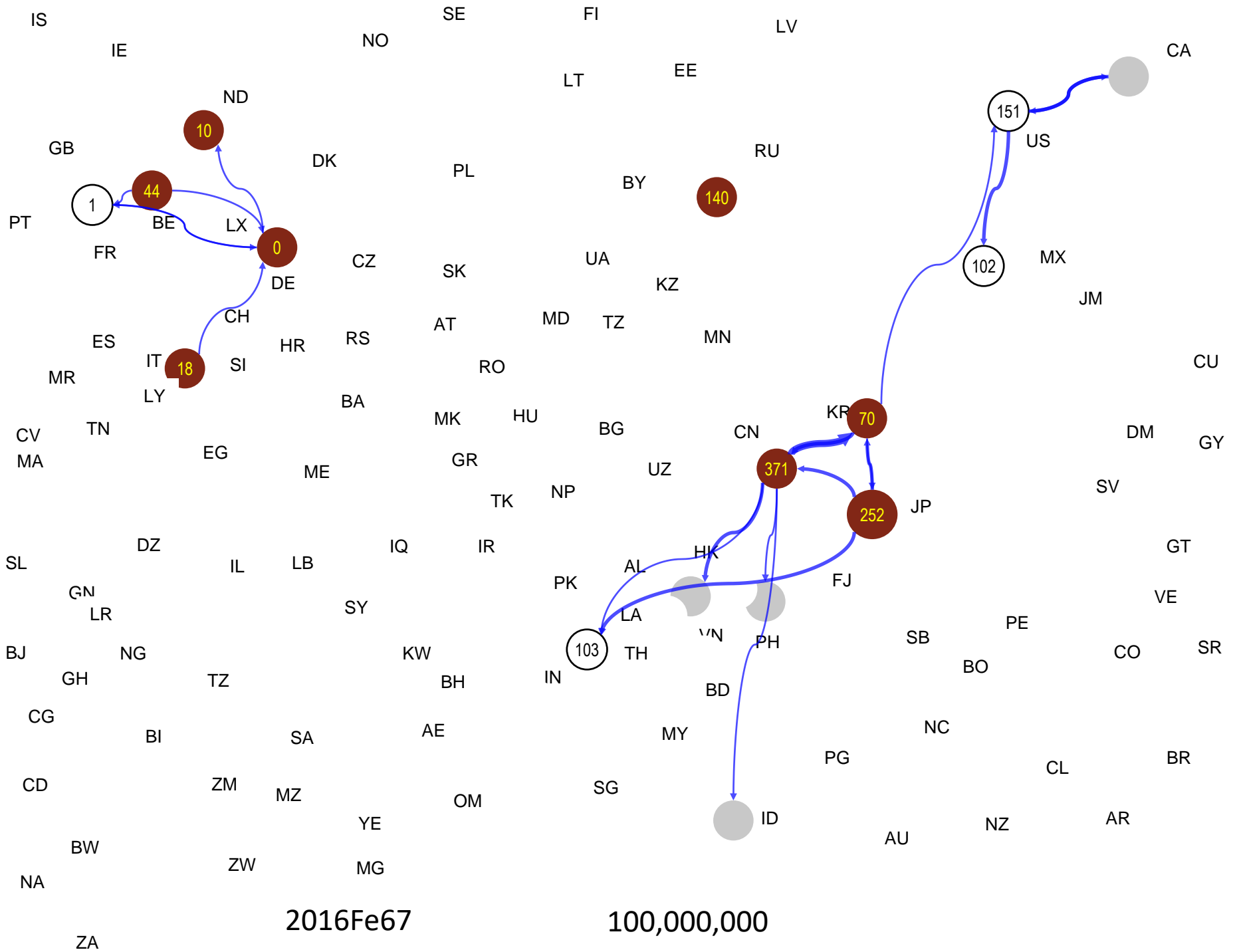


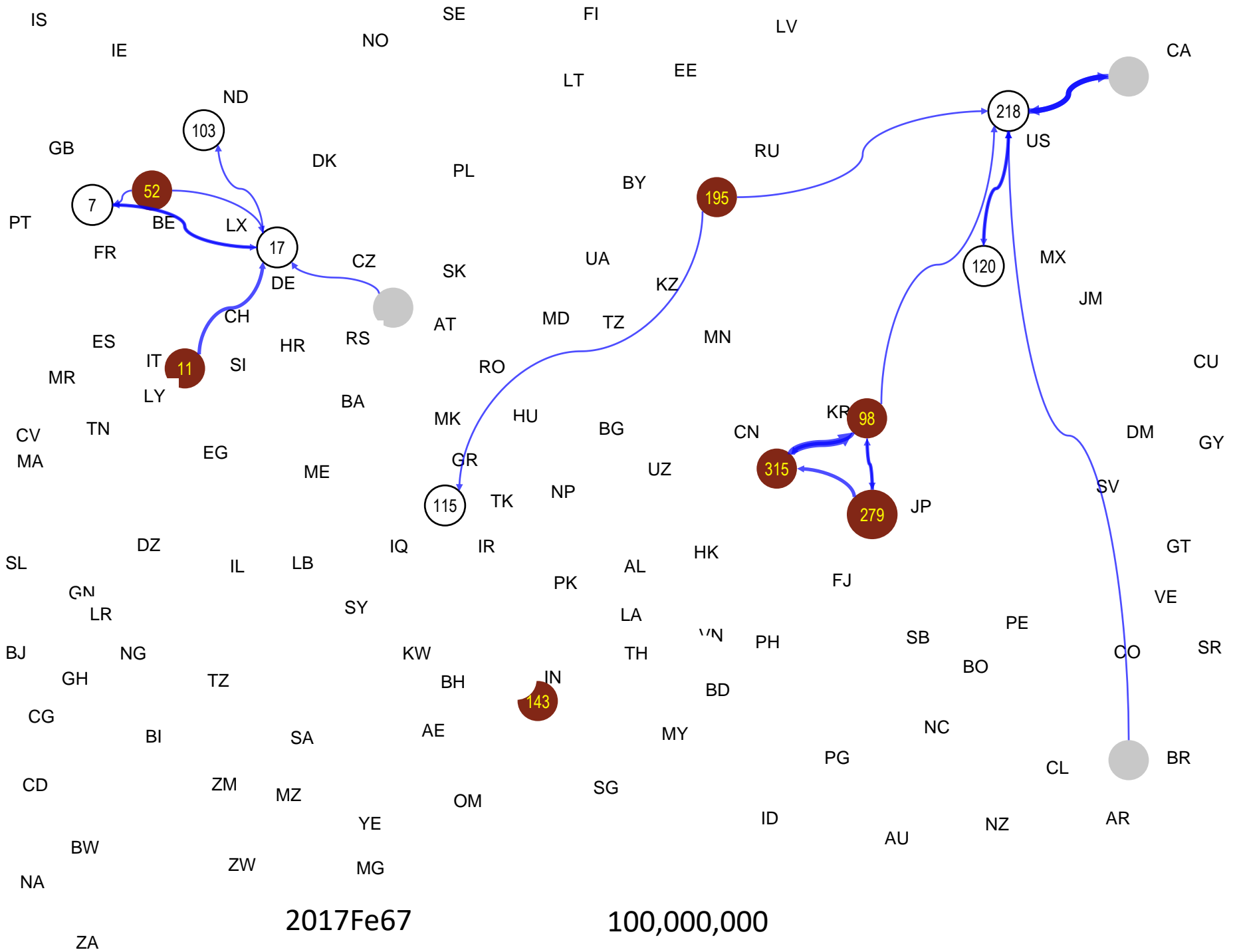


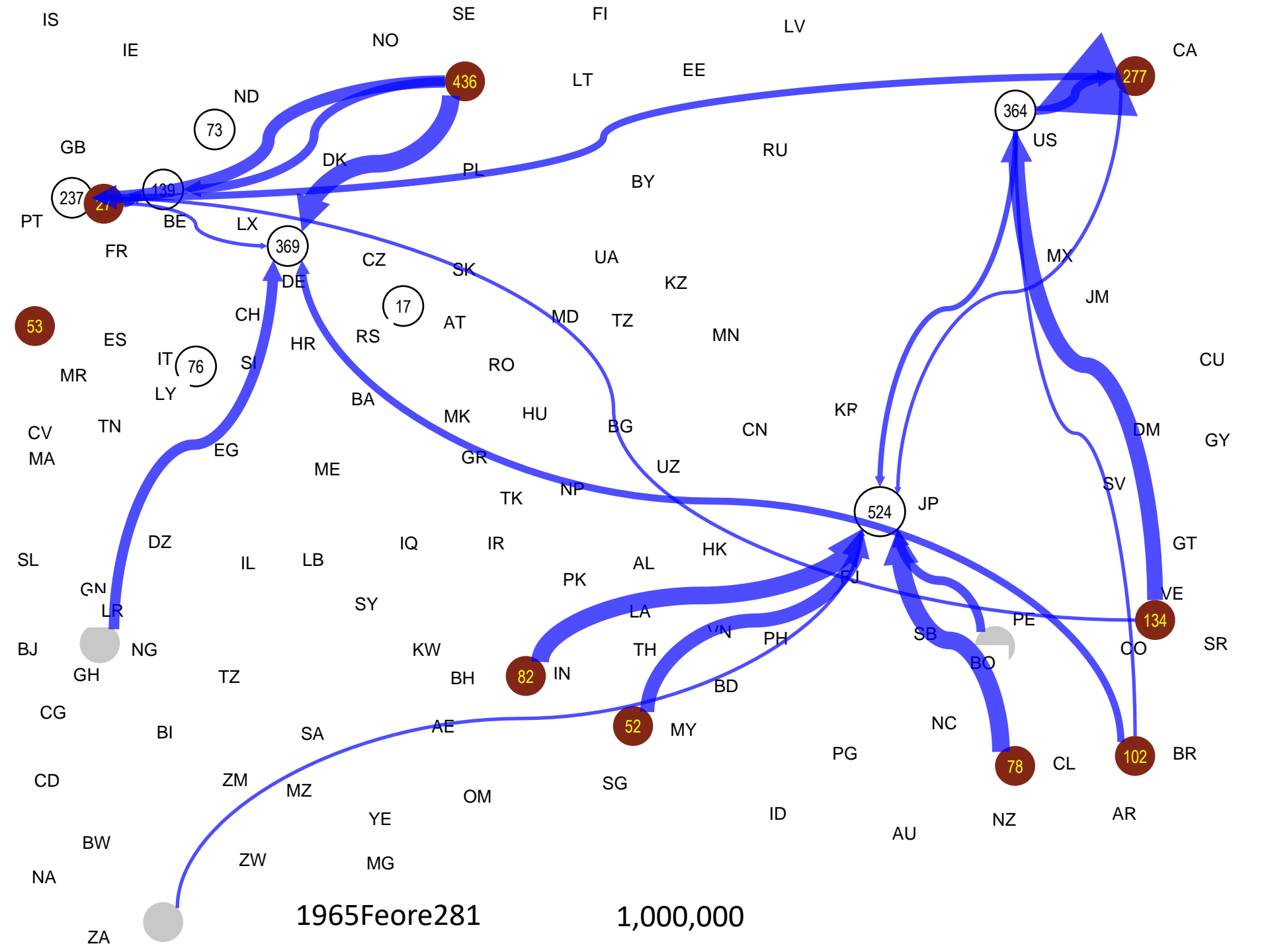


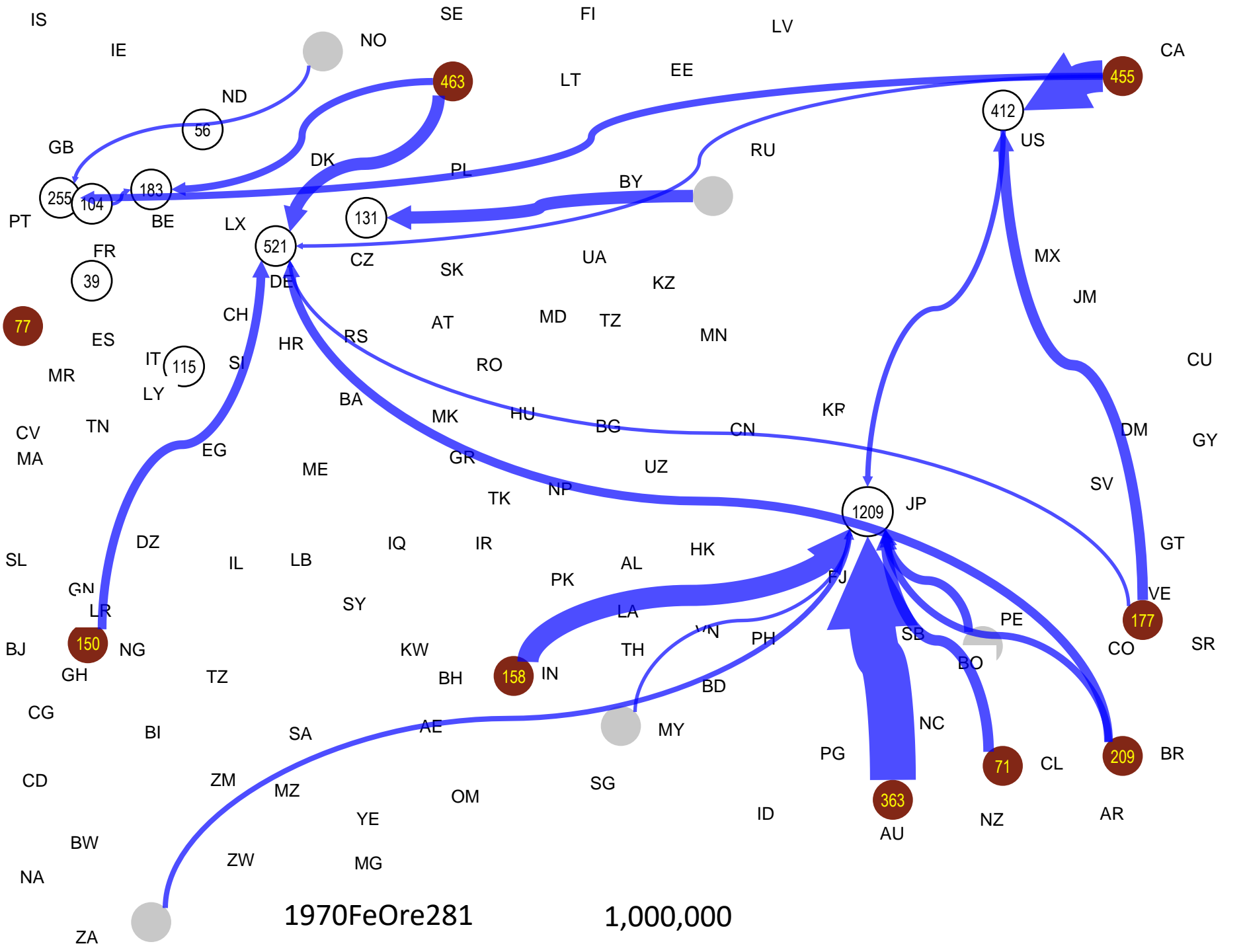


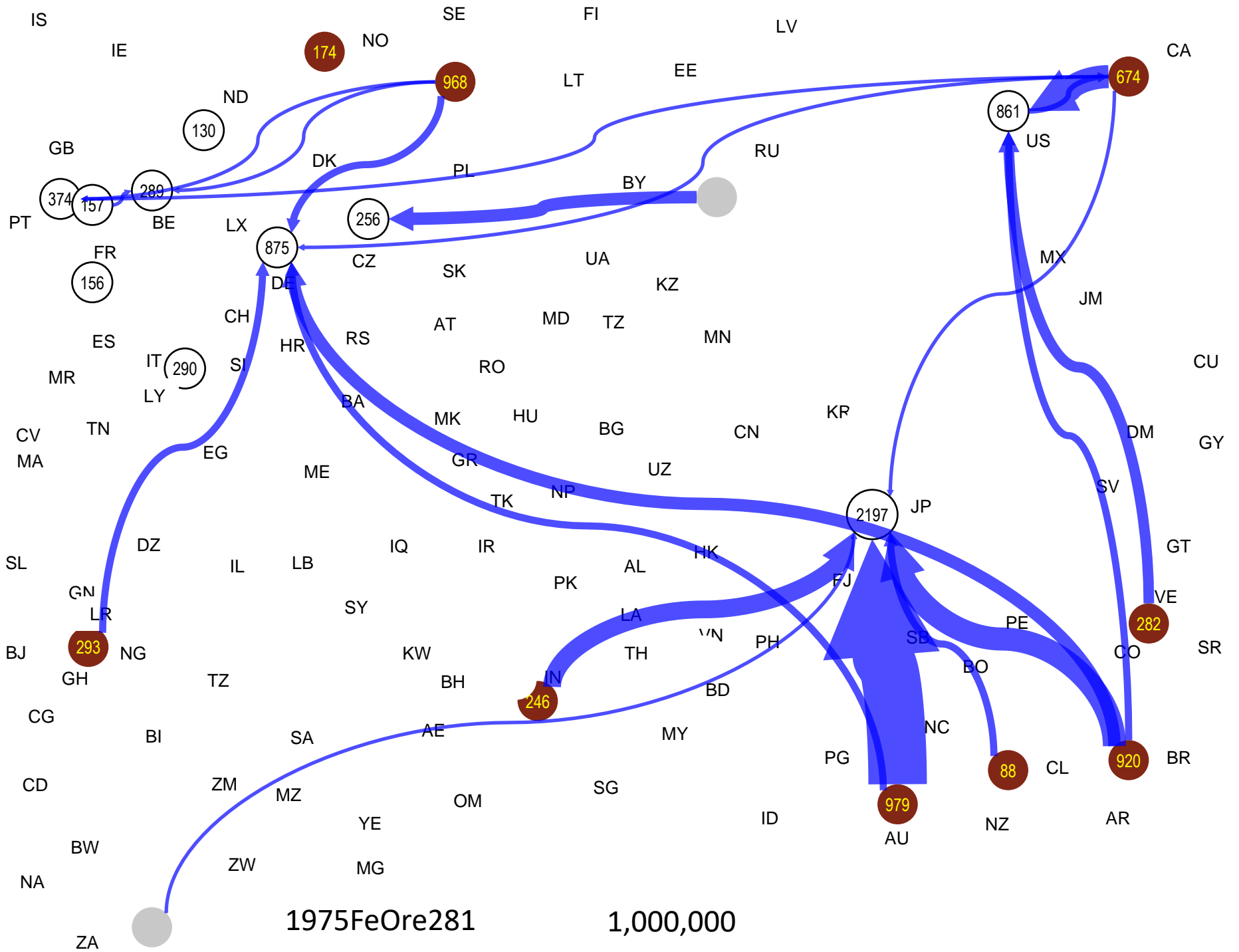


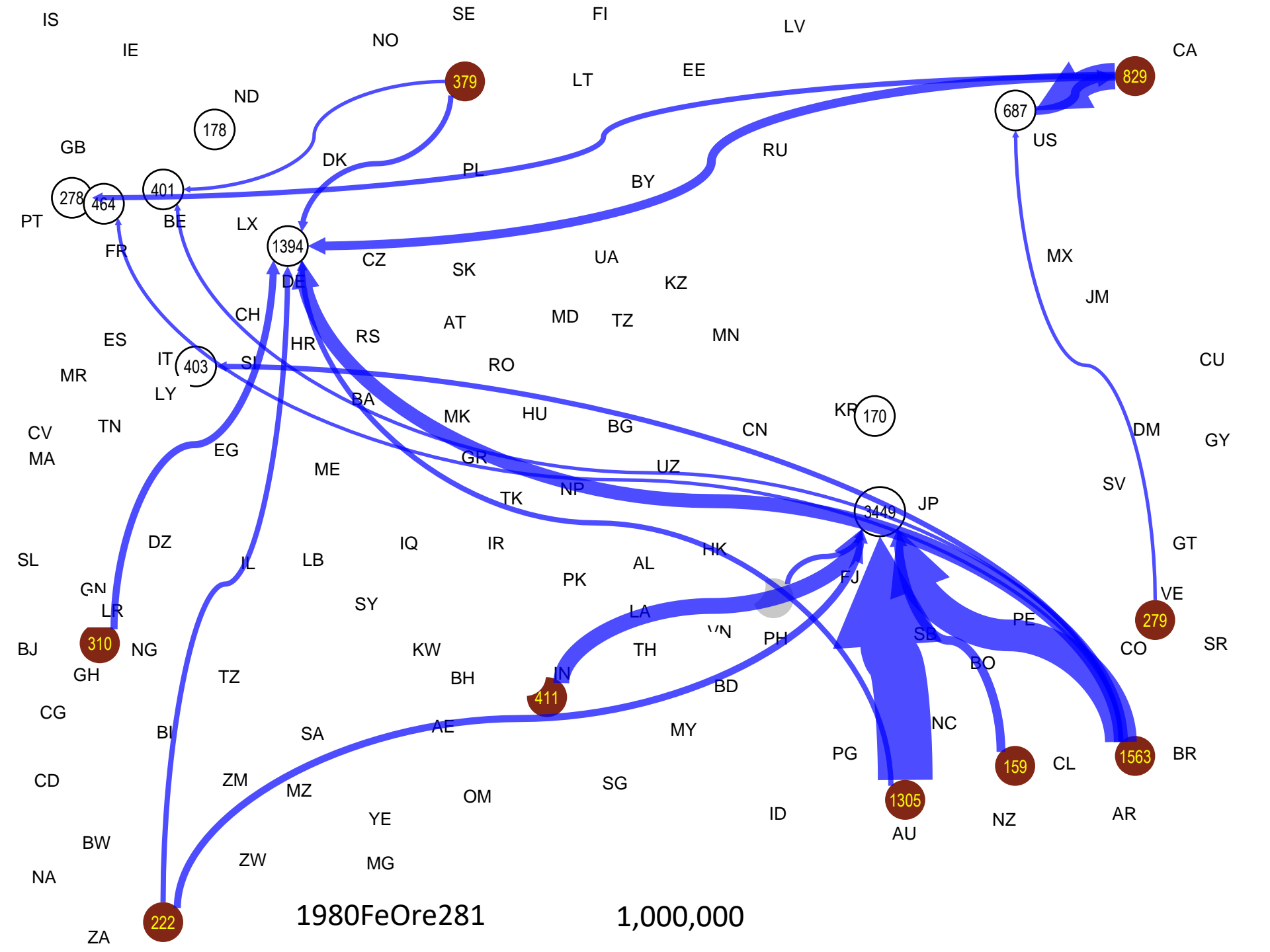




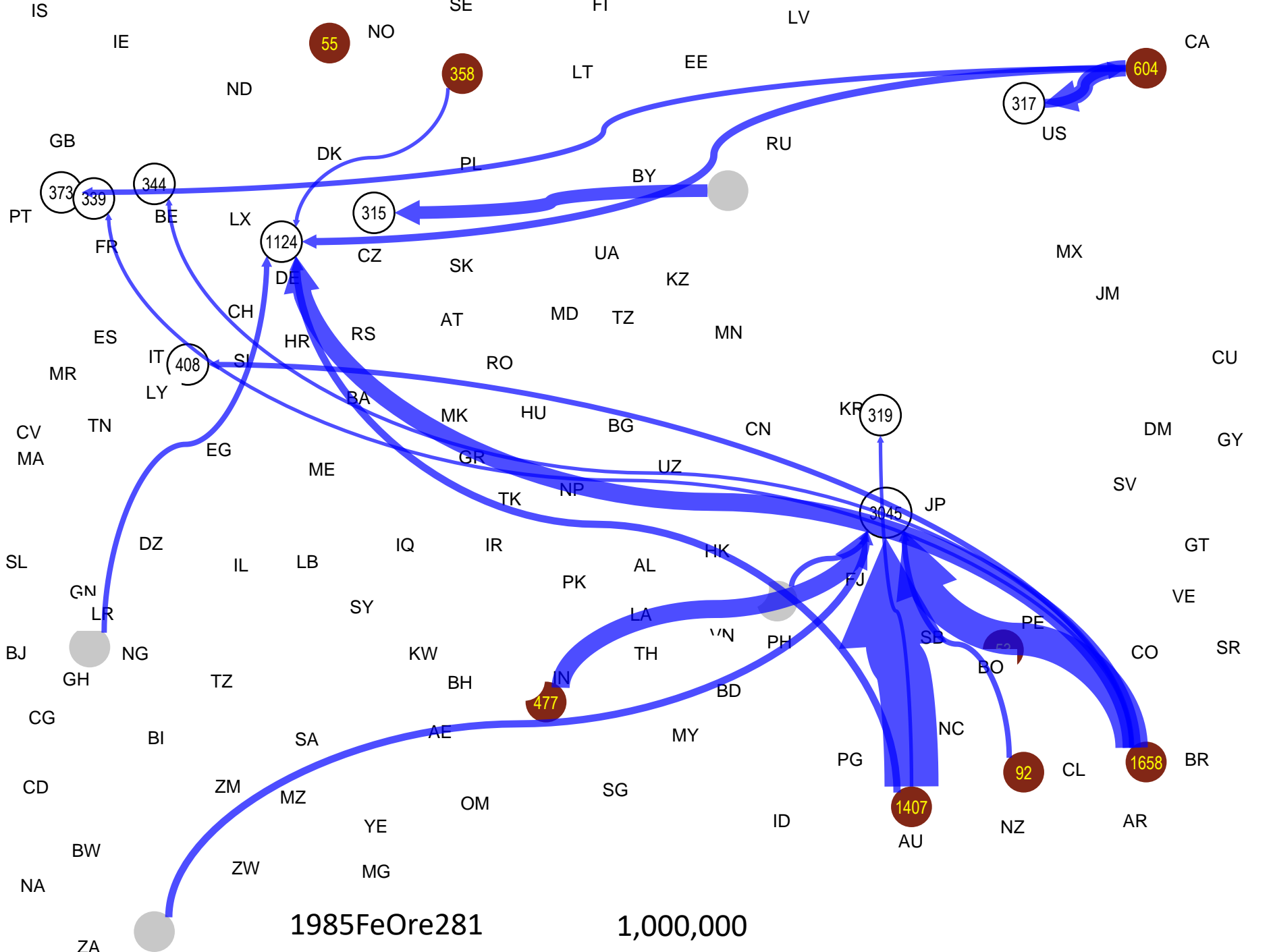






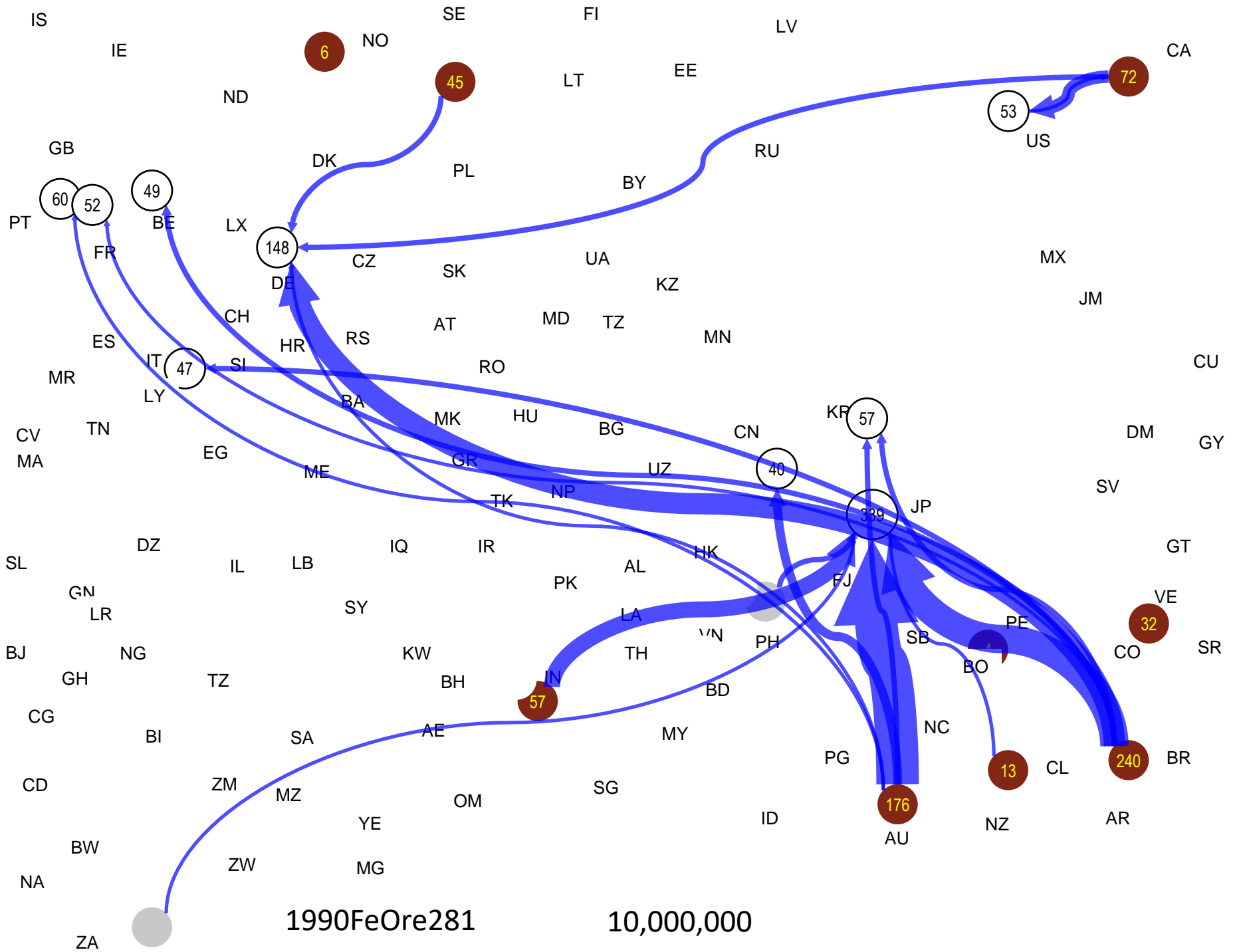


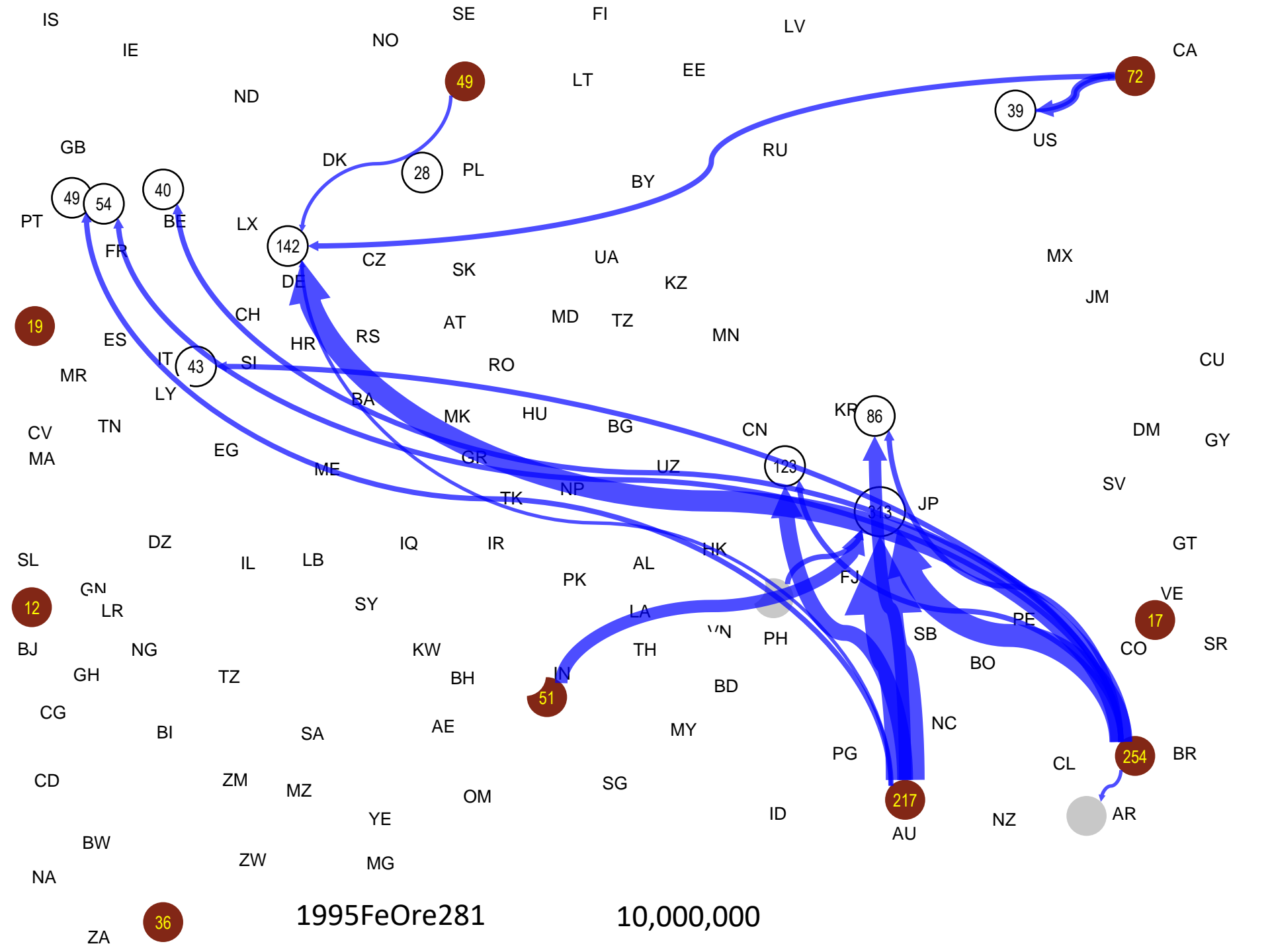


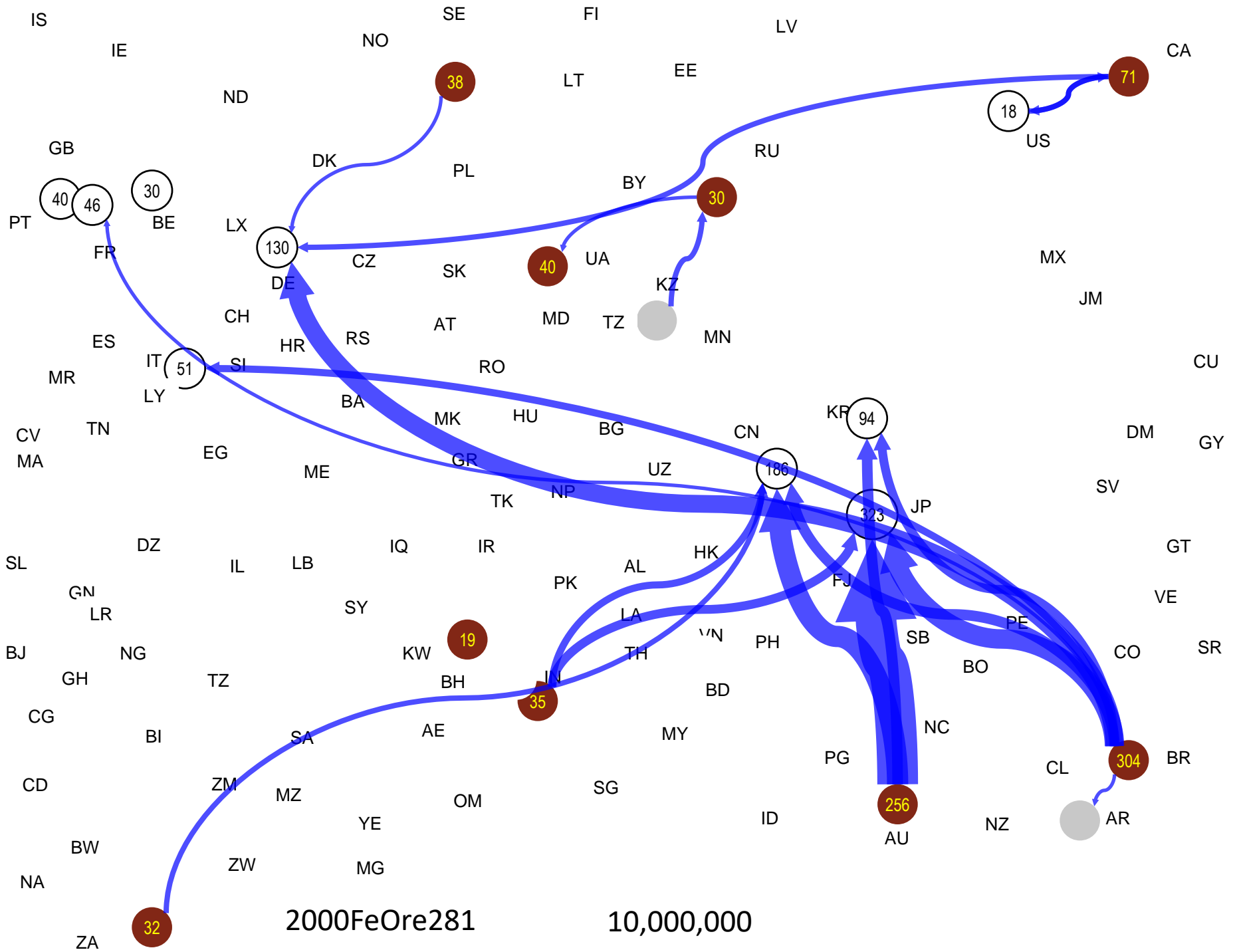


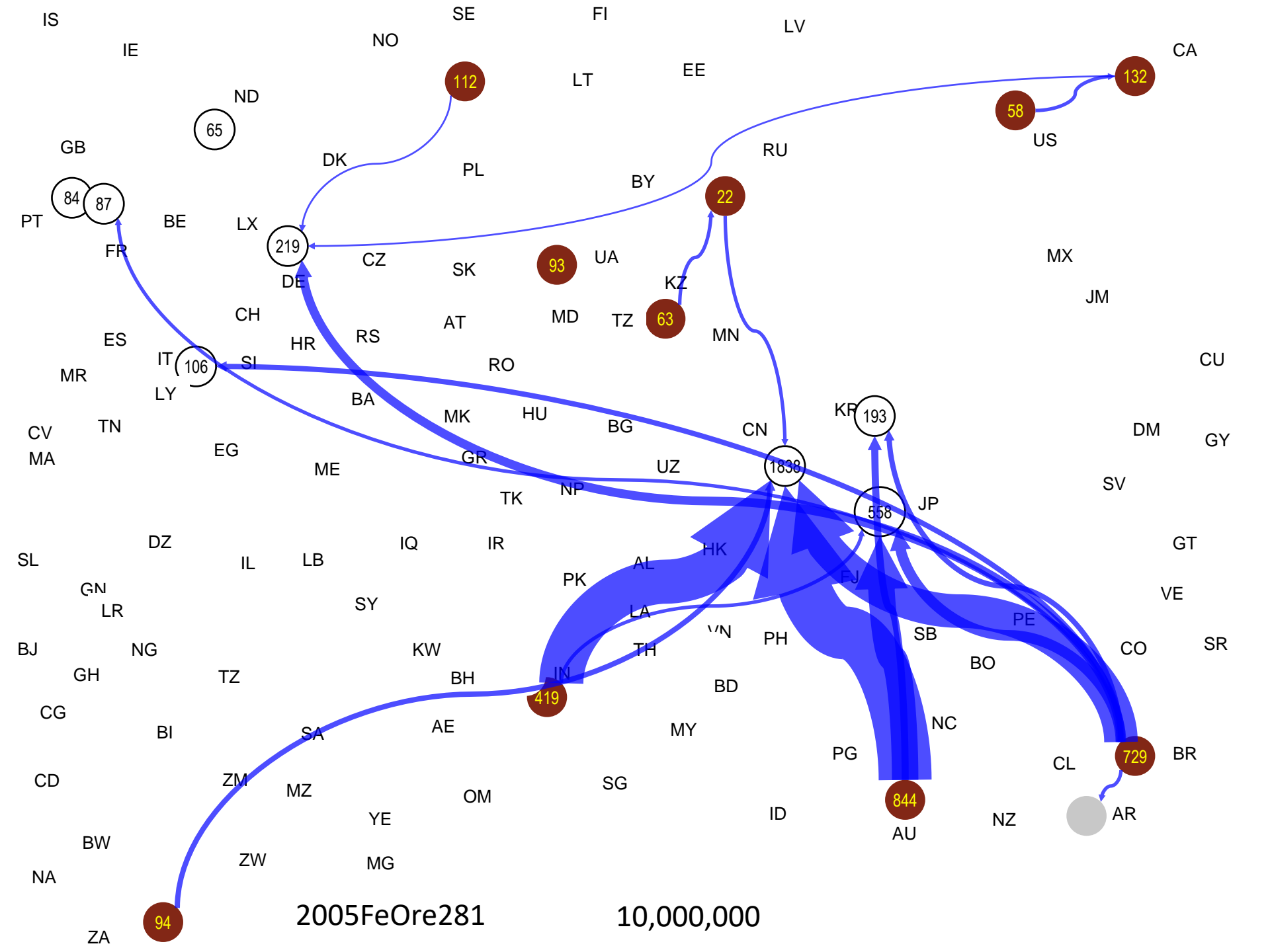
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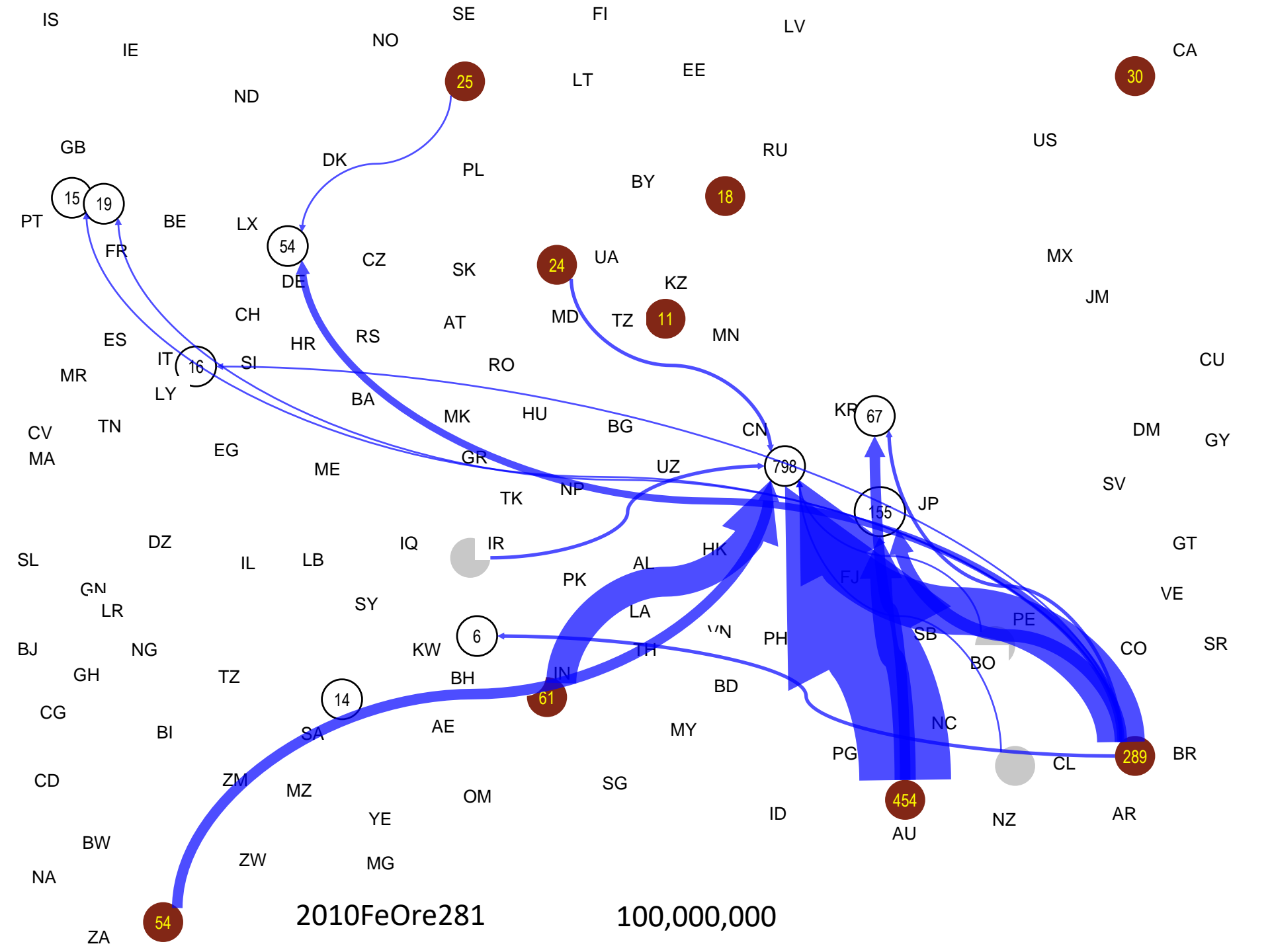
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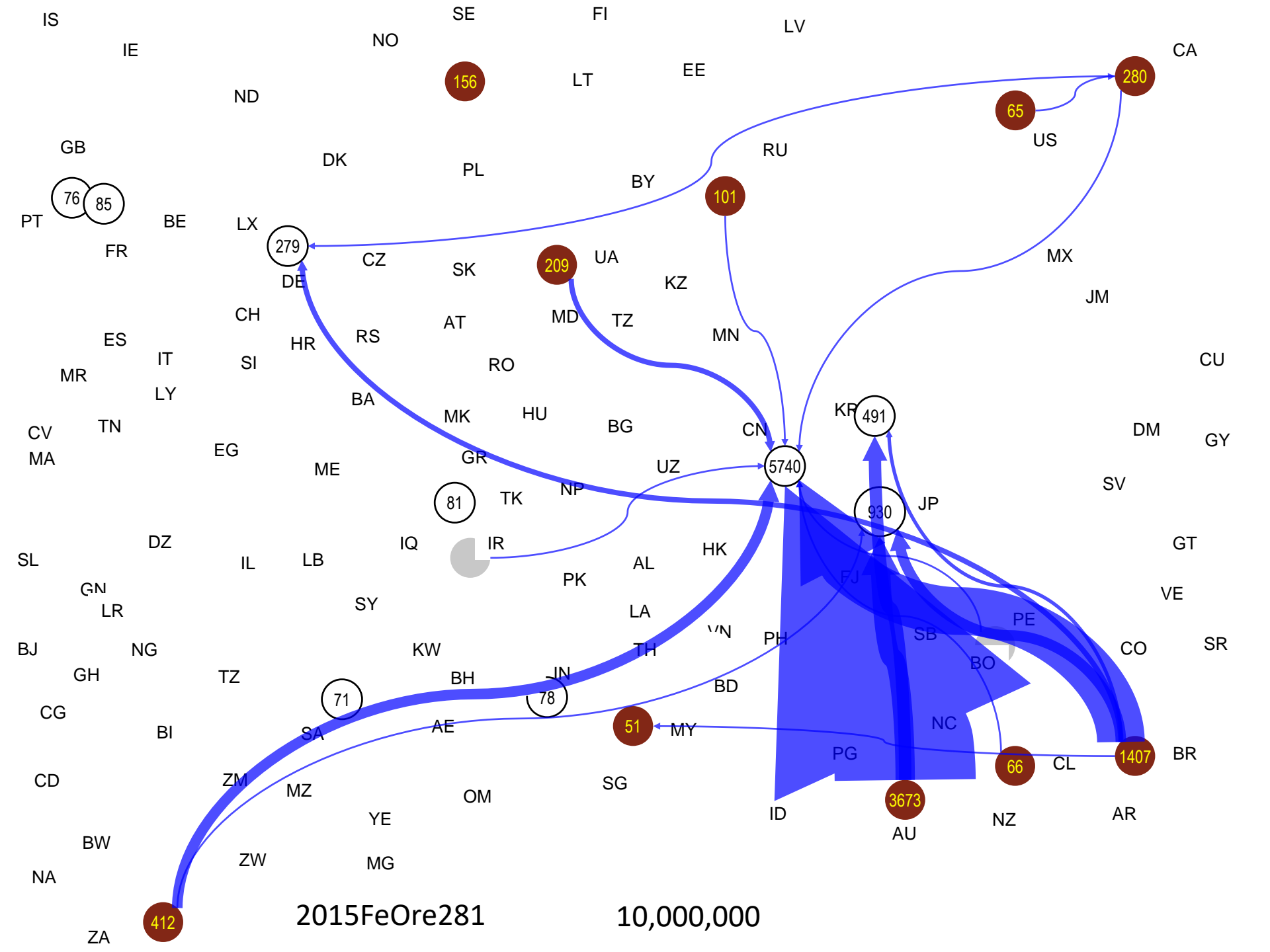


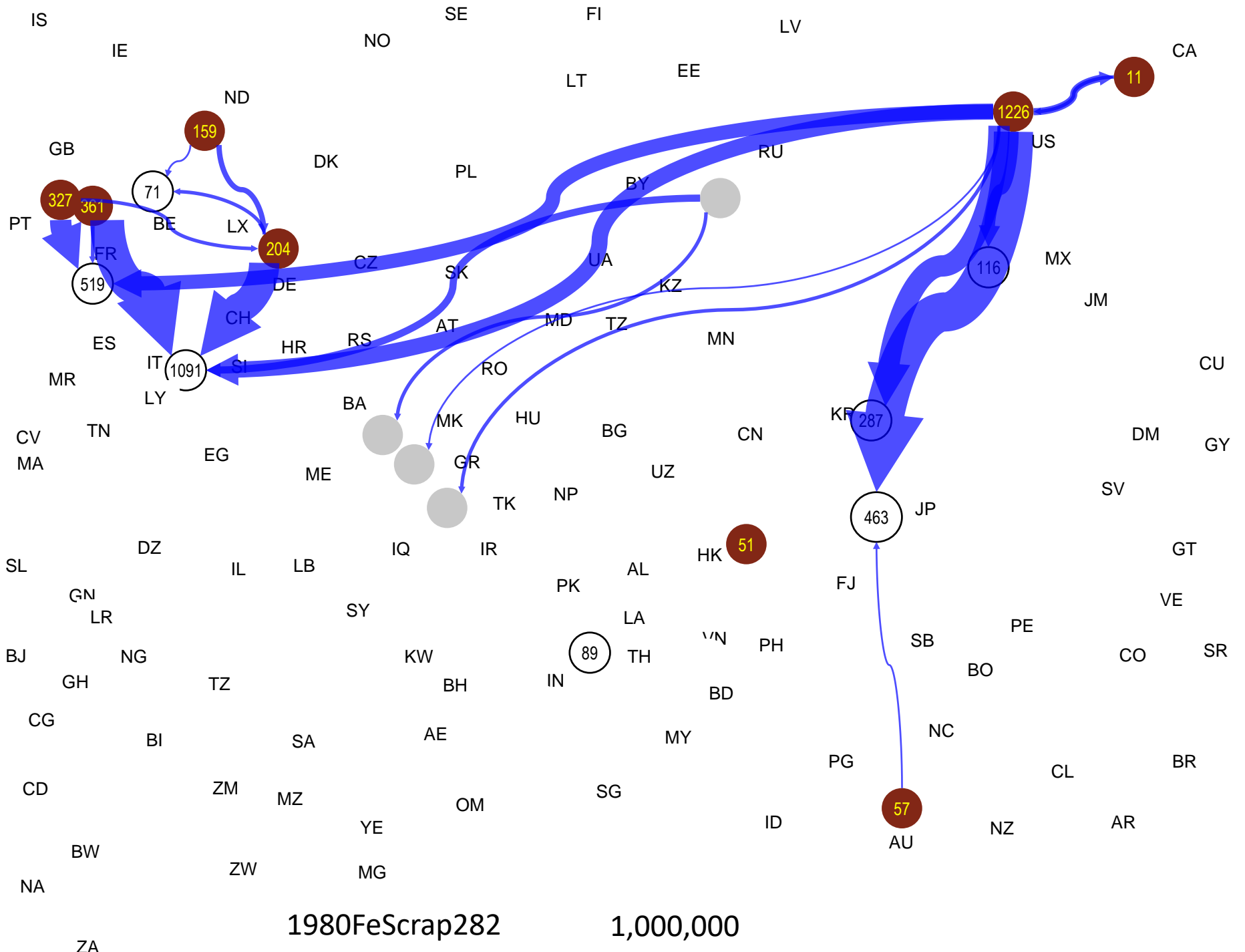




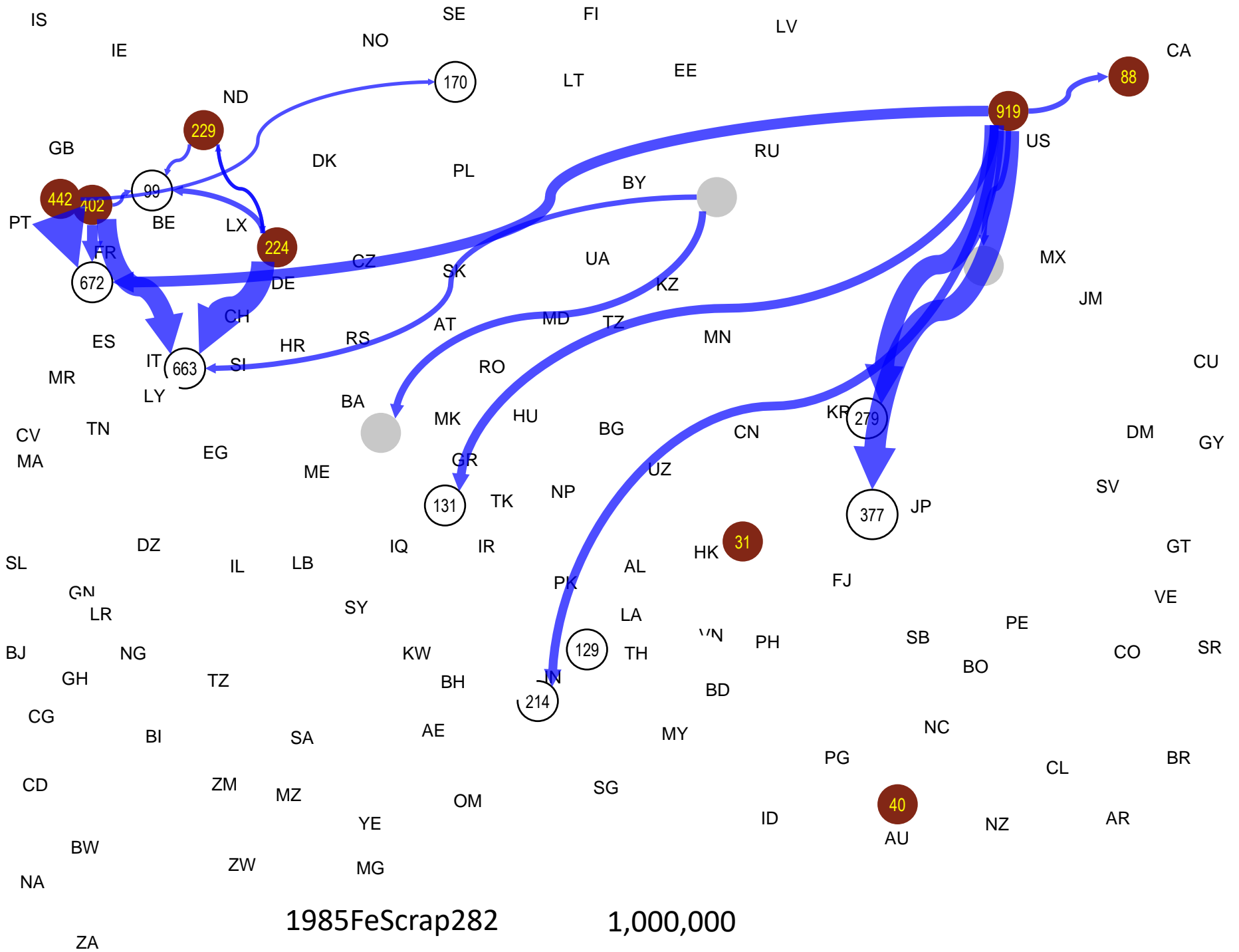


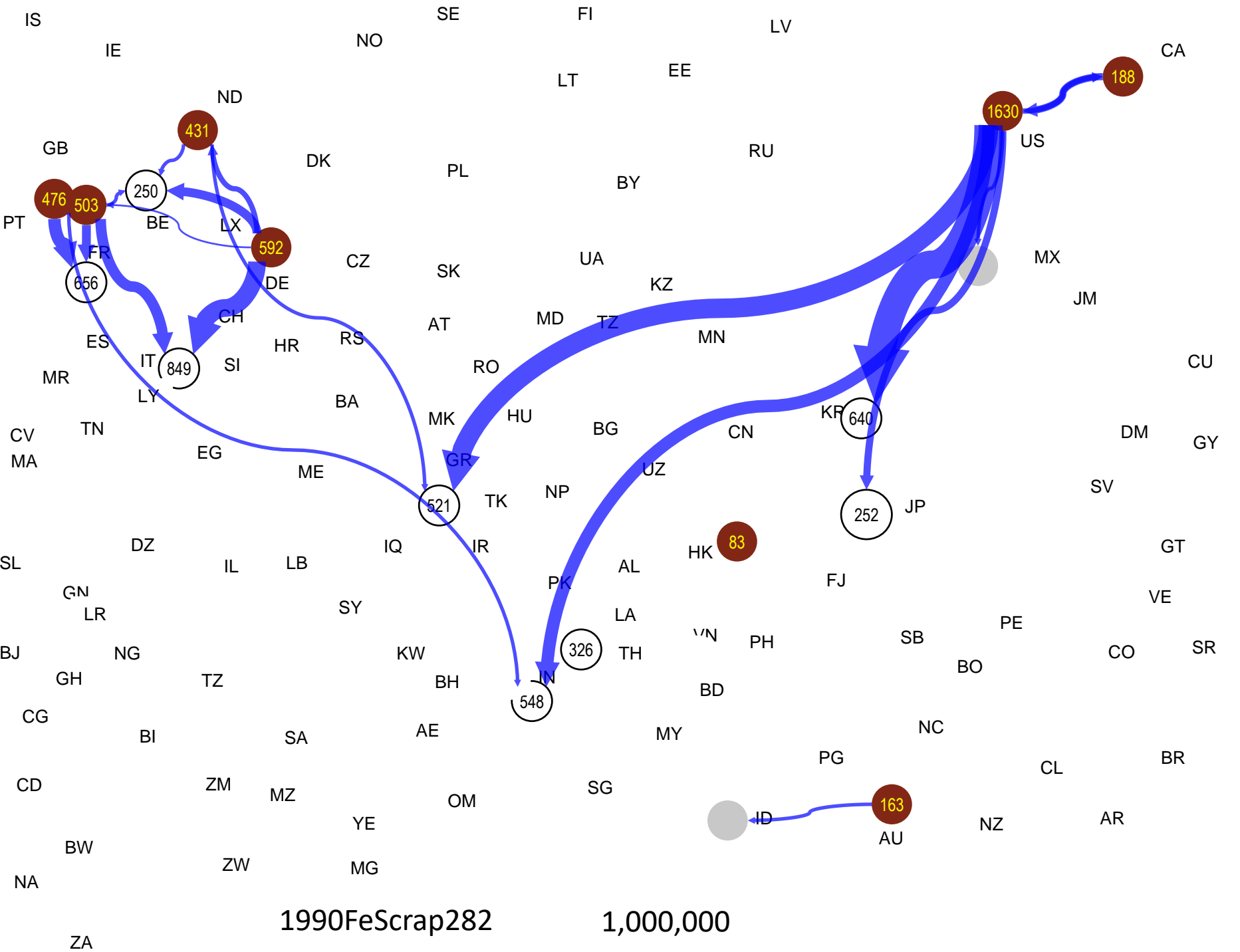


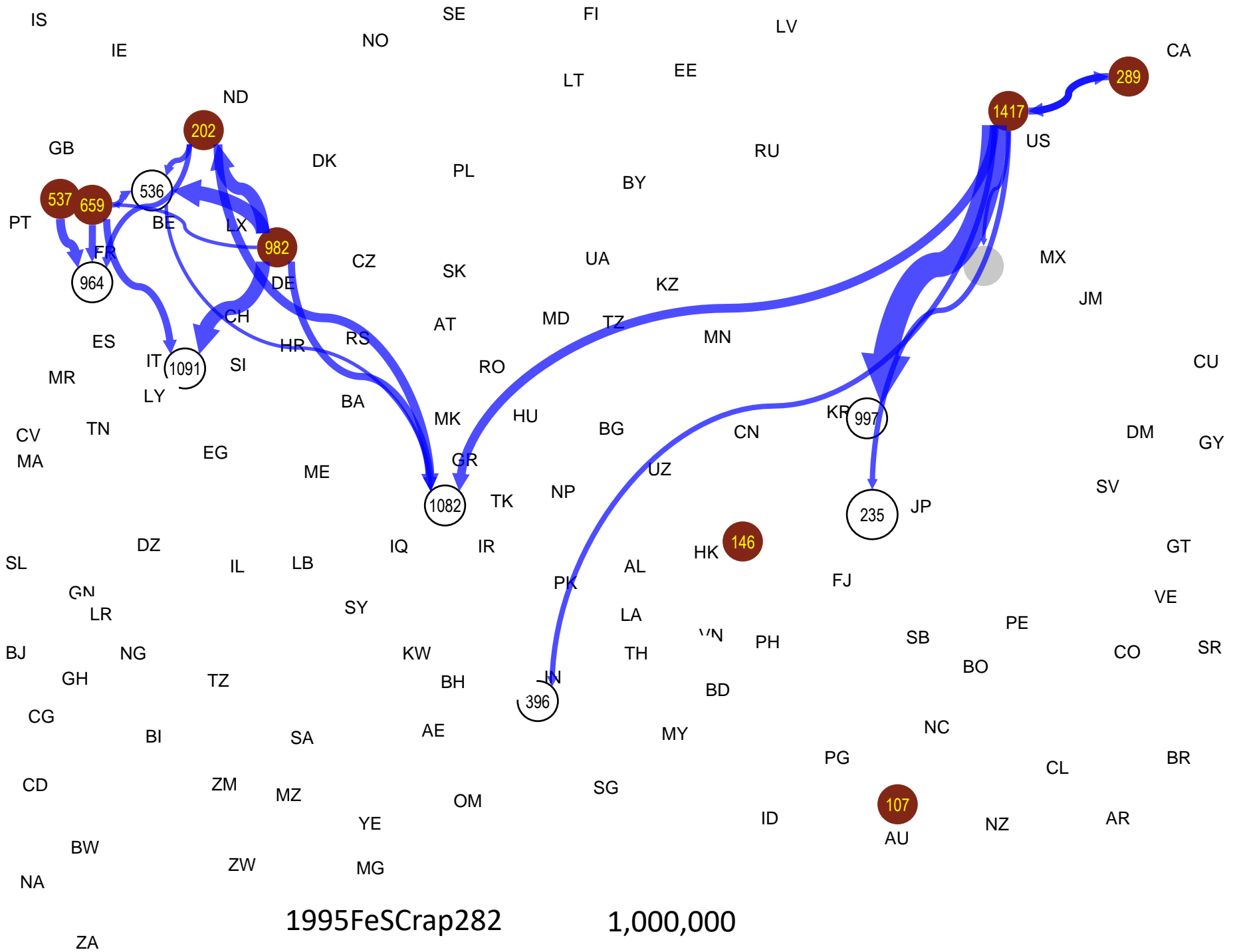


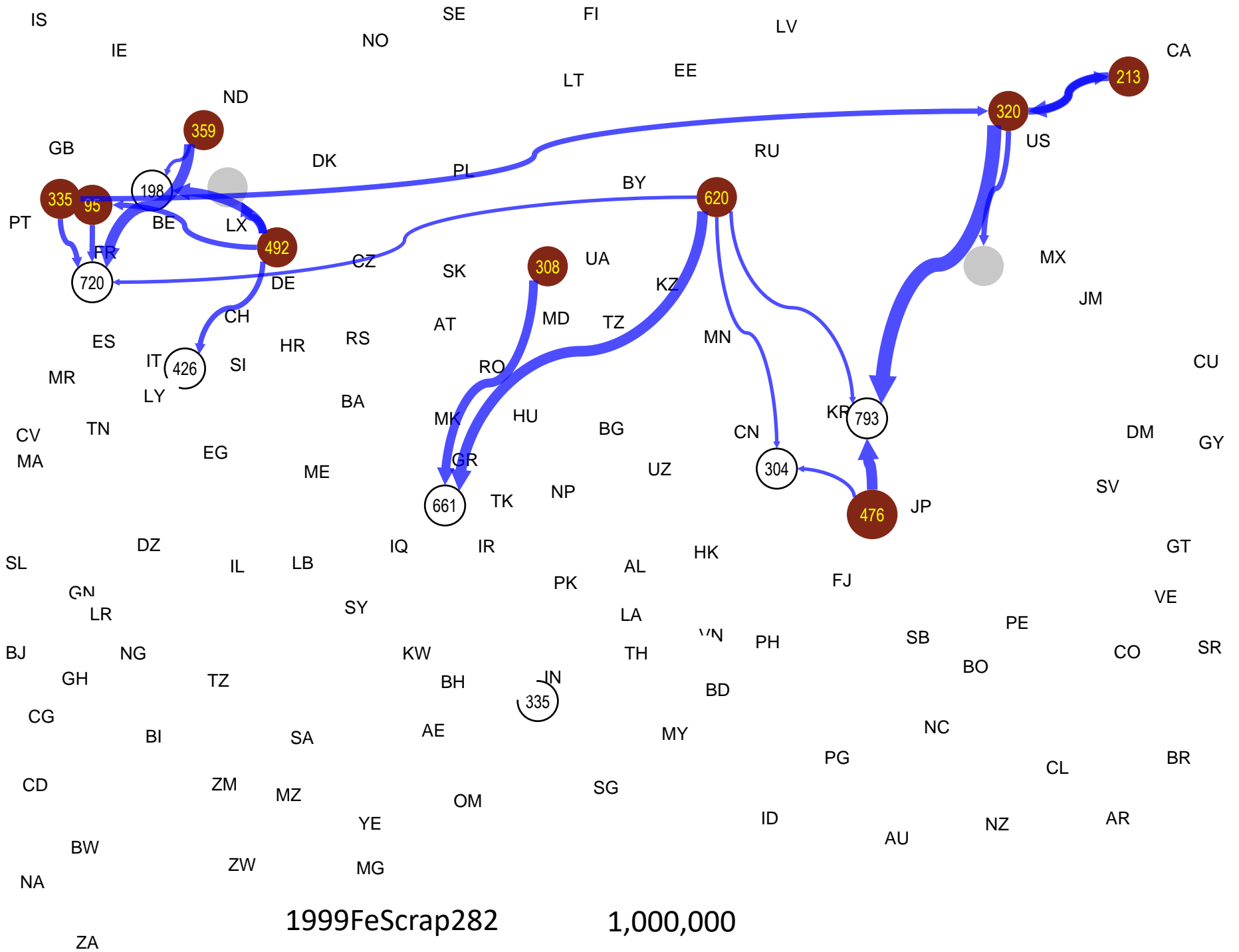


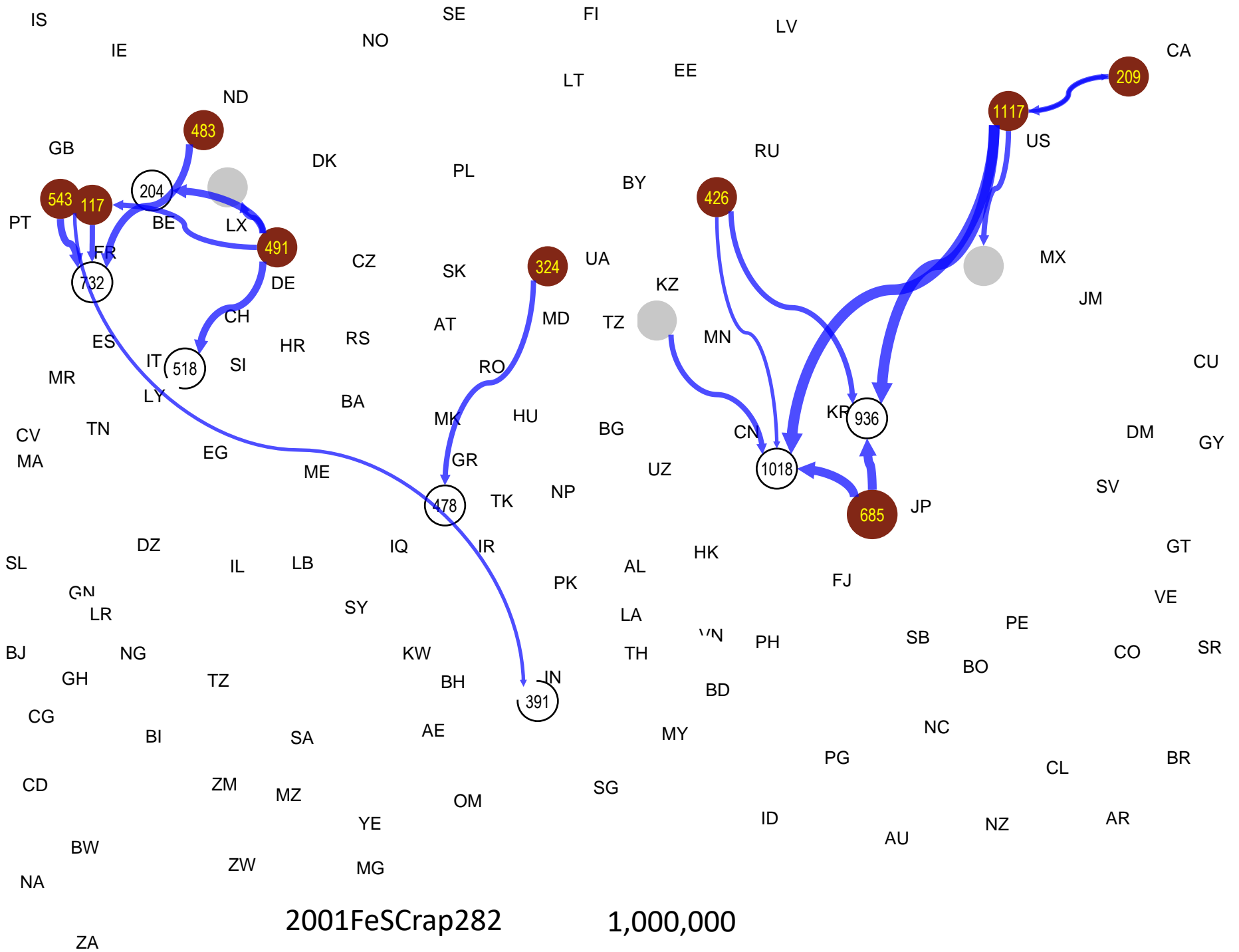


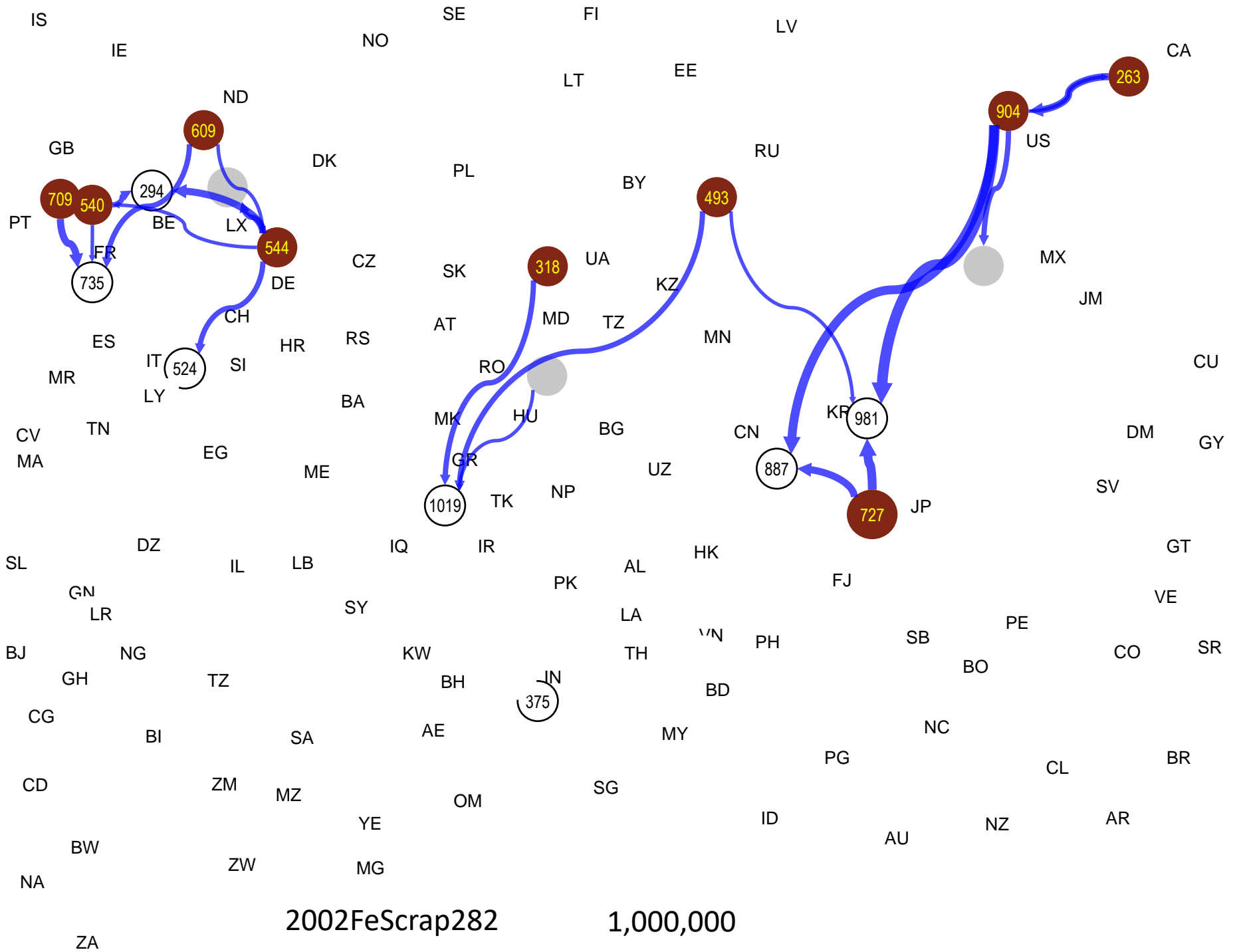


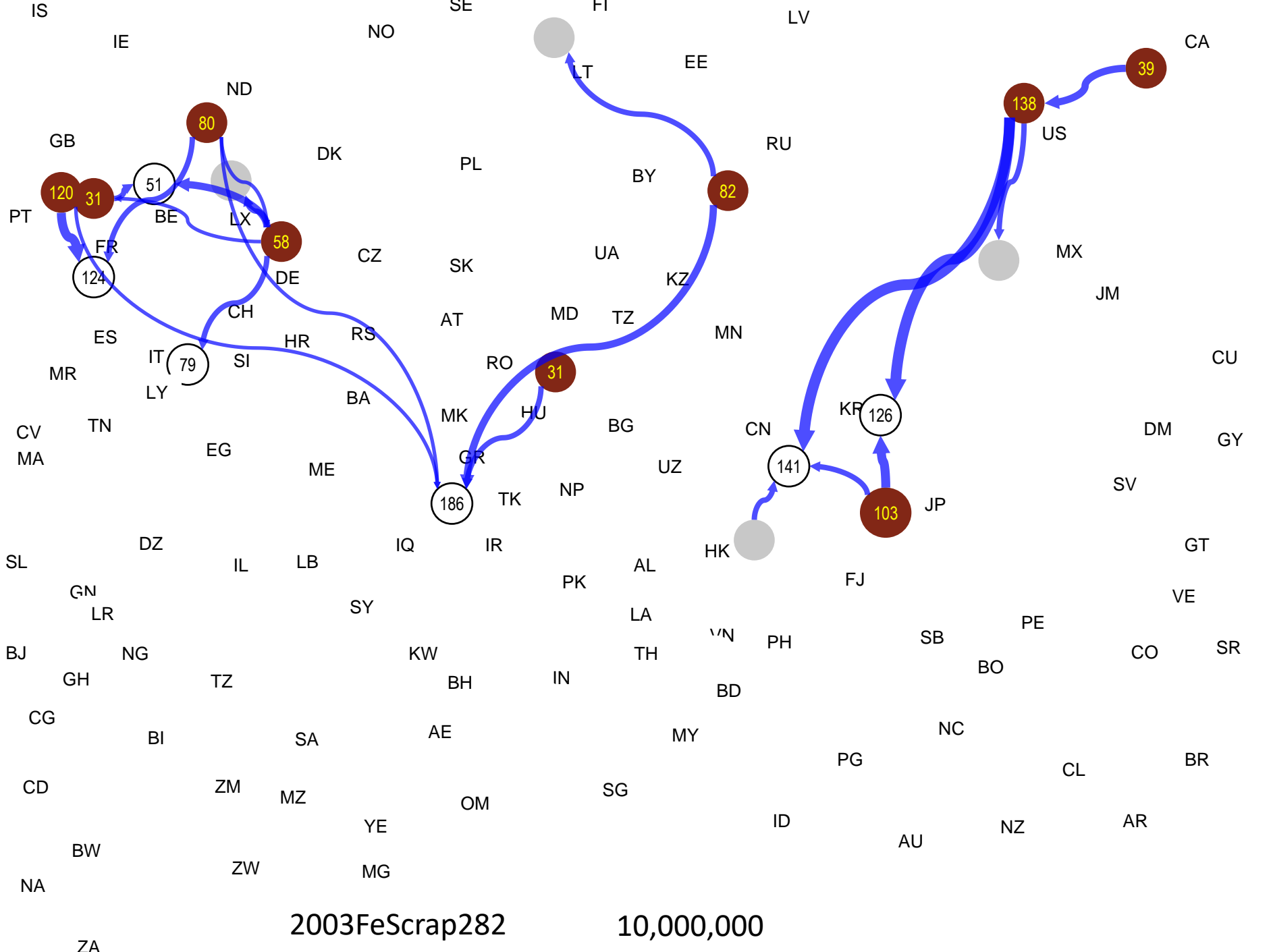


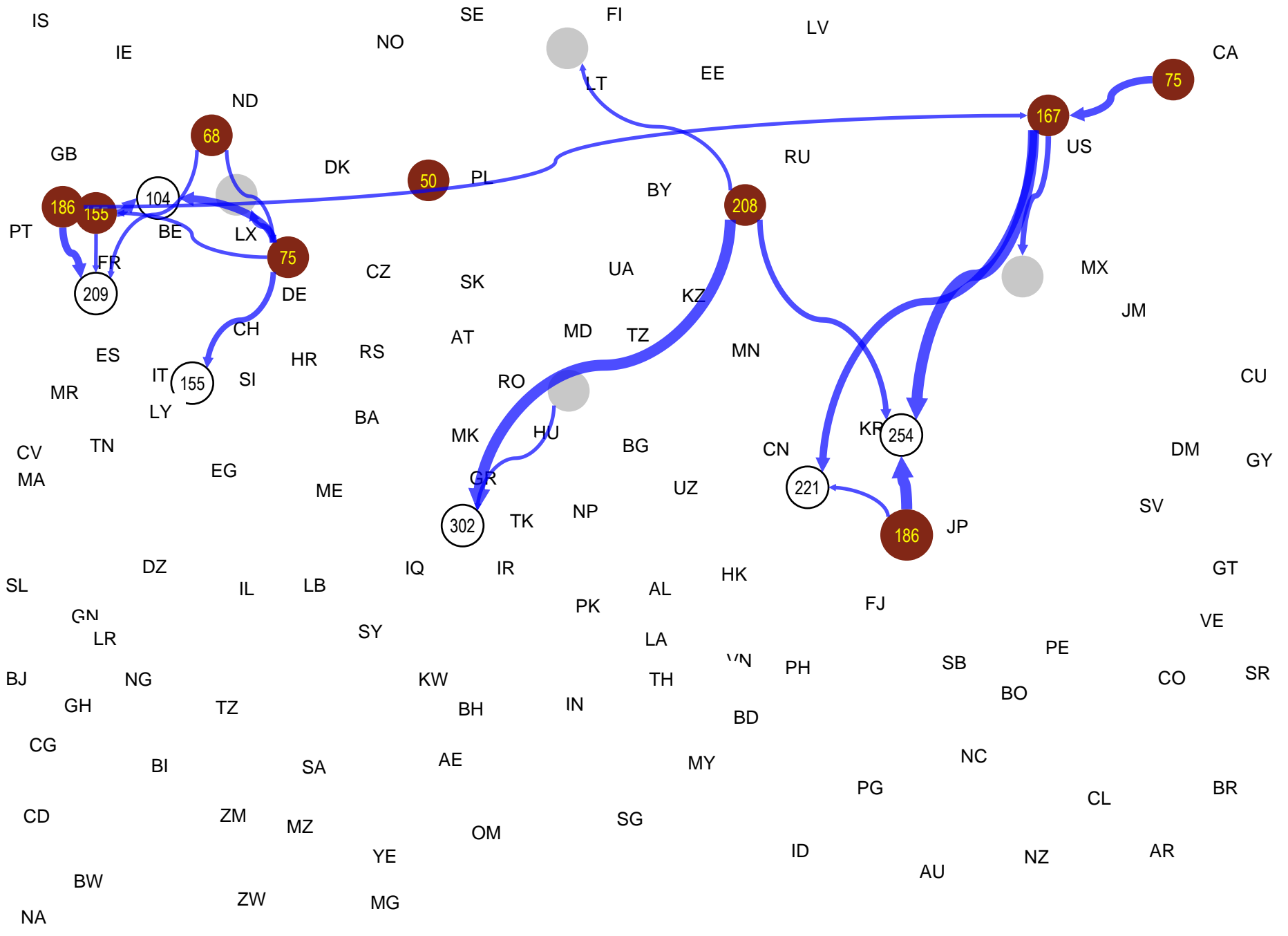








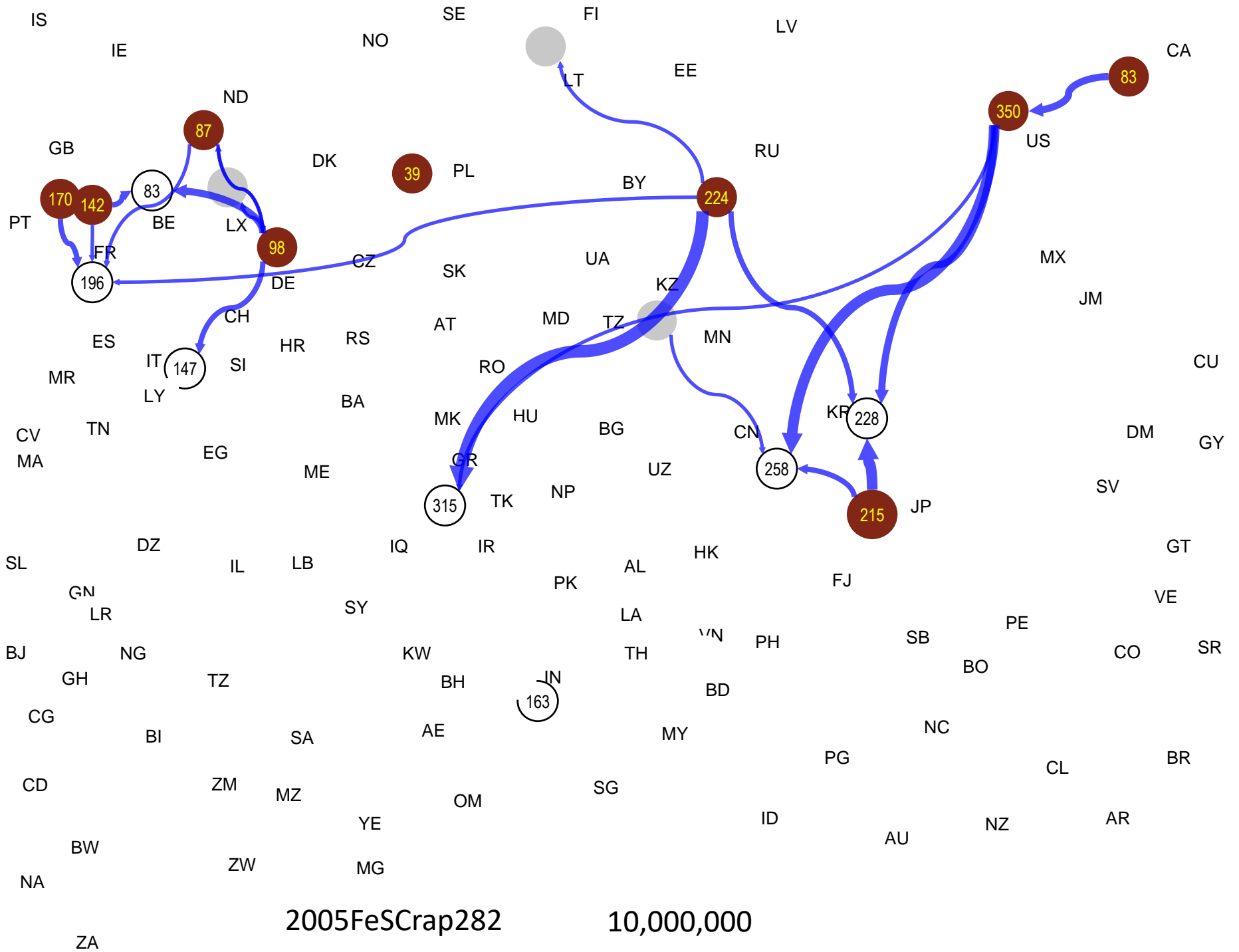


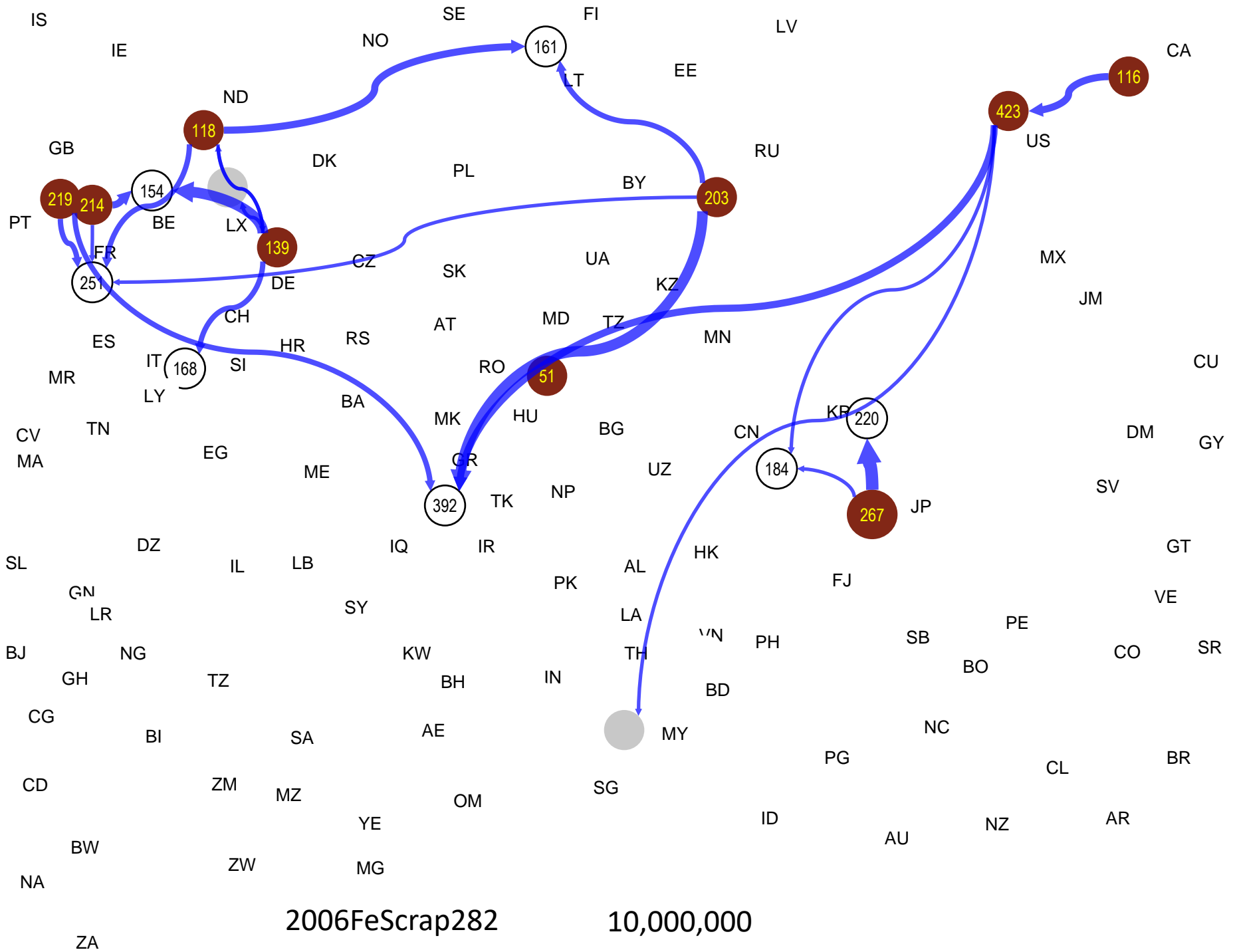


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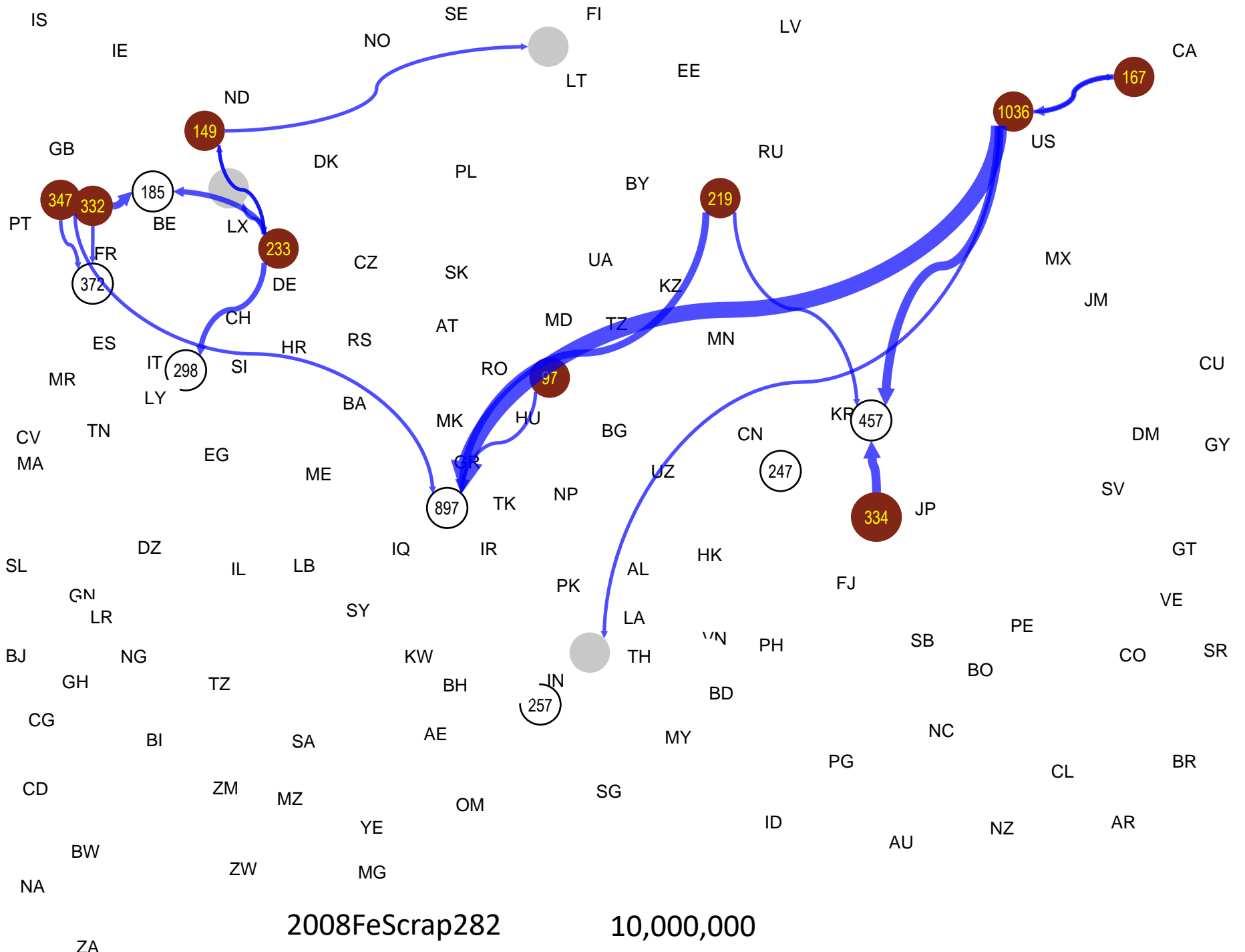
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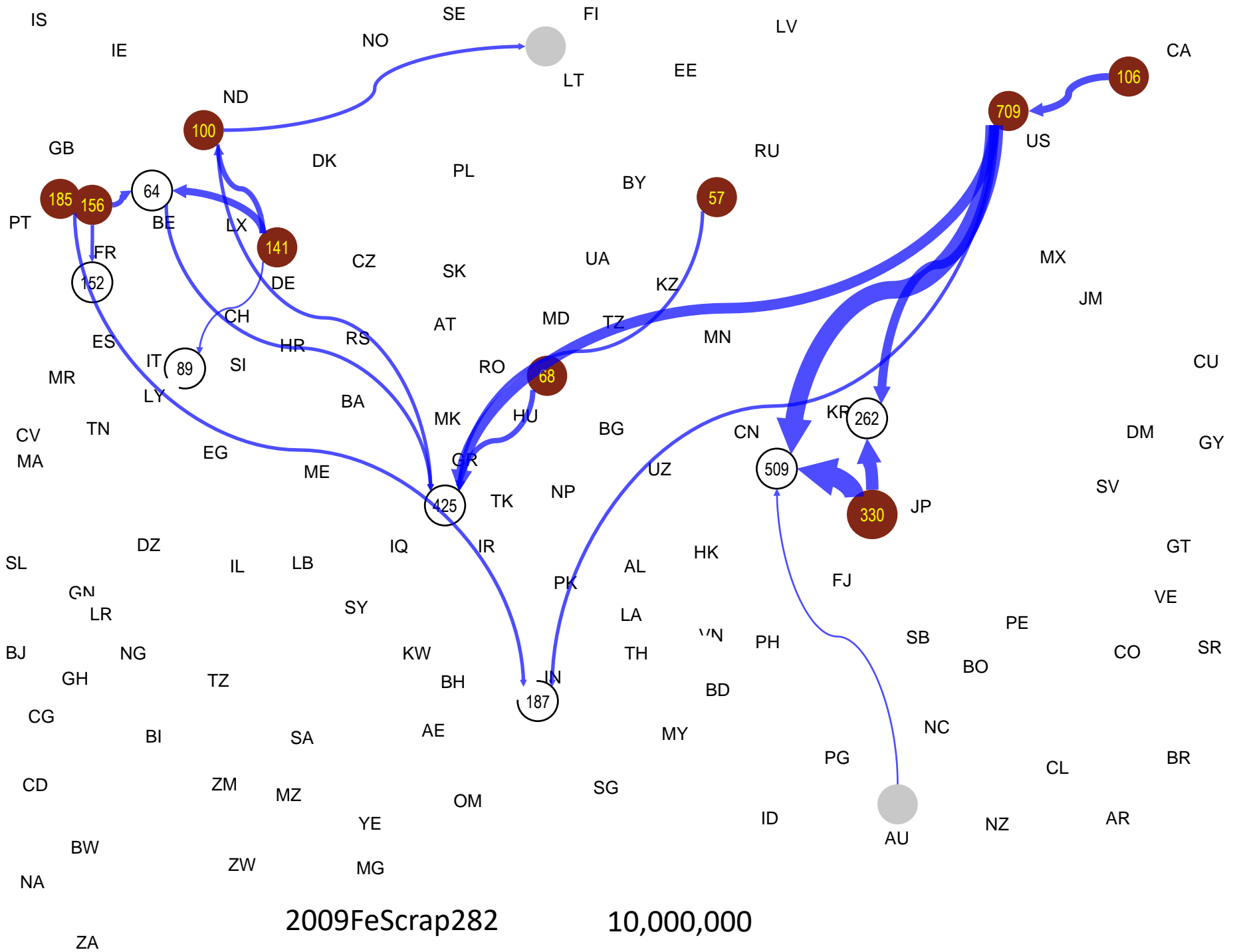


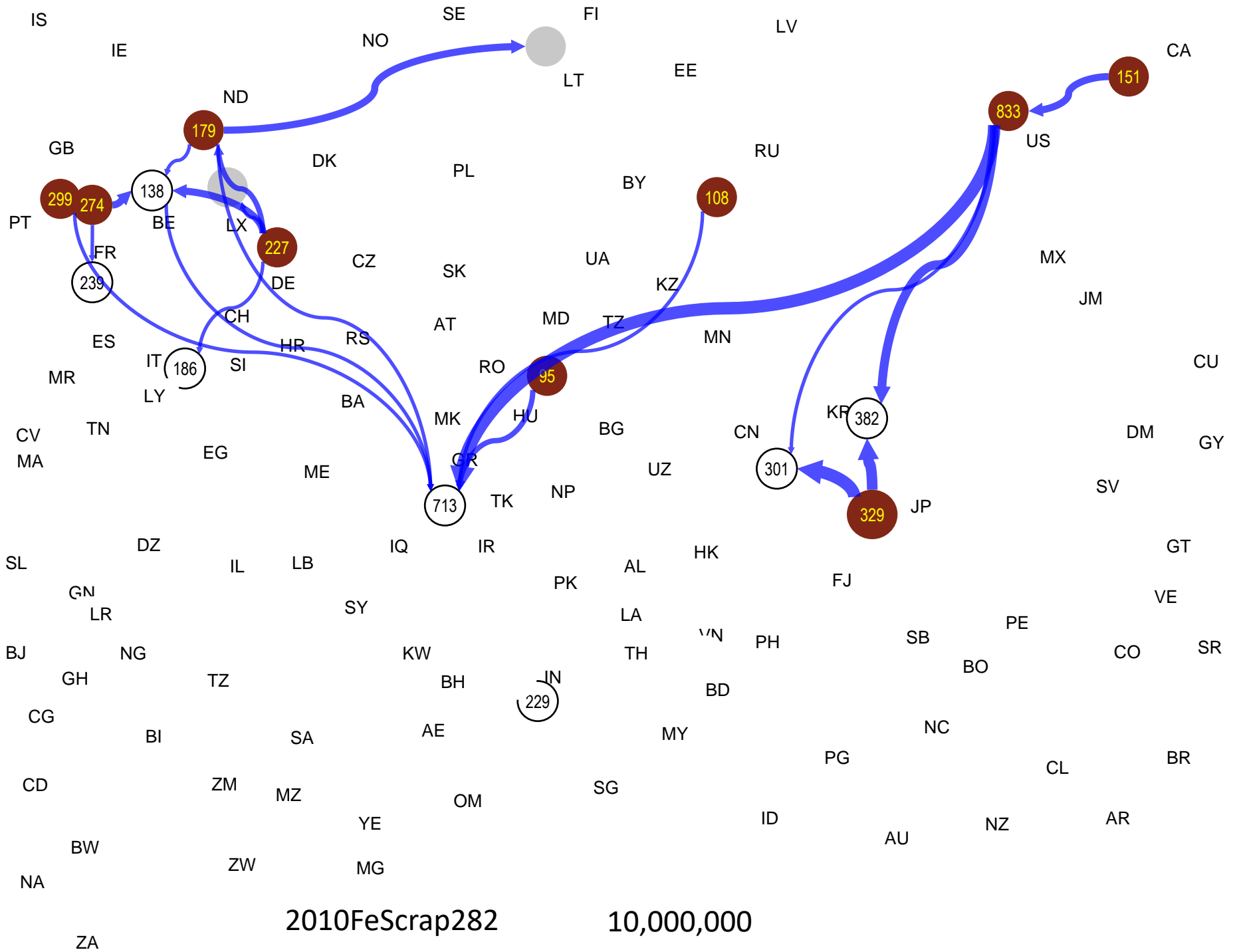




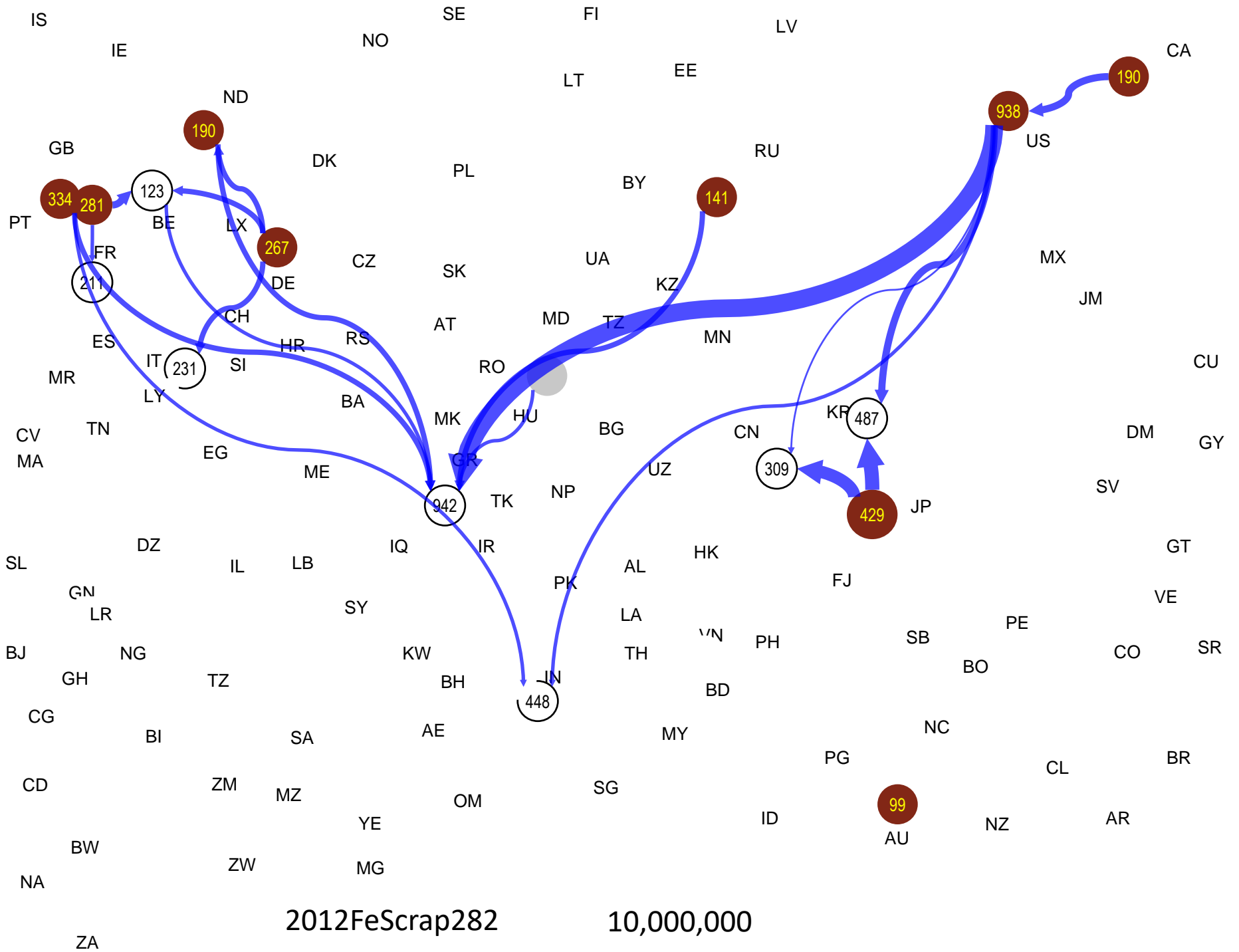




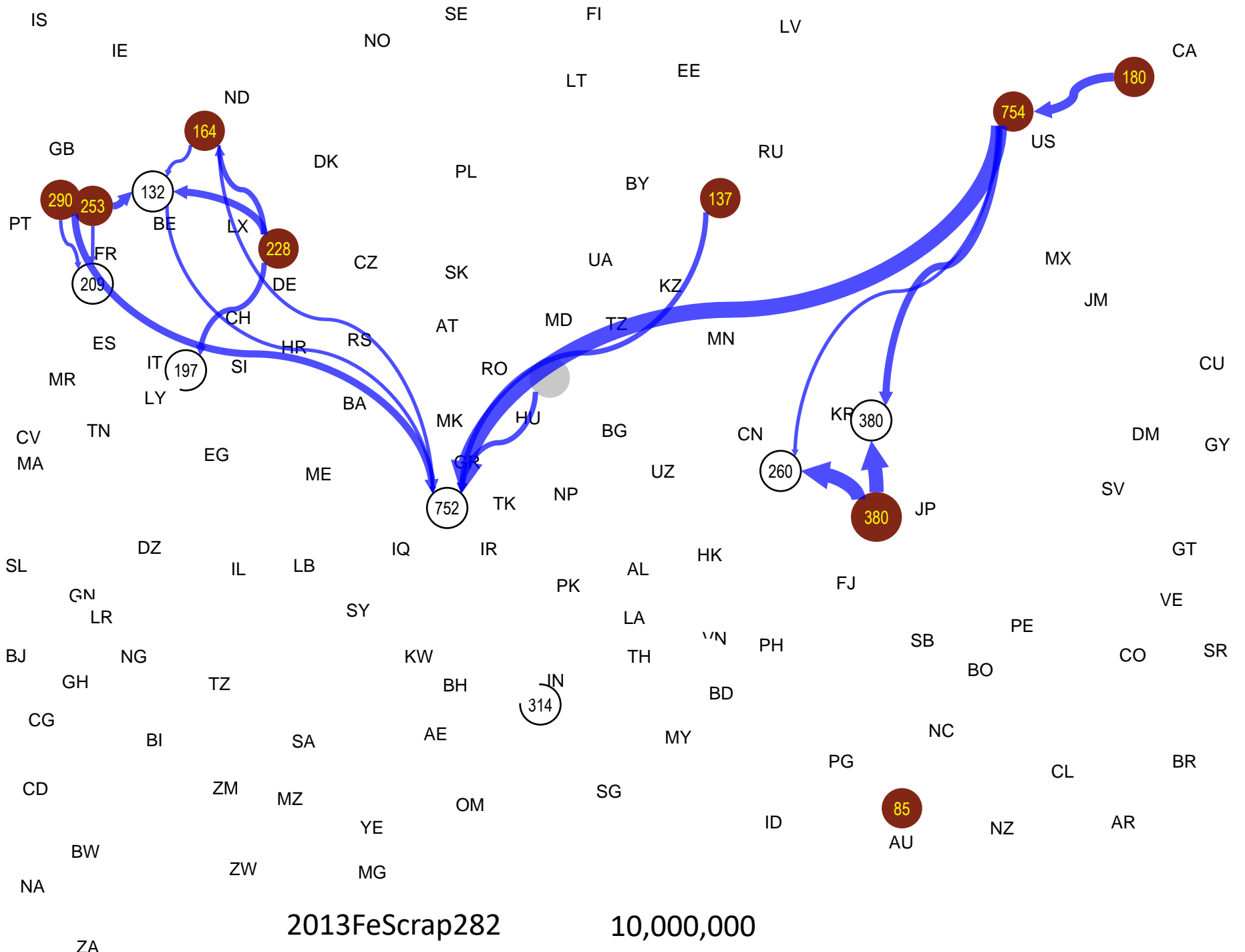


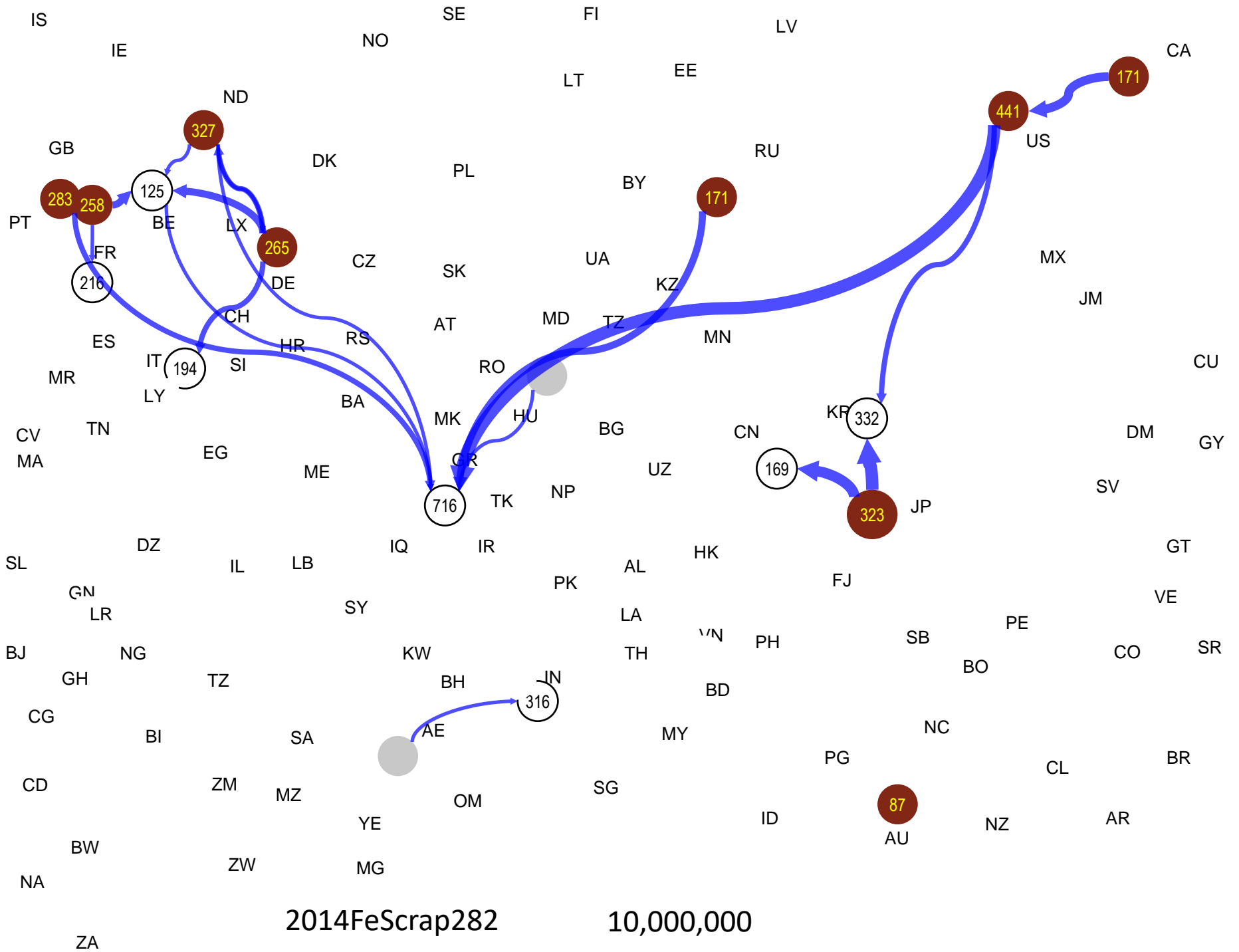


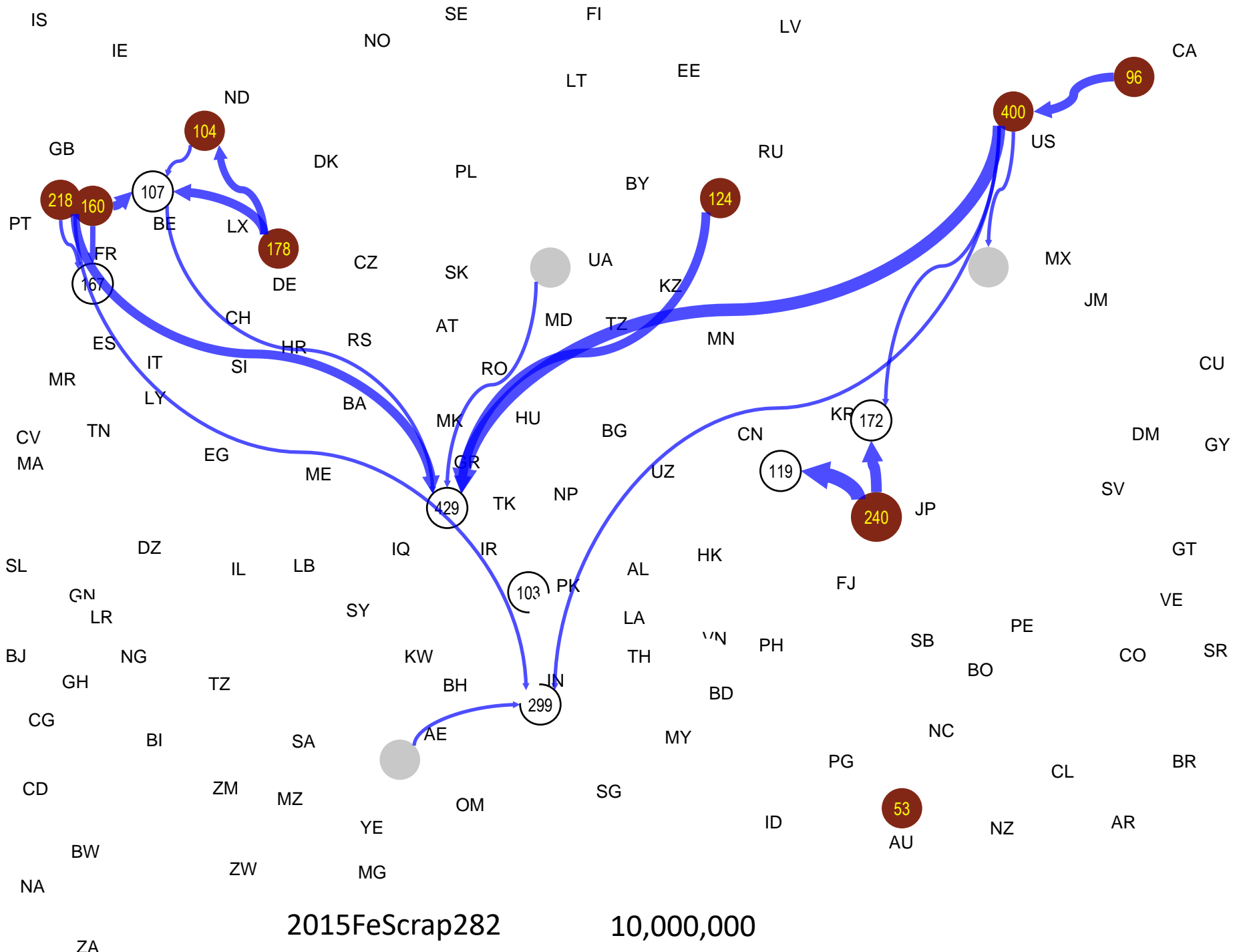






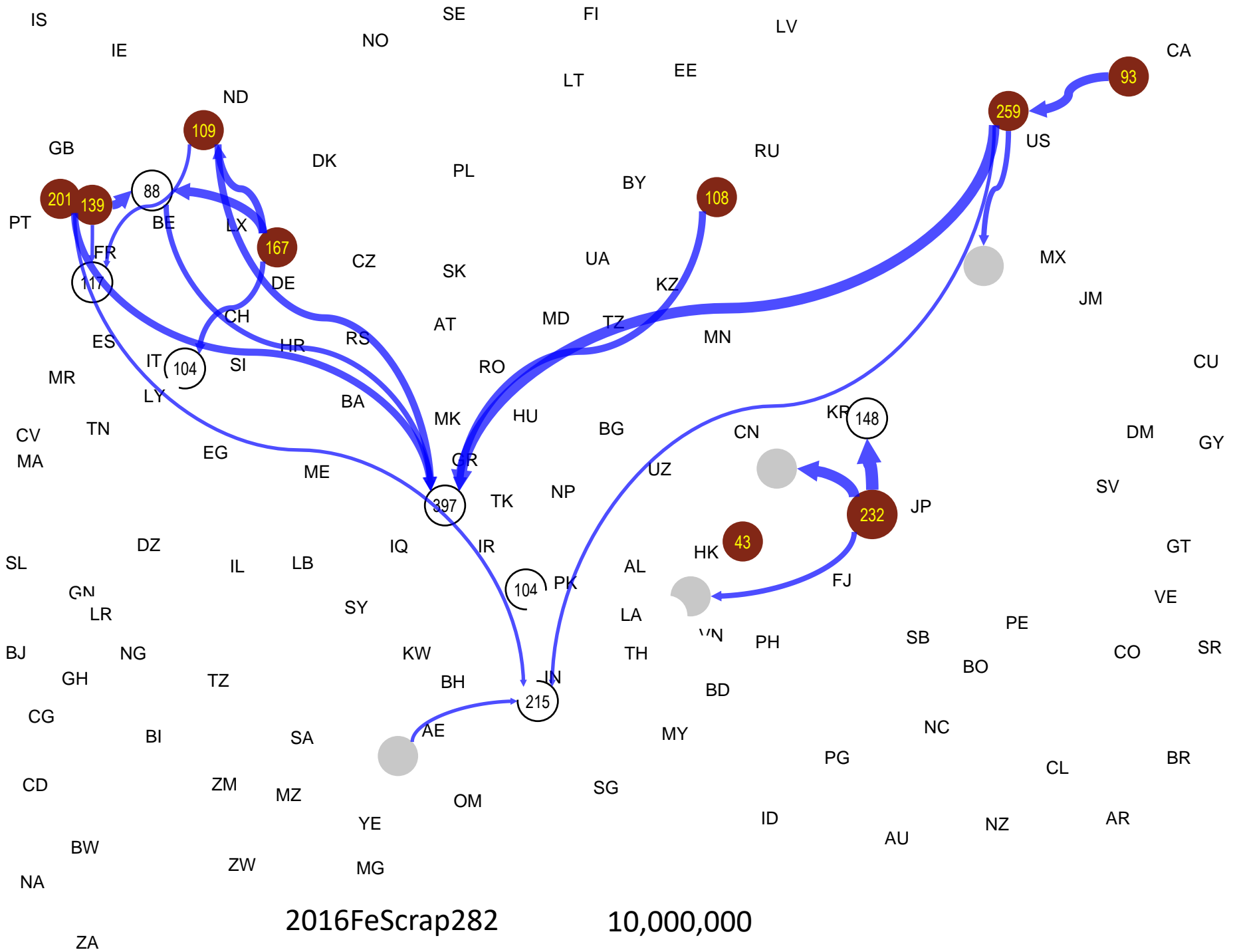


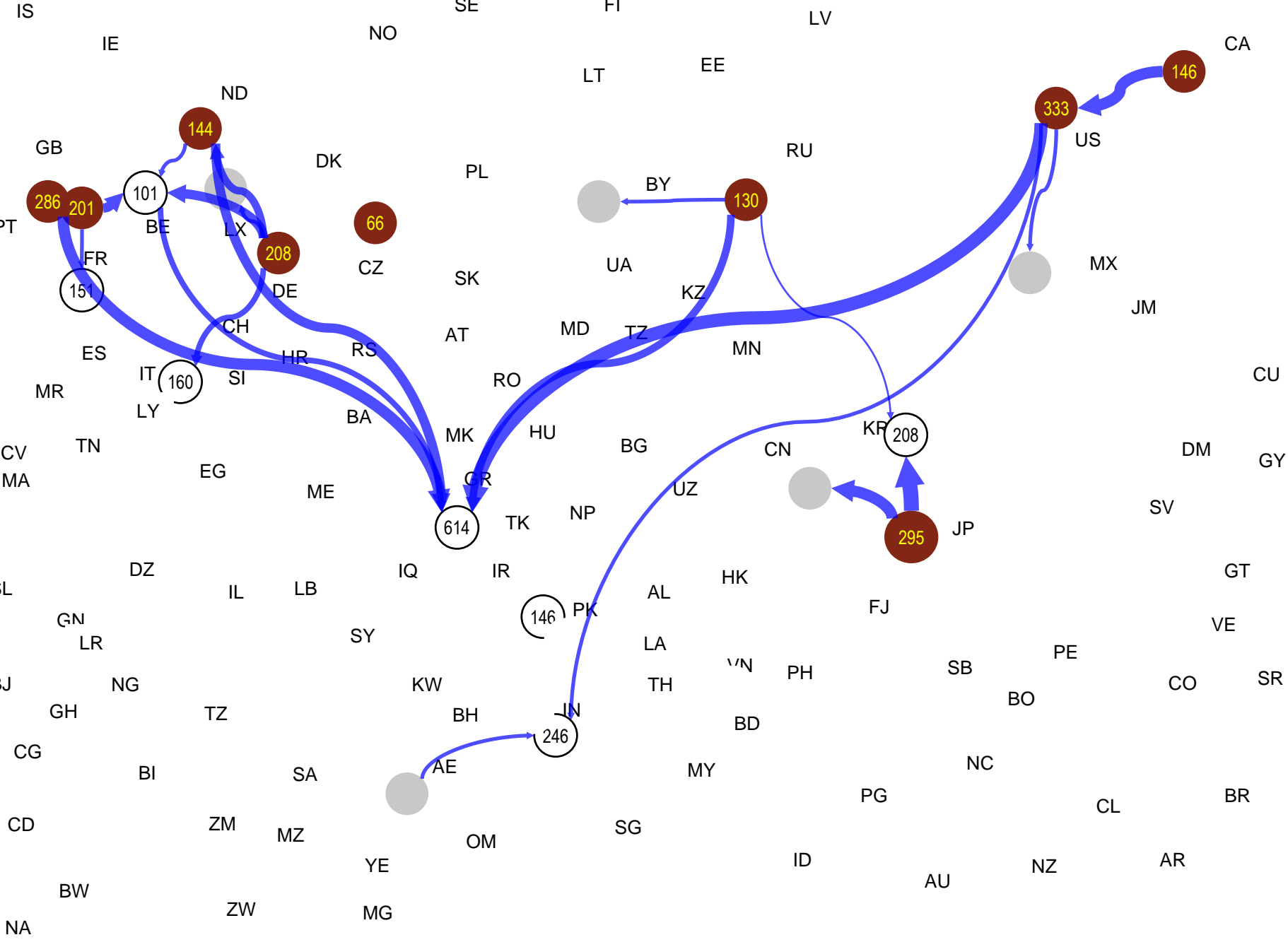




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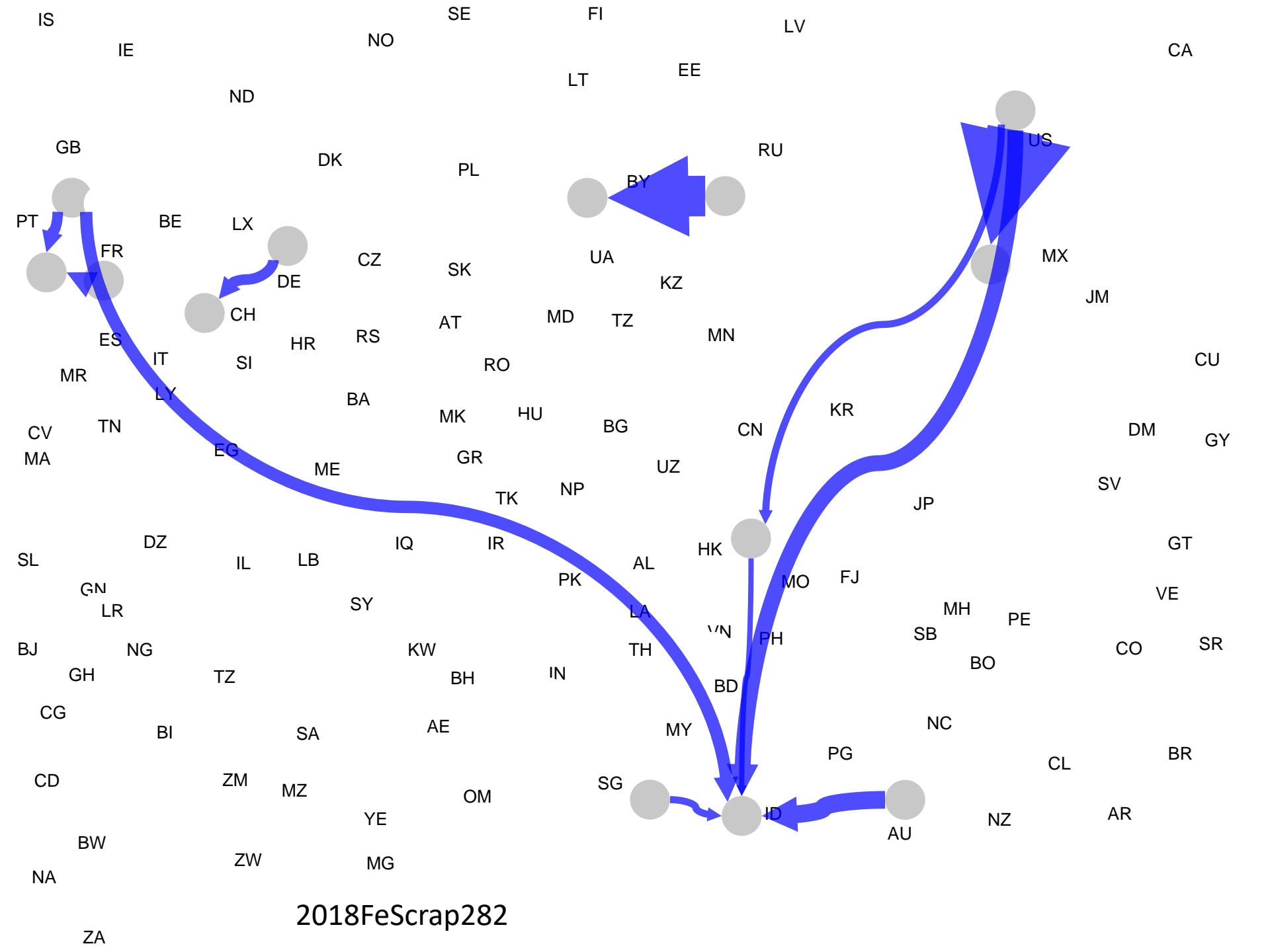
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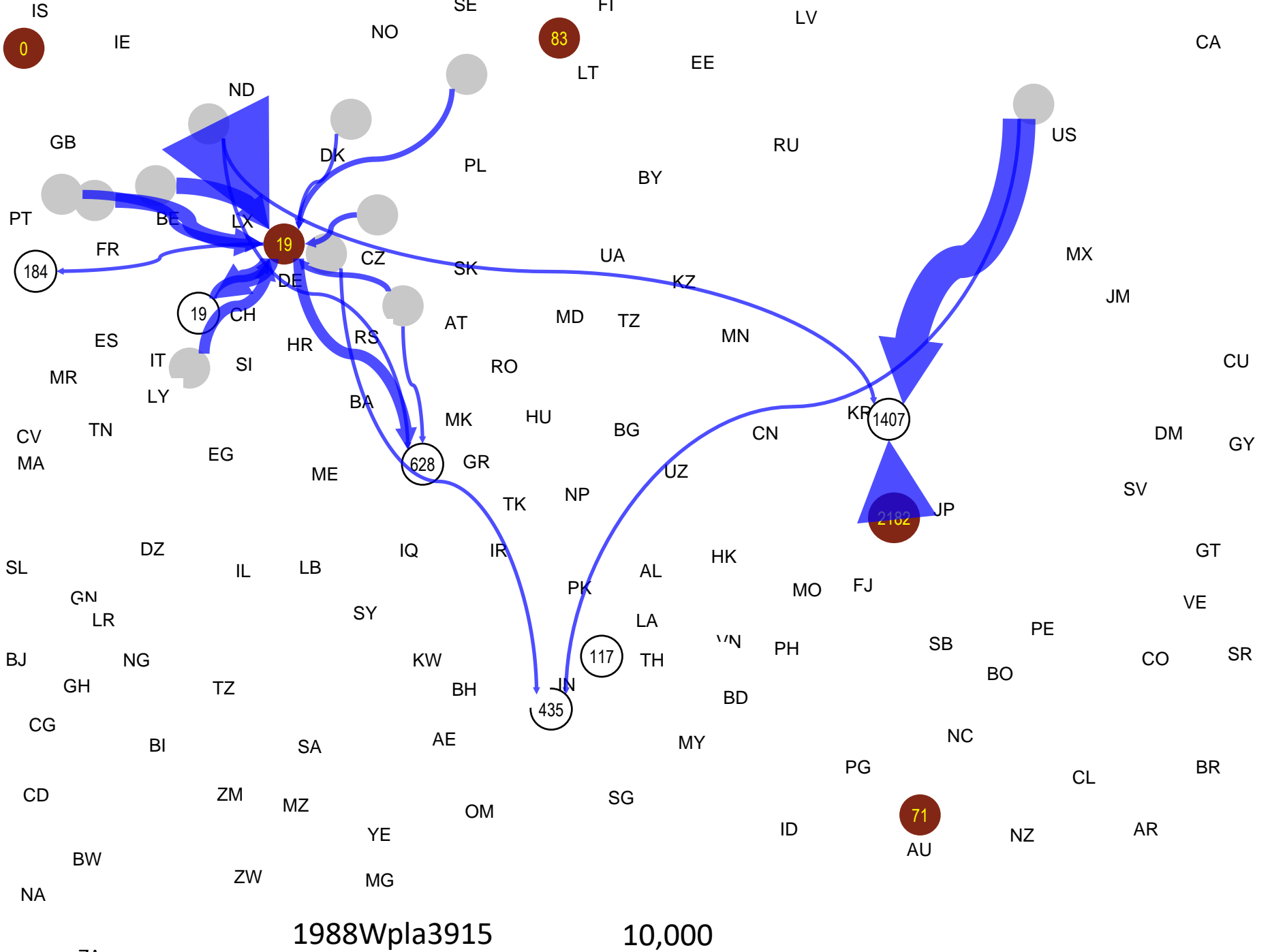


2017FeScrap282 10,000,000

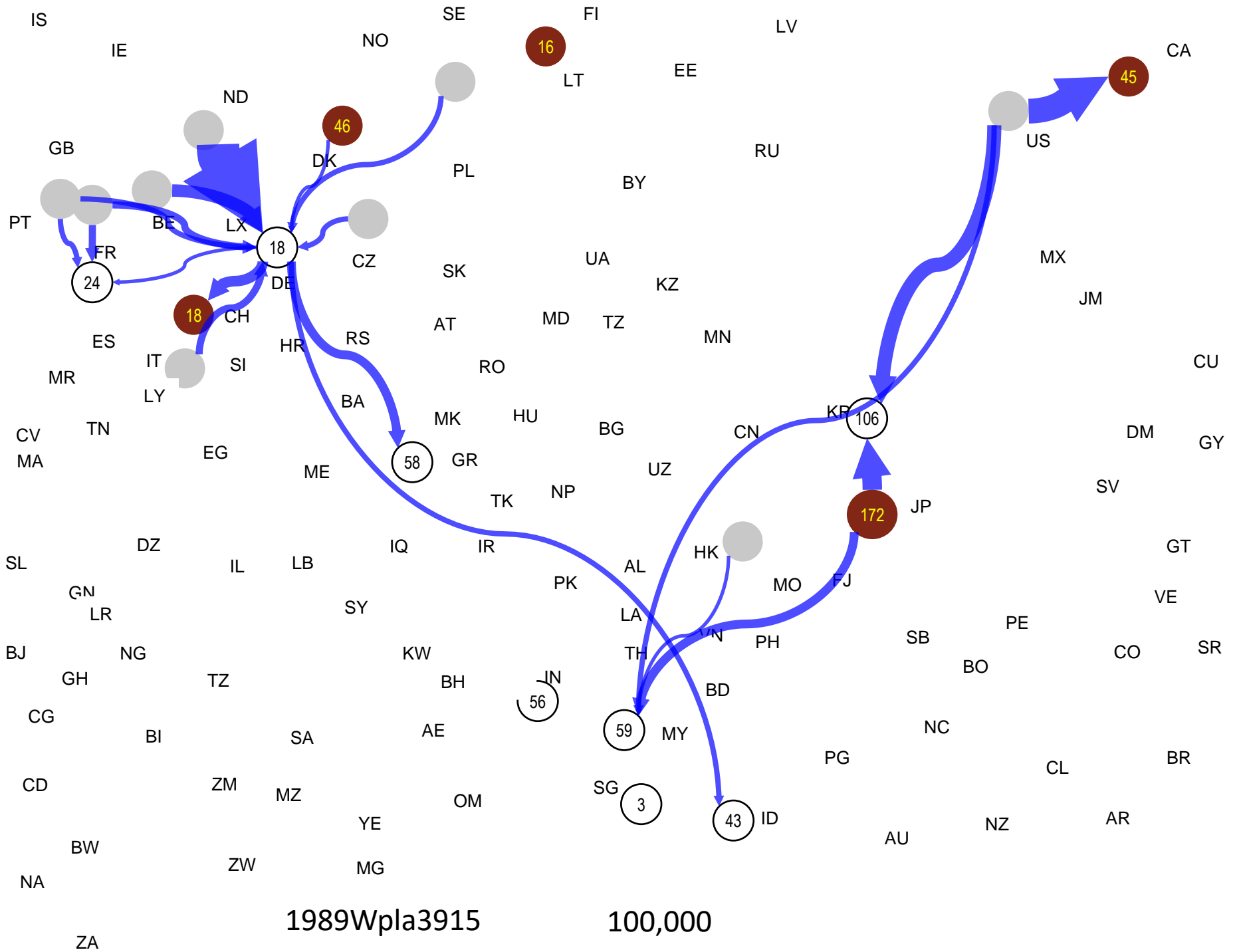
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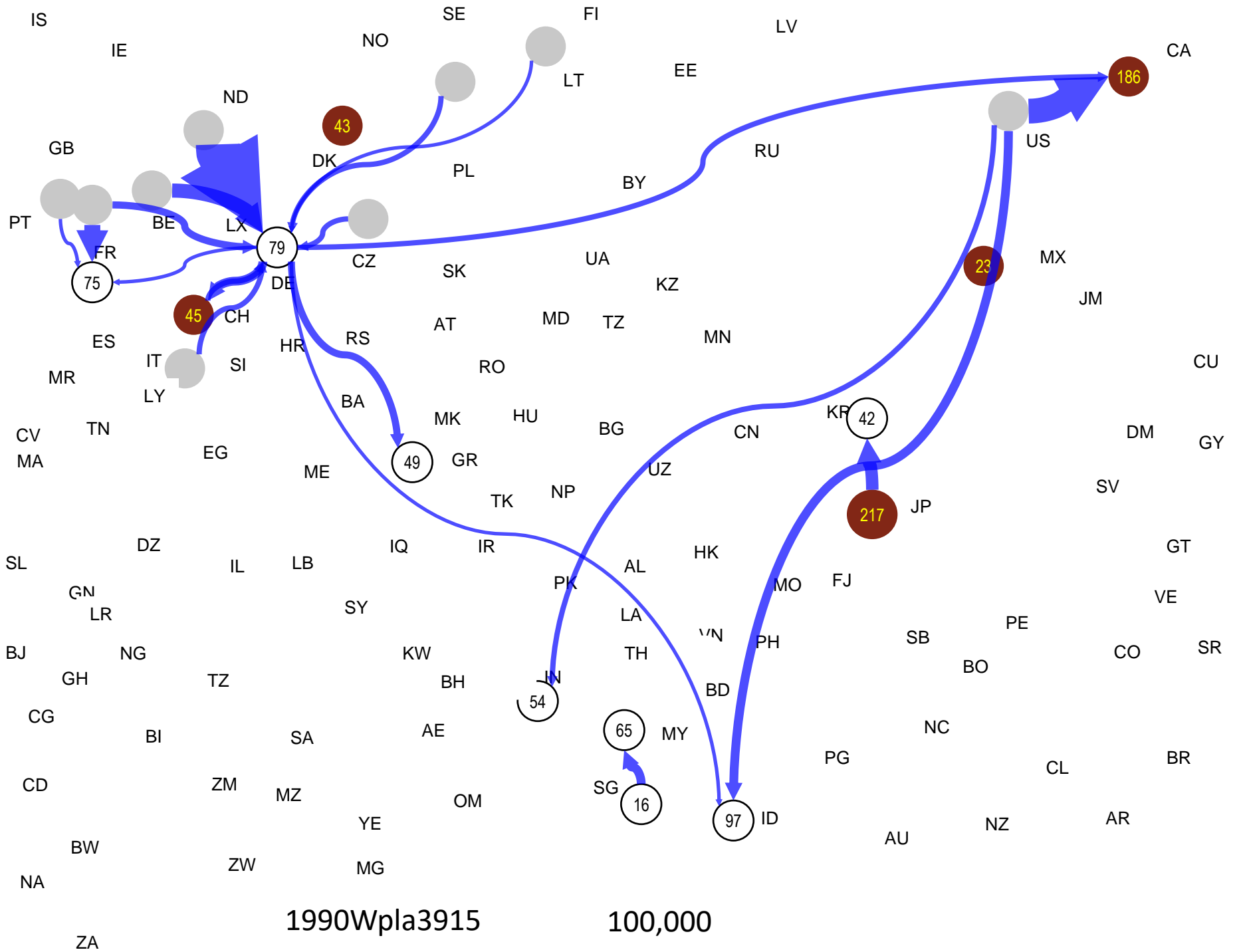
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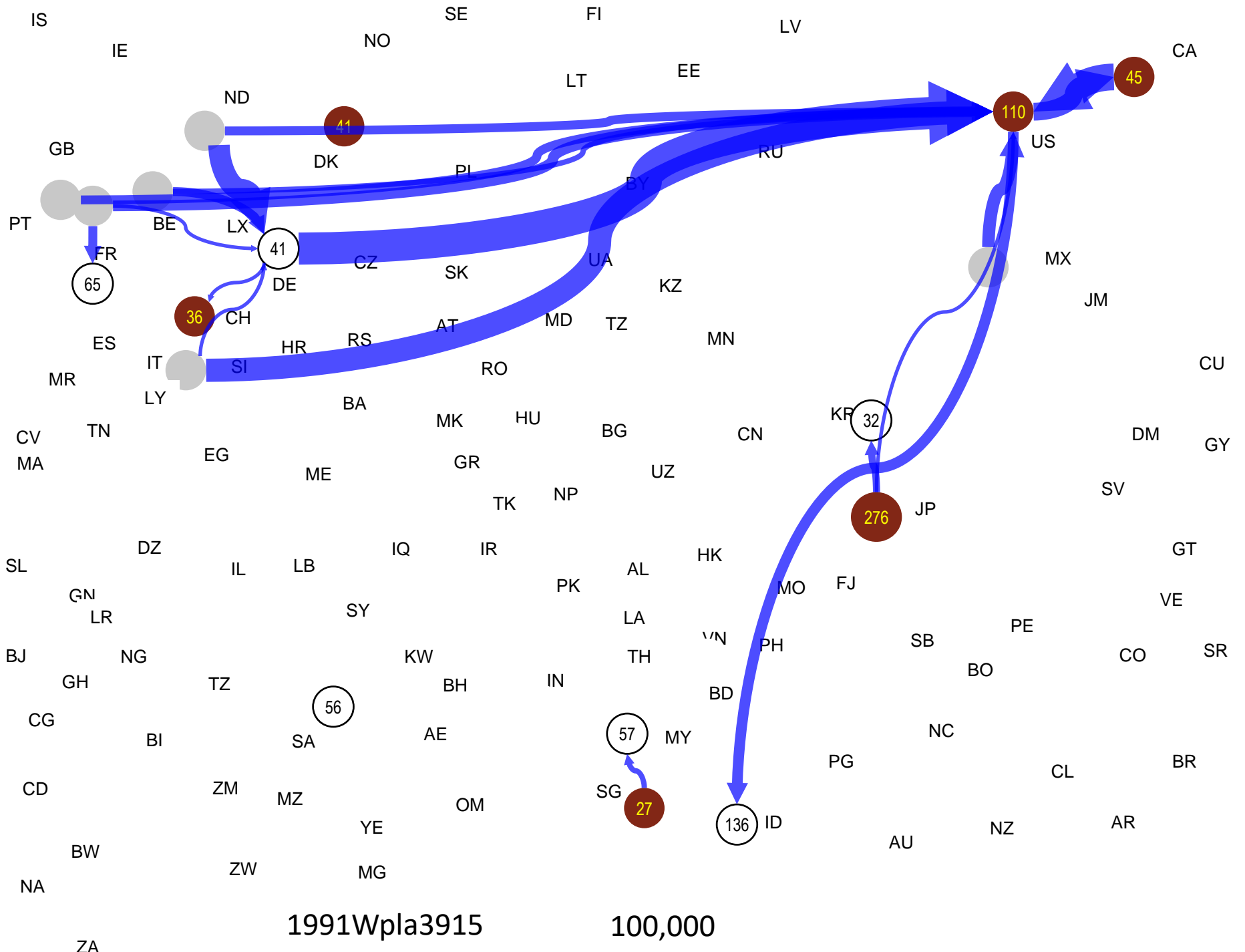


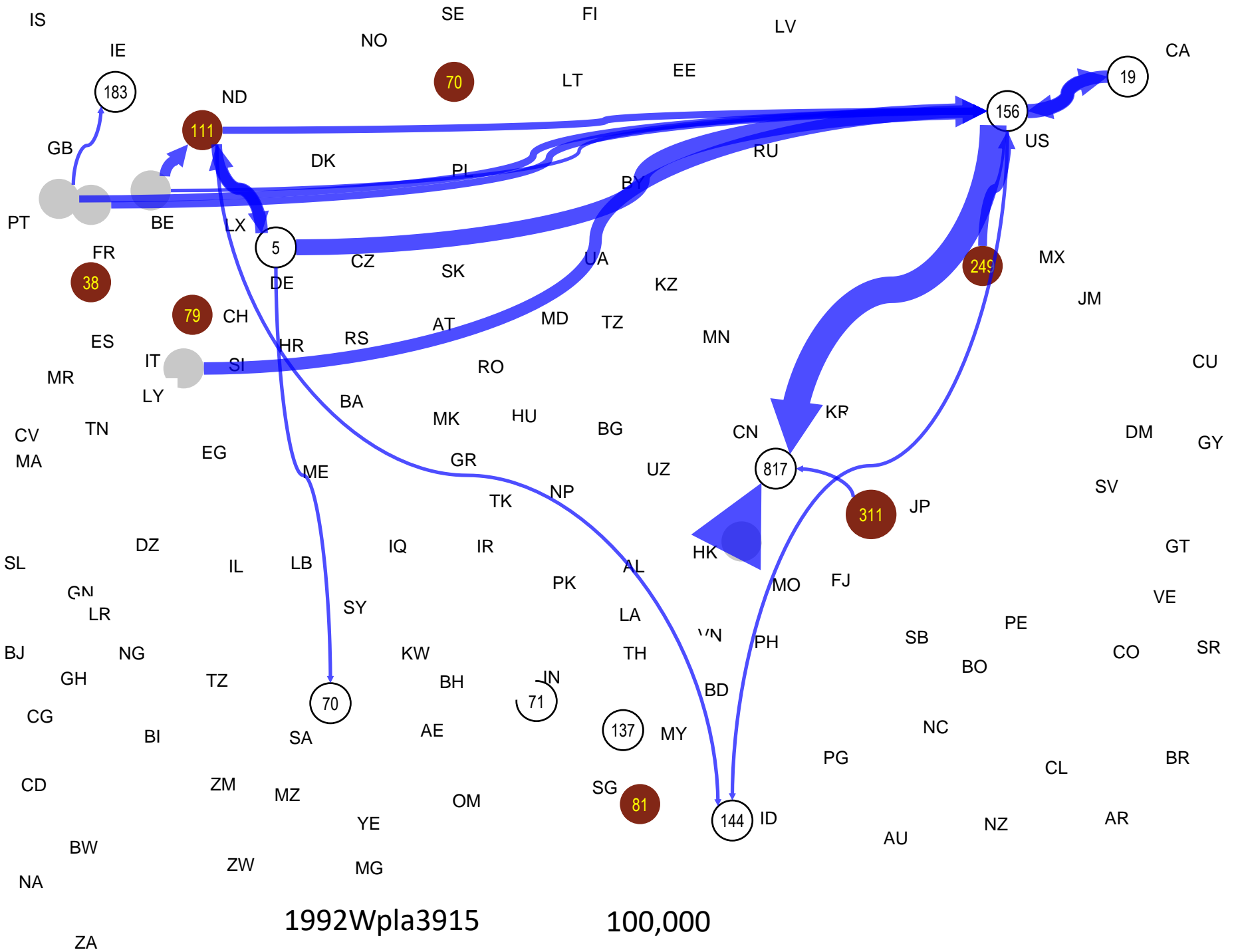
1988Wpla3915 10,000

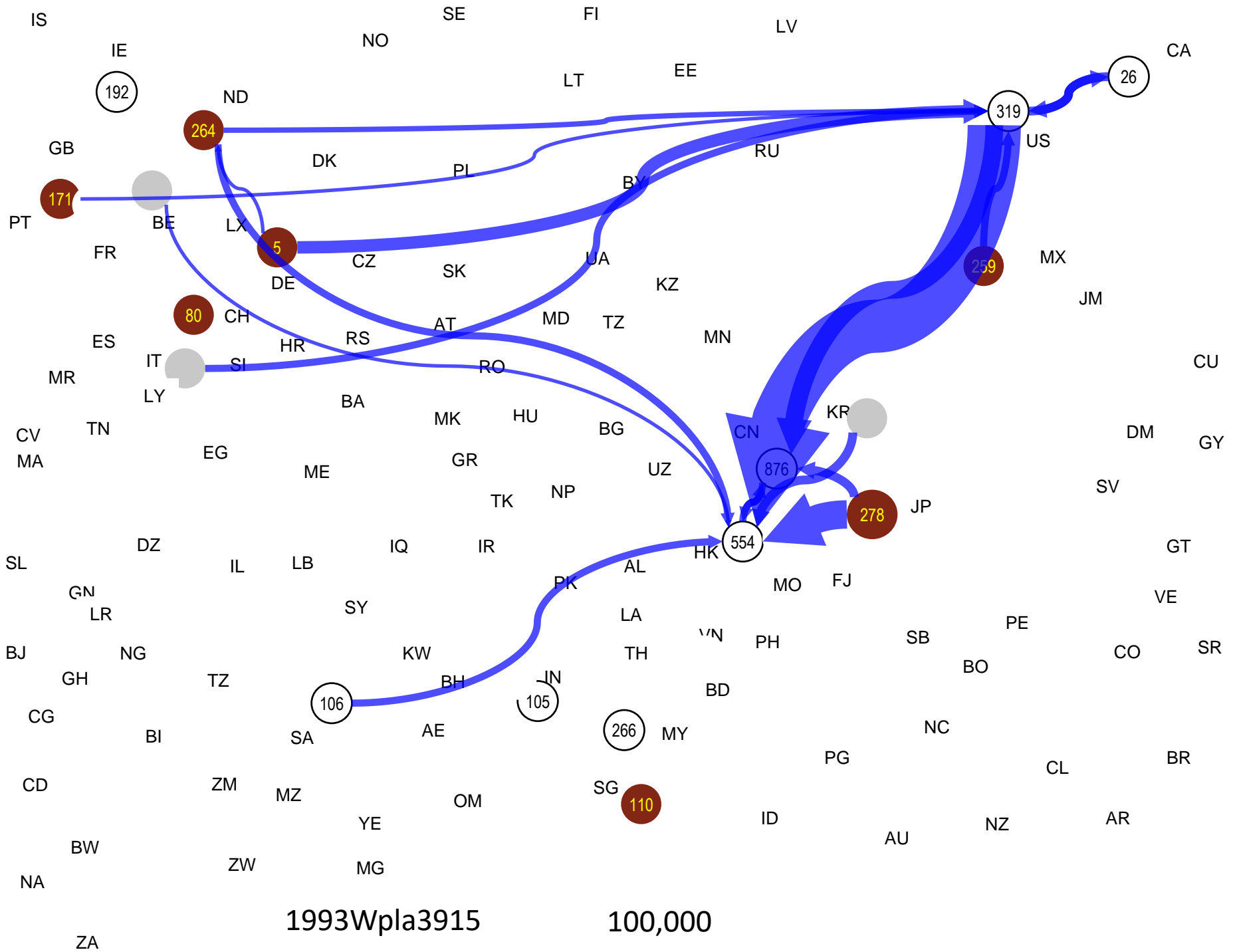


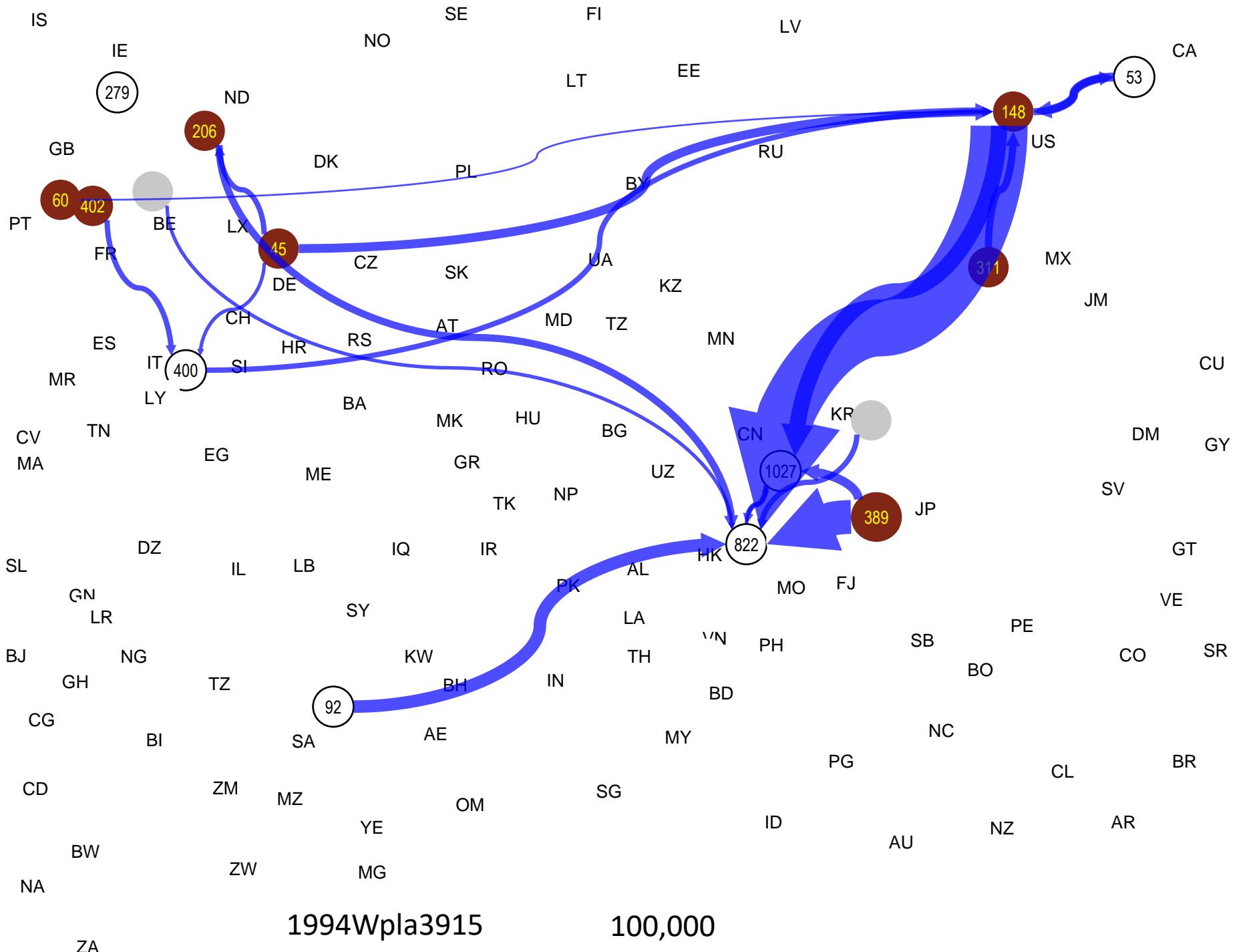


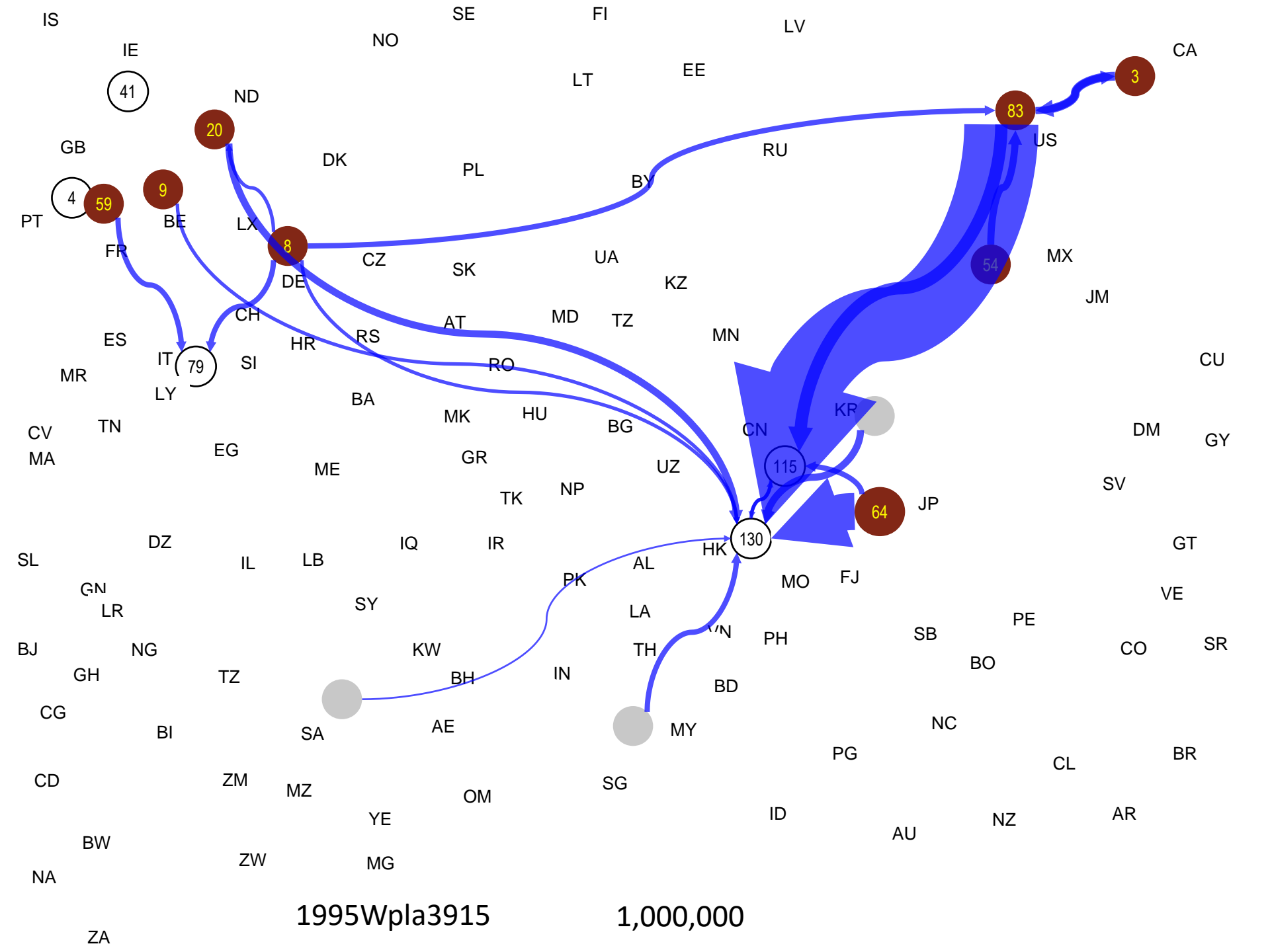


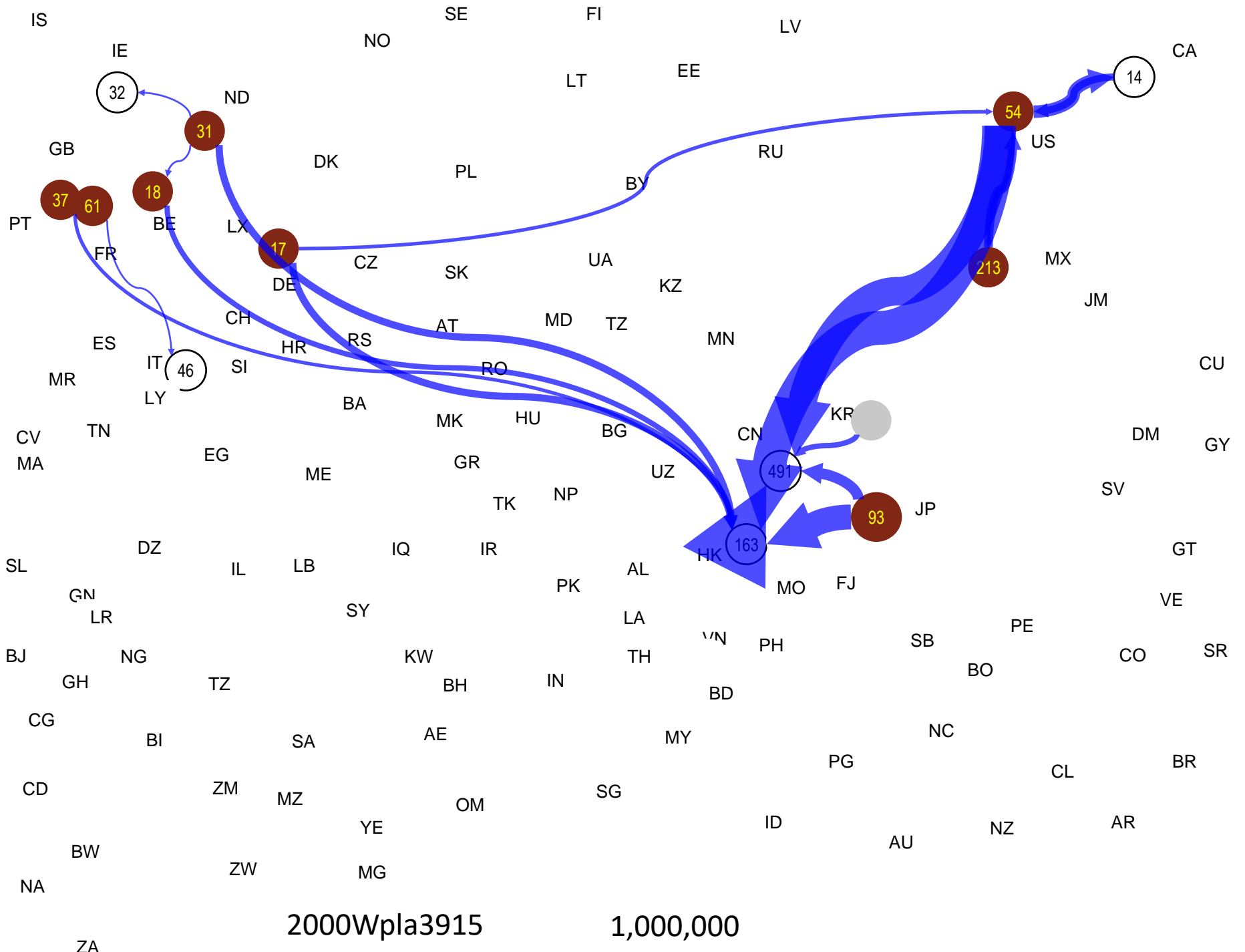






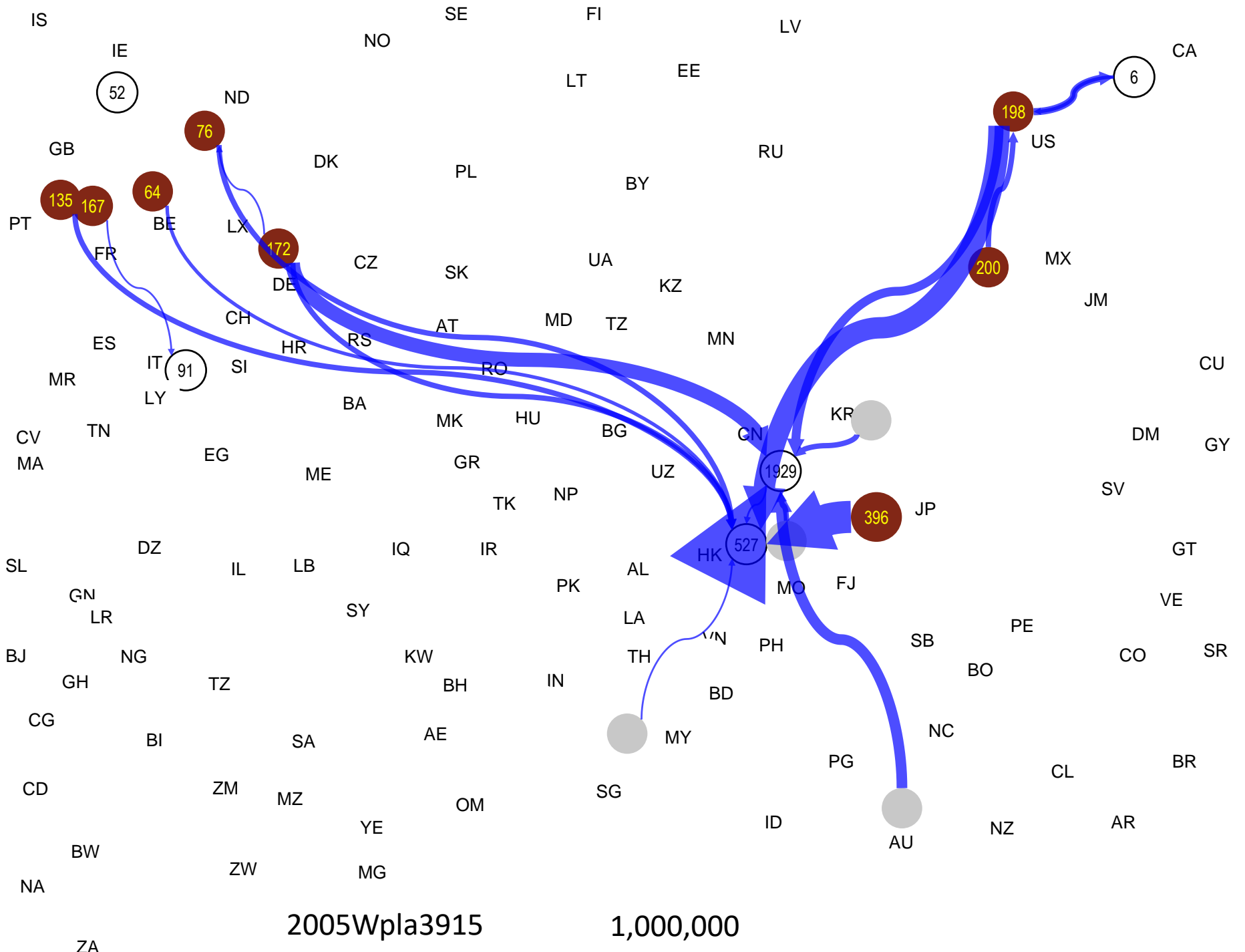




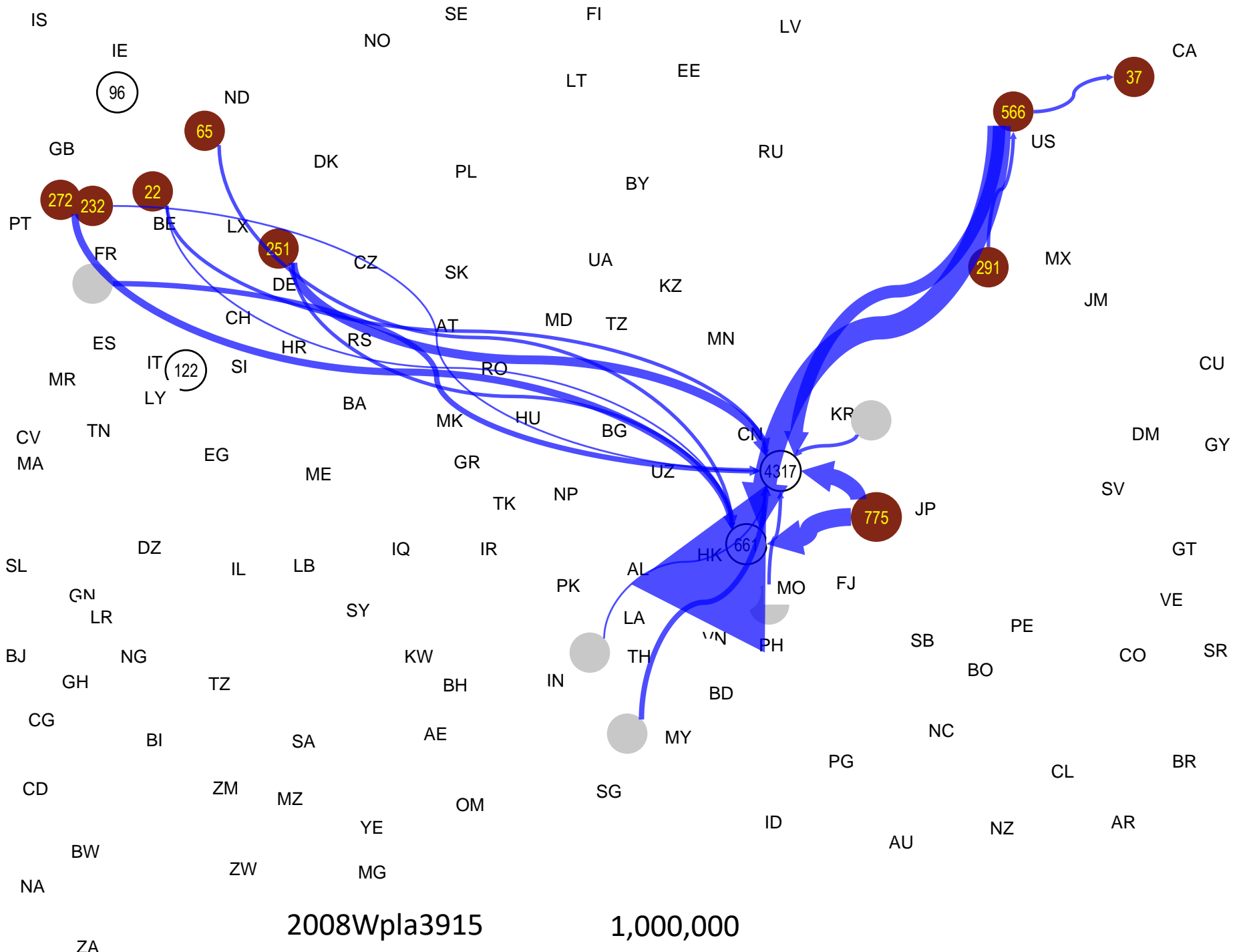


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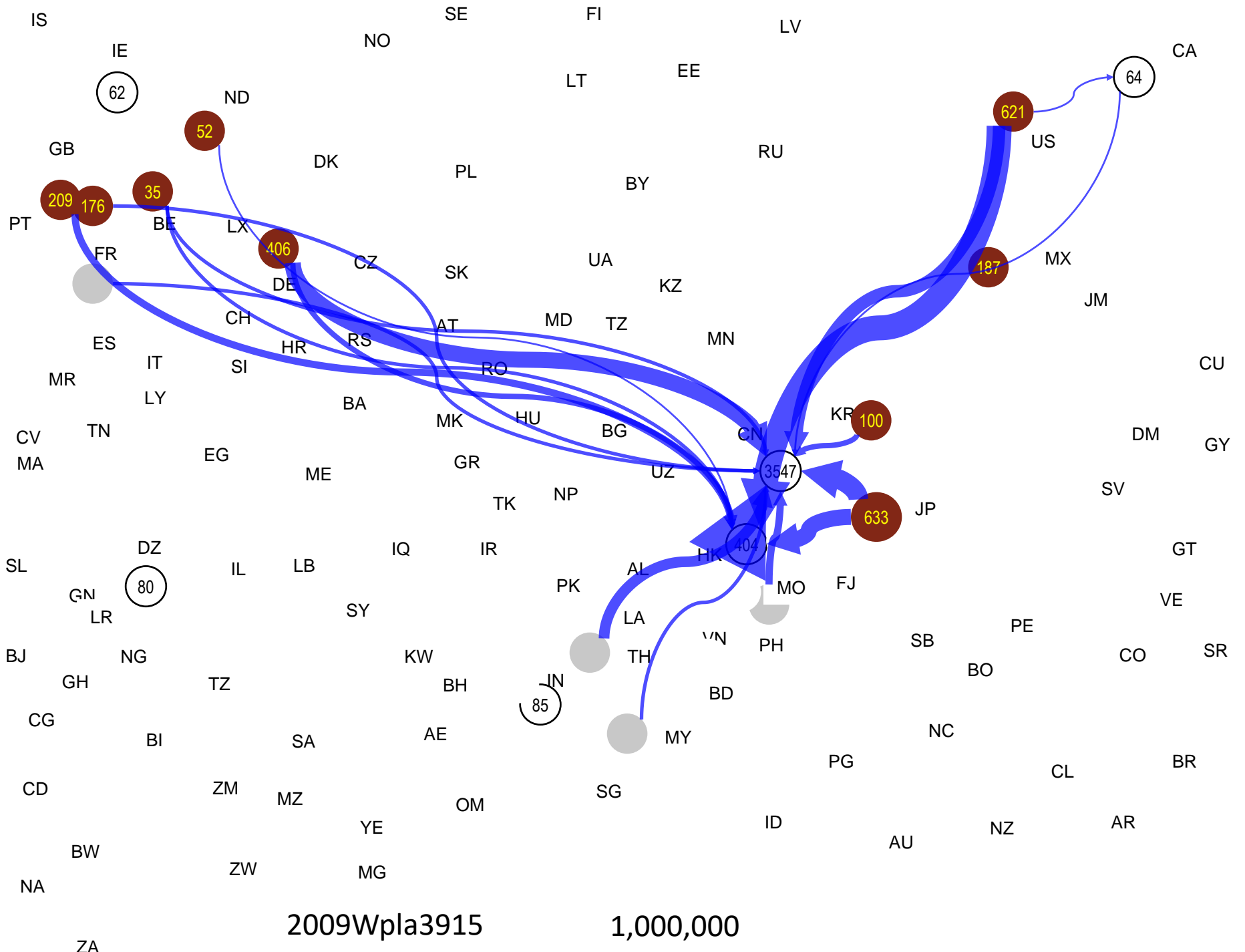






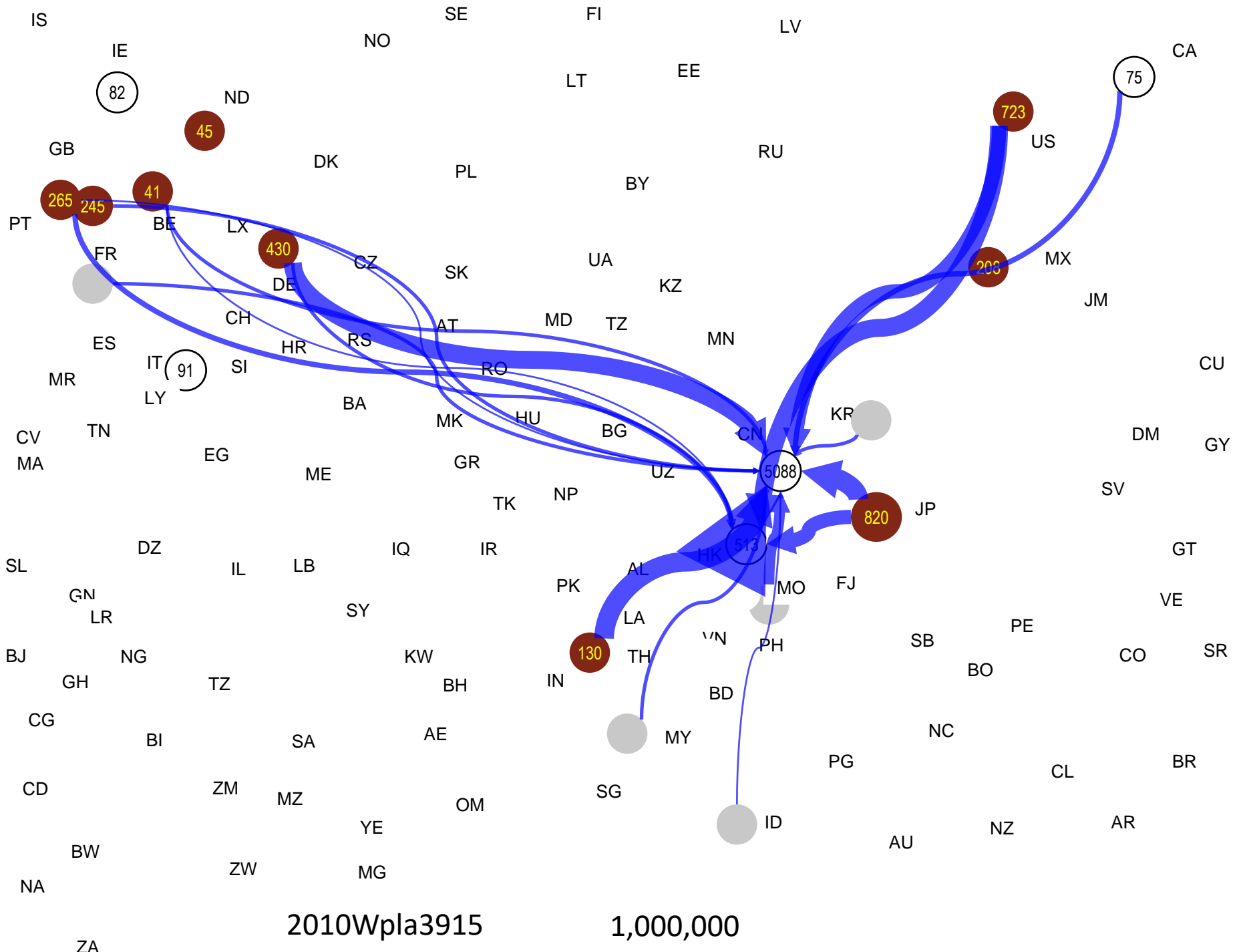
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1,000,000



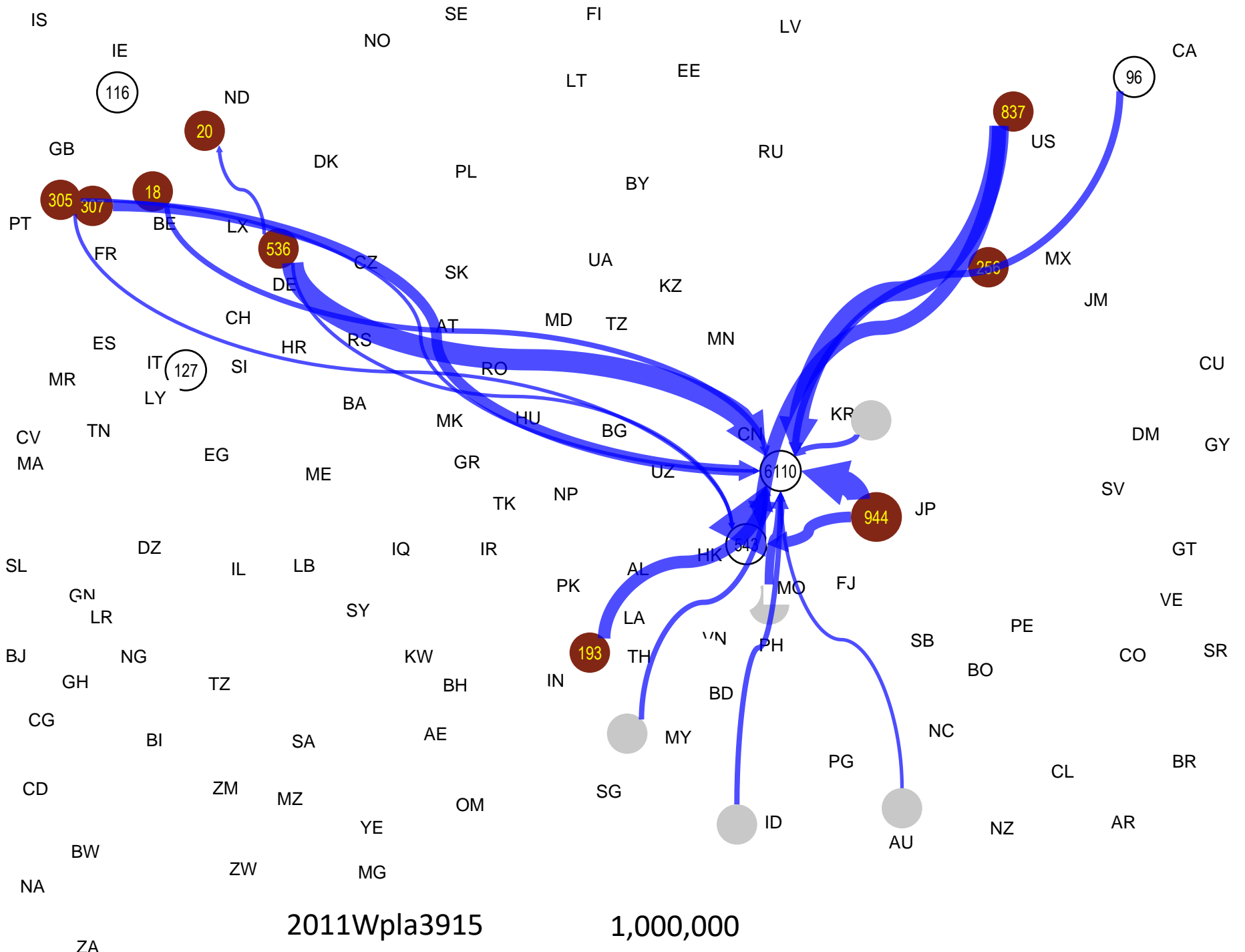
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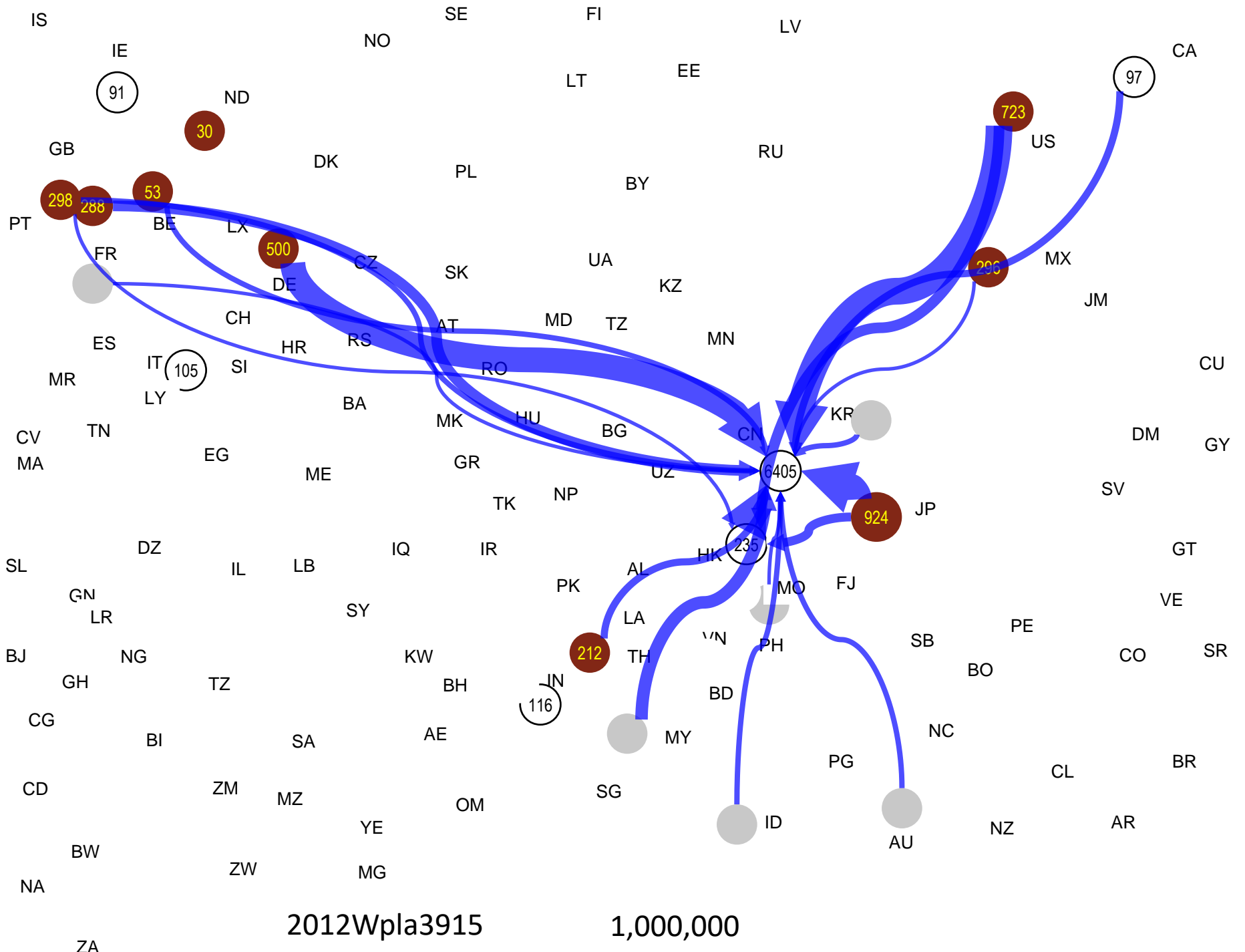
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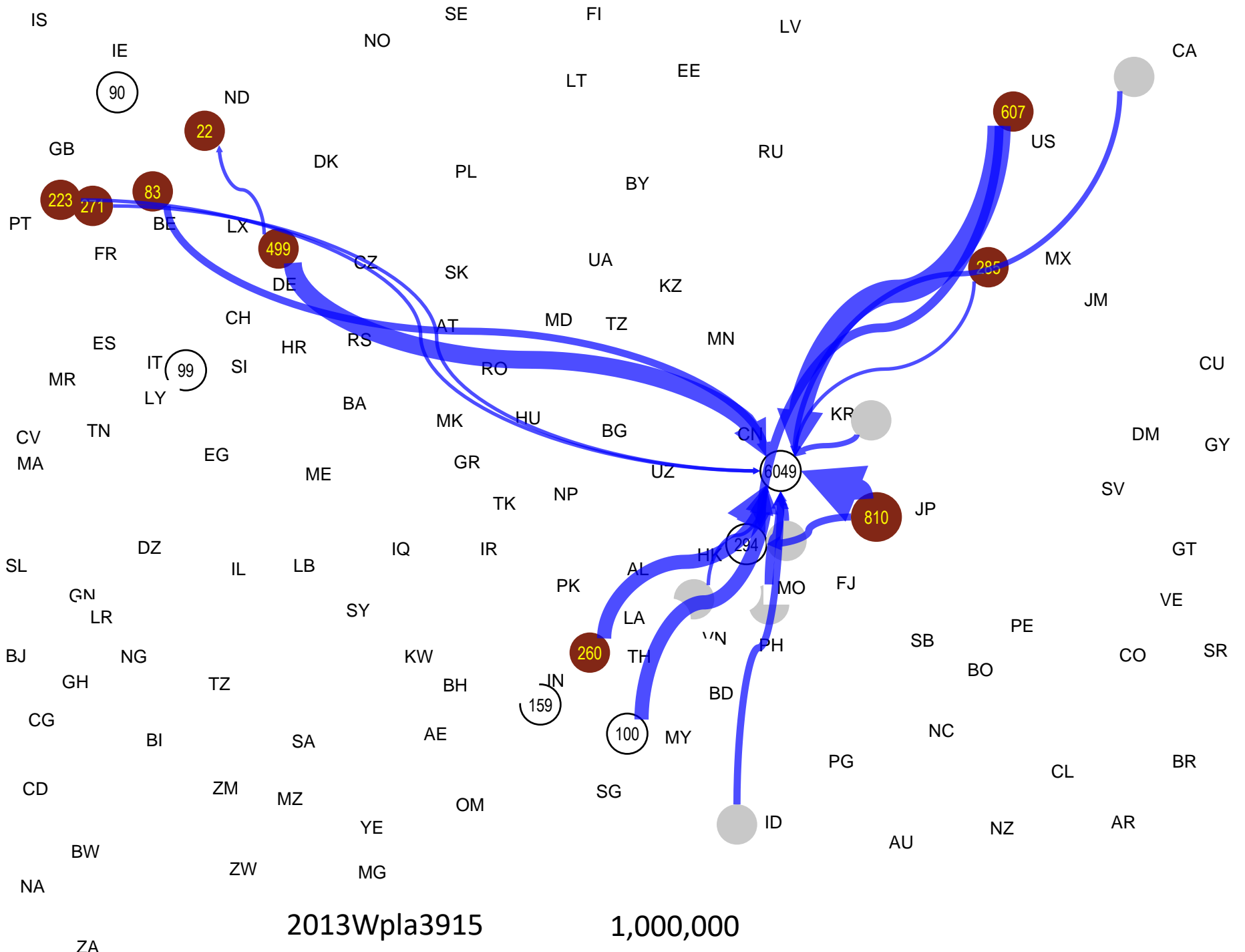
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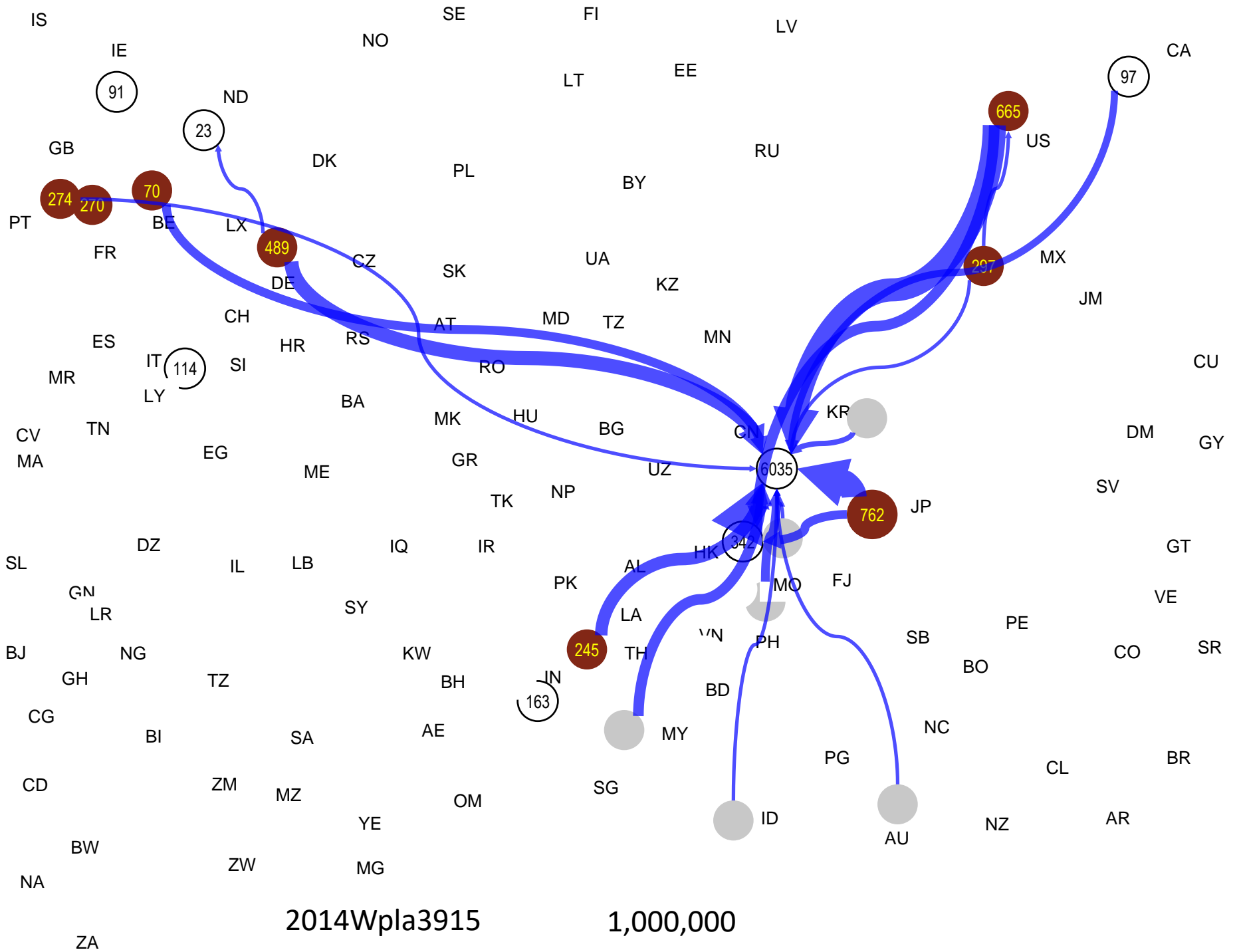
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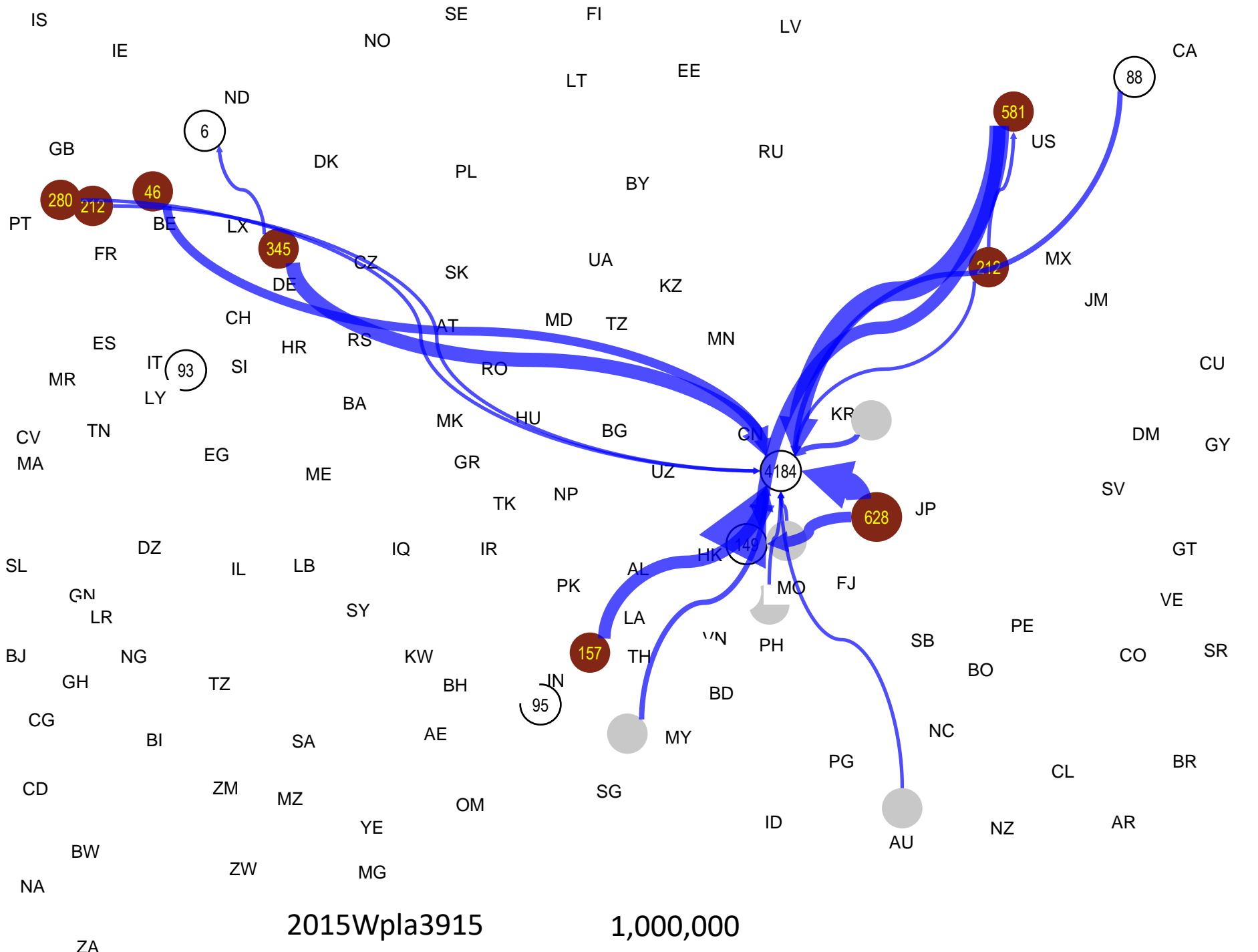


2012Wpla3915

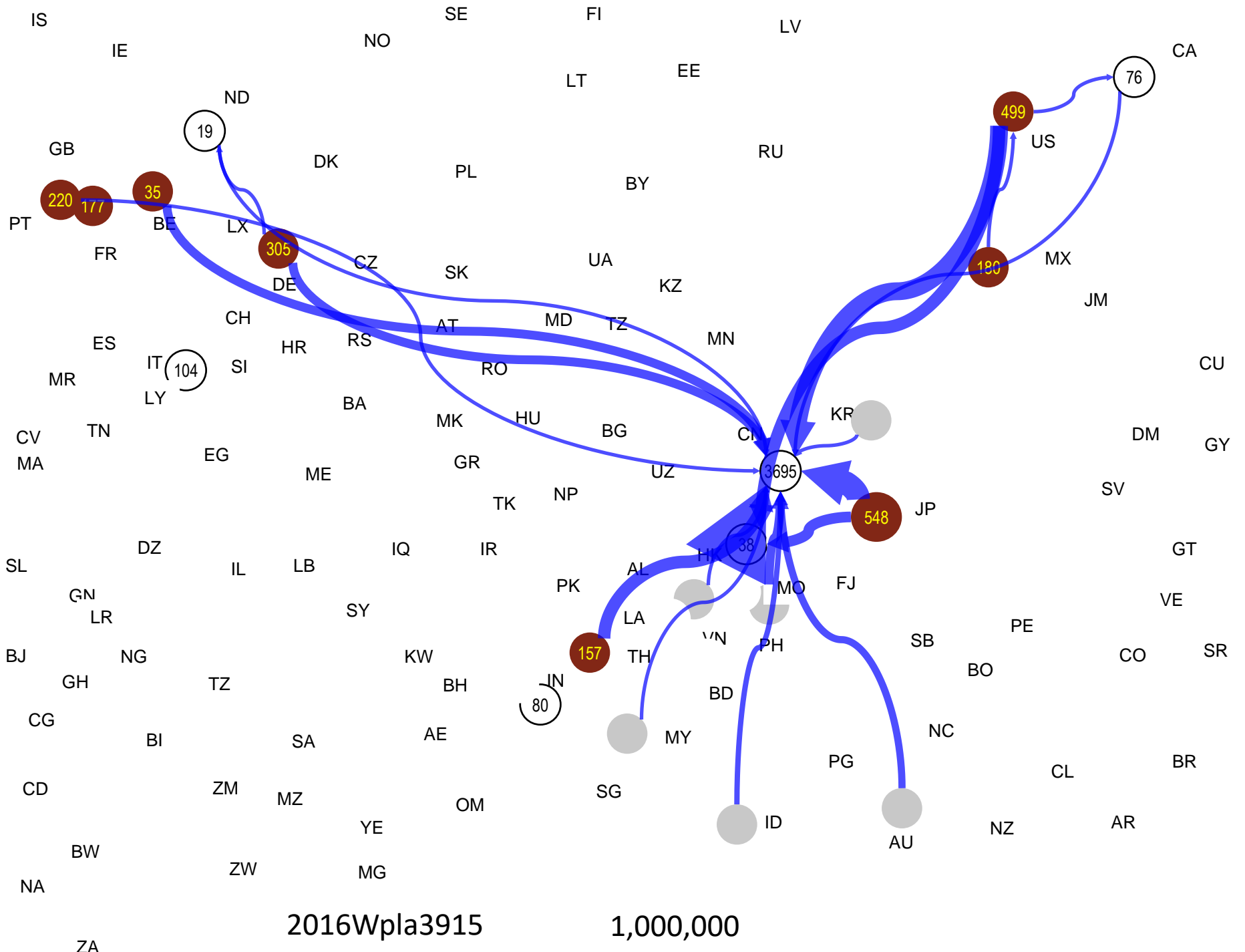
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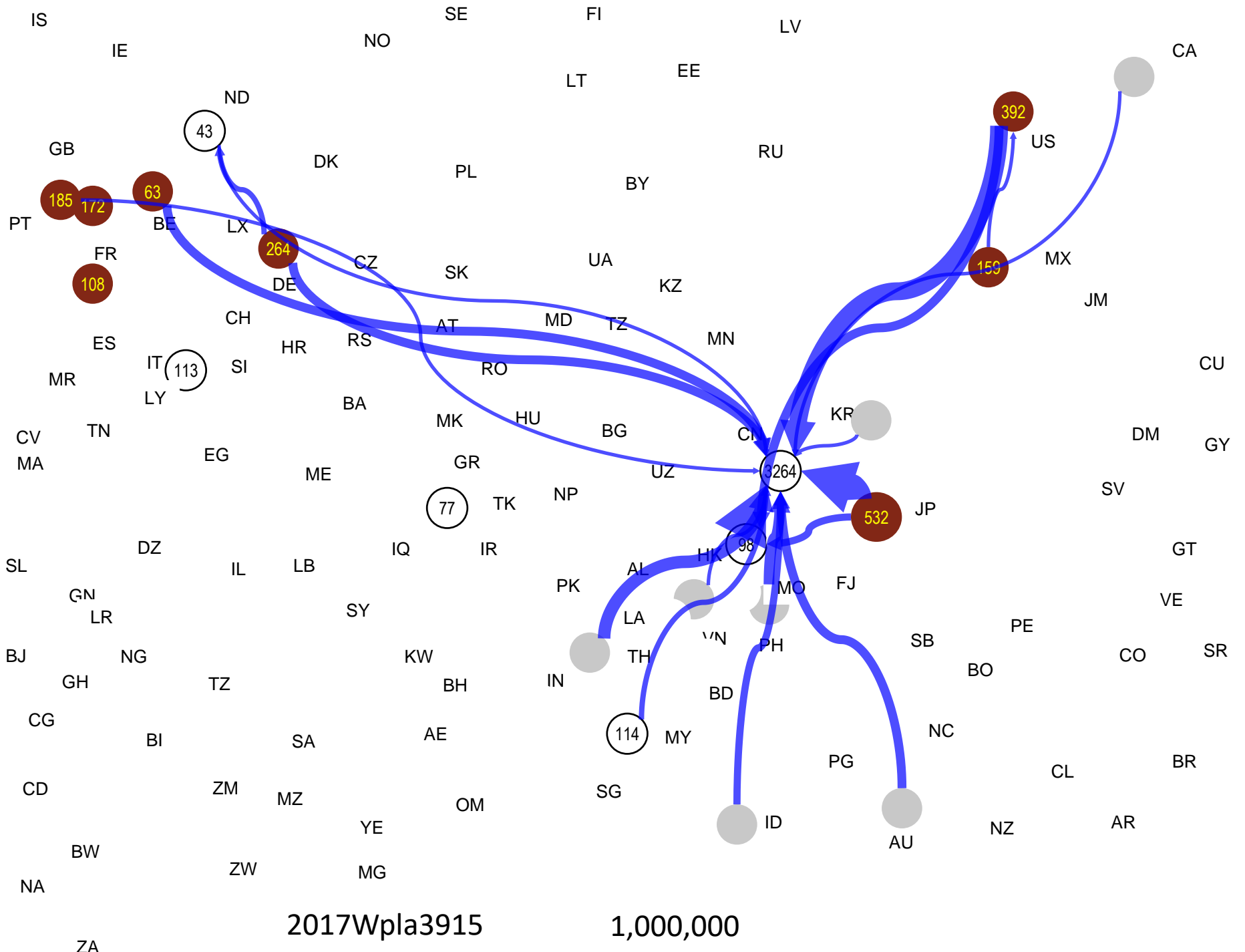


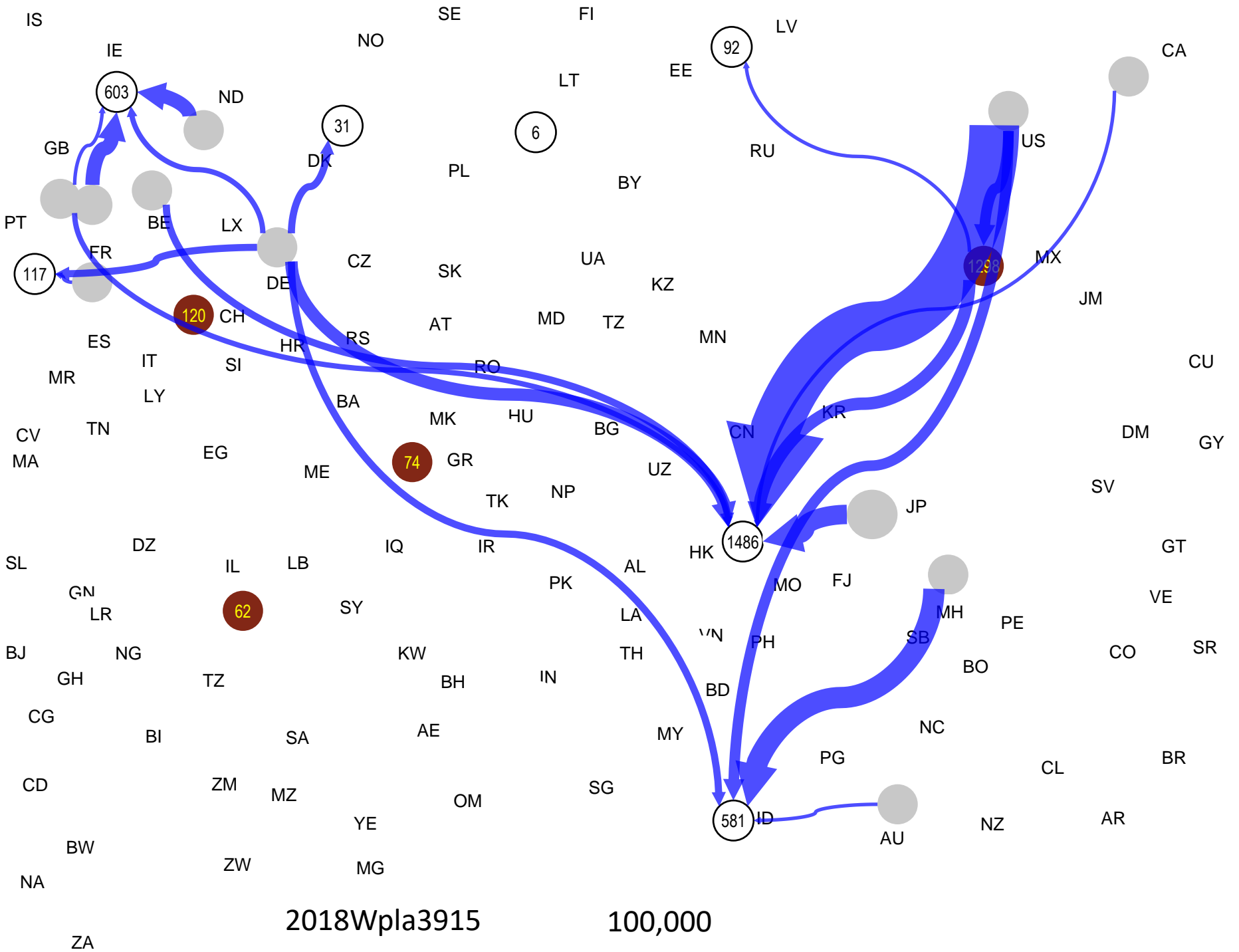




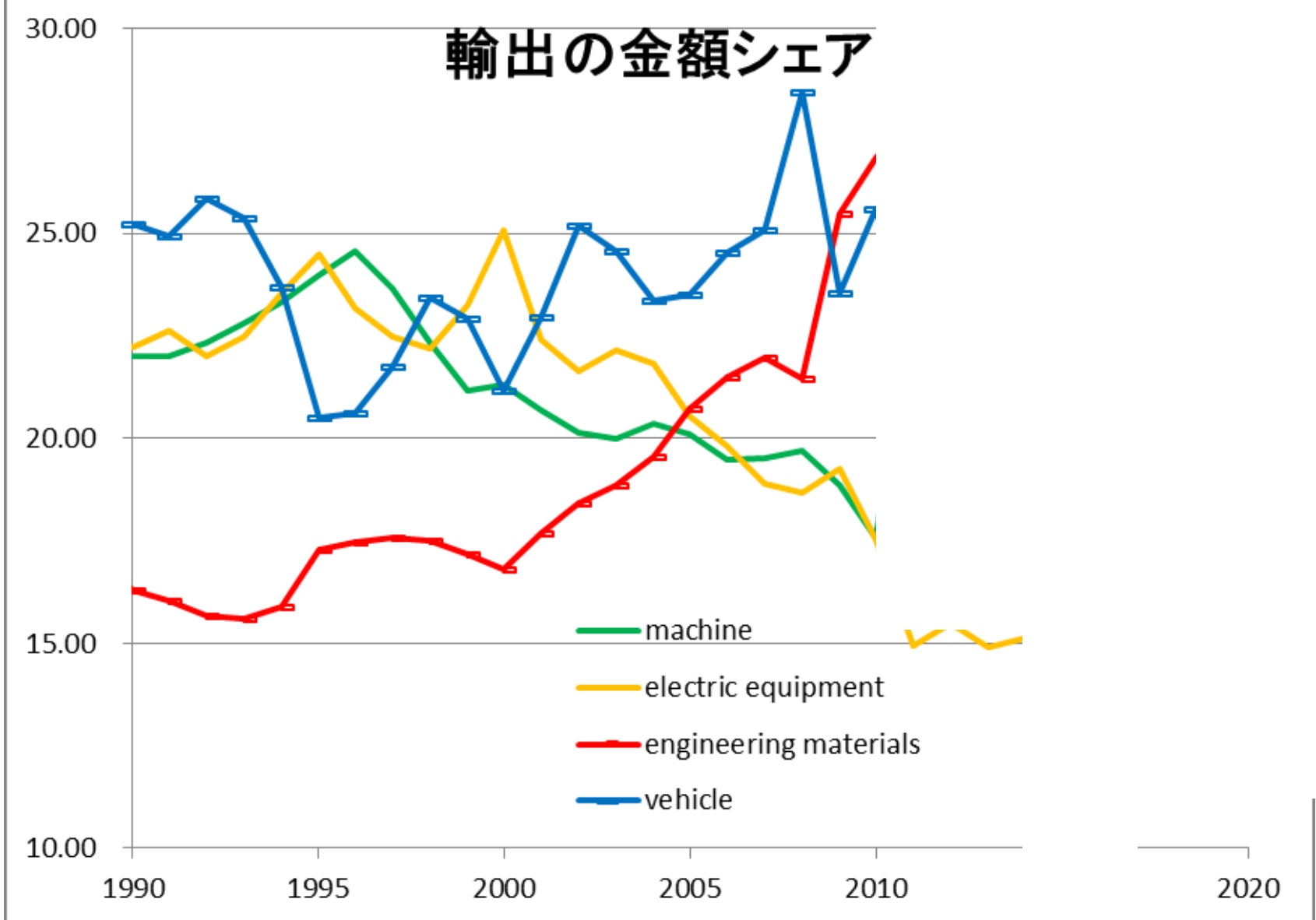








# 輸出の金額シェア



化学物質

化	1					'28250000	28.25		ヒドラジン及びヒドロキシルアミン並びにこれらの無機塩並びにその他の無機塩基、金属酸化物、金属水酸化物及び金属過酸化物
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特殊化学

特	1					'29411000	2941.10	000	ー ペニシリン及びその誘導体(ペニシラン酸構造を有するものに限る。)並びにこれらの塩
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プラスチック

P	1					'39210000	39.21		プラスチック製のその他の板、シート、フィルム、はく及びストリップ
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製品

製	1					'40150000	40.15		衣類及び衣類附属品(手袋、ミトン及びミットを含み、加硫したゴム(硬質ゴムを除く。)製のものに限るものとし、用途を問わない。)
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窯業素材

セ	1					'69090000	69.09		陶磁製の理化学用その他の技術的用途に供する物品、農業に使用する種類のおけ、かめその他これらに類する容器及び輸送又は包装に使用する種類のつぼ、ジャーその他これらに類する製品
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ファインセラミクス

フ	1					'690890999'			ー 陶磁製の理化学用その他の技術的用途に供する物品
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鉄

鉄	1					'73010000	73.01		鋼矢板(穴をあけてあるかないか又は組み合わせてあるかないかを問わない。)及び溶接形鋼
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非鉄金属

金	1					'76040000	76.04		アルミニウムの棒及び型材
	1					'76041000	7604.10	000	ー アルミニウム(合金を除く。)のもの

構成素材

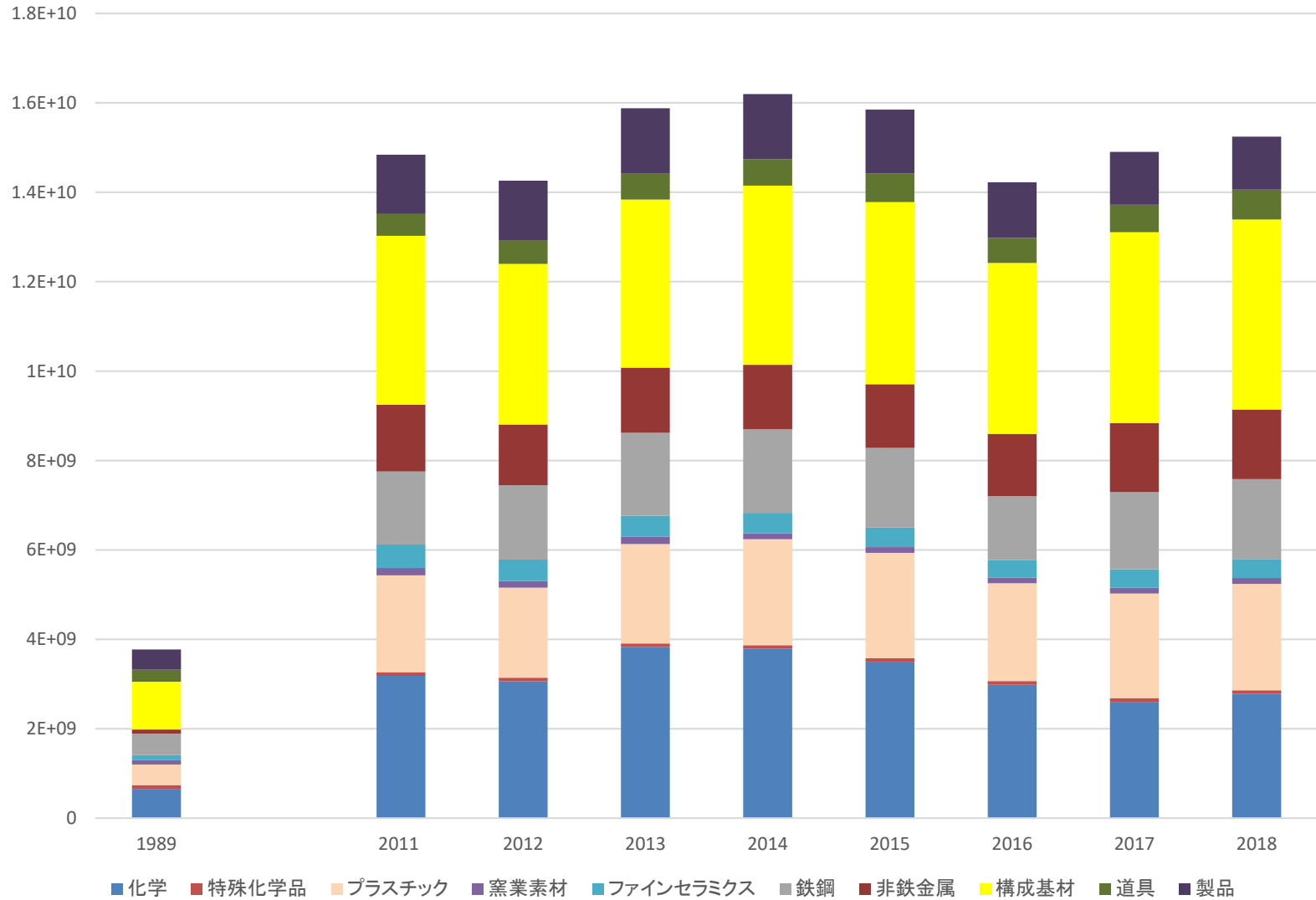
調	1					'76070000	76.07		アルミニウムのはく(厚さ(補強材の厚さを除く。)が0.2ミリメートル以下のものに限るものとし、印刷してあるかないか又は紙、板紙、プラスチックその他これらに類する補強材により裏張りしてあるかないかを問わない。)
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道具

調	1					'90011000	9001.10		ー 光ファイバー(束にしたものを含む。)及び光ファイバーケーブル
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具	1					'83090000	83.09		卑金属製の栓及びふた(王冠、ねじふた及び注水口用の栓を含む。)、瓶用口金、ねじ式たる栓、たる栓用カバー、シールその他これらに類する包装用の附属品
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## 素材分野の輸出額構成



substance



Material



Member subject  
Prepared material



Parts  
component



product

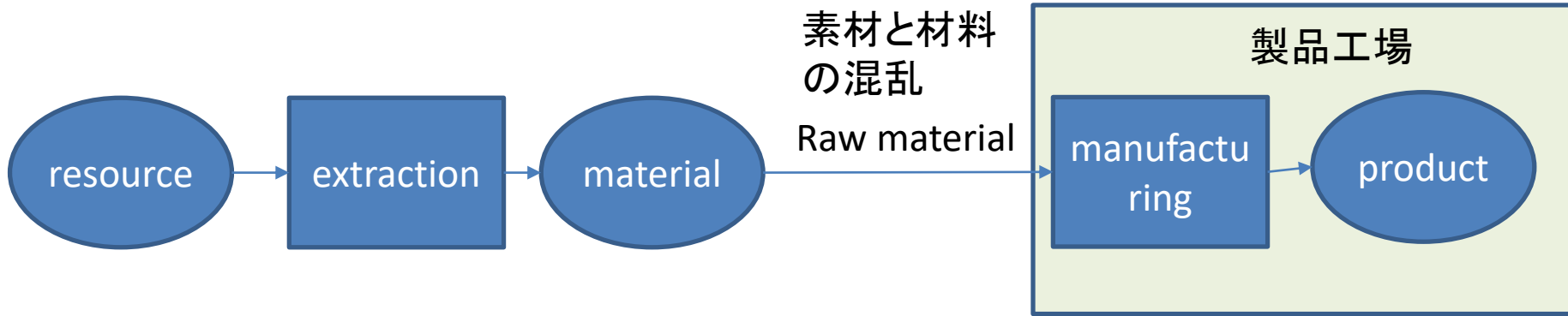


processing

Preparation  
functionalization

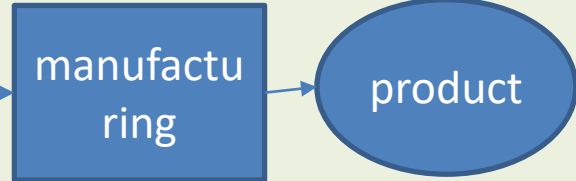
assembling

Raw material



素材と材料  
の混乱

Raw material



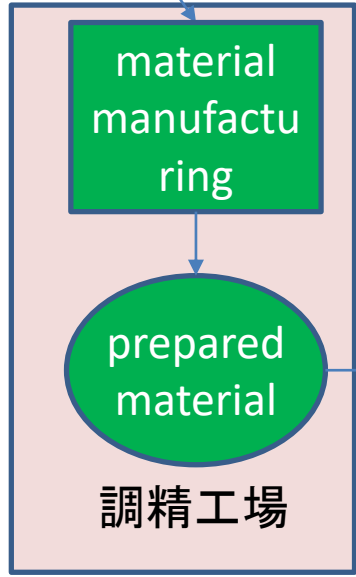
材料

Raw material

両者を区別できる  
適切な表現を

-ory  
~に使用されるもの  
~に役立つもの

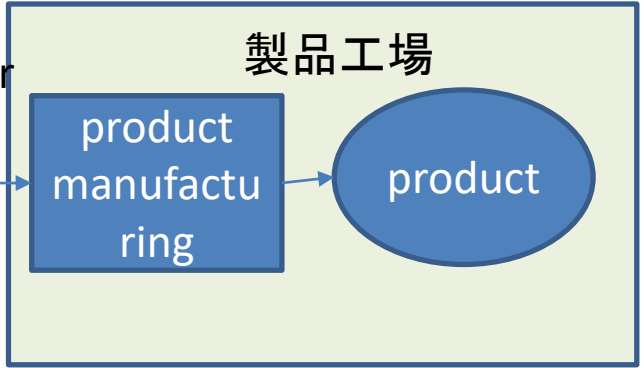
機能出現能  
品位 物質の不純物管理  
形態 粒度、結晶条件、  
膜厚等  
界面条件



素材  
アセンブル要素

assembly

Member  
subject



ナノテクノロジー



# まとめ

- 基礎材料のフローは20世紀後四半期は日本であったが現在は中国を中心の動くようになった
- 日本の輸出においては21世紀に入って、「素材」のシェアが大きい
- 基礎材料(raw material)とは異なった構成素材(prepared material, assembly)が日本のモノづくりのカギである